OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603002D8Z - Medical Advanced Technology**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	3.477	0.000	0.000	0.000	0.000	0.000	0.000
0603002D8Z Medical Advanced Technology	3.477	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: (U) This program supports applied research for advanced development of biomedical strategies to prevent, treat and assess health consequences from exposure to ionizing radiation. It capitalizes on findings under PE 0602787DZ, Medical Technology, and from industry and academia to advance novel medical countermeasures into and through pre-clinical studies toward newly licensed products. Program objectives focus on mitigating the health consequences from exposures to ionizing radiation that represent the highest probable threat to US forces under current tactical, humanitarian and counter-terrorism mission environments. Findings from basic and developmental research are integrated into highly focused advanced technology development studies to produce the following: (1) protective and therapeutic strategies; (2) novel biological markers and delivery platforms for rapid, field-based individual dose assessment; and (3) experimental data needed to build accurate models for predicting casualties from complex injuries involving radiation and other battlefield insults. The Armed Forces Radiobiology Research Institute (AFRRI), because of its multidisciplinary staff and exceptional laboratory and radiation facilities, is uniquely positioned to execute the program as prescribed by its mission. Because national laboratories operated by the Department of Energy no longer support advanced research relevant to military medical radiobiology, AFRRI is currently the only national resource carrying out this mission.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	4.691	0.000	0.000
Current BES/President's Budget (FY 2007)	3.477	0.000	0.000
Total Adjustments	-1.214	0.000	0.000
Congressional Program Reductions			
Congressional Rescissions	-1.214		
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603002D8Z - Medical Advanced Technology**

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
05						

Comment: By FY 2005 obtain "investigational new drug" status for a therapeutic agent to mitigate readiation injury.

Exhibit R-2, RDT&E Budget Item Justification					February 2006		
Appropriation/Budget Activity RDT&E.DW/BA3	R-1 Item Nomenclature: SO/LIC Advanced Development - PE 0603121D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Total PE Cost	34.921	45.689	30.575	31.589	32.514	33.152	33.998
Explosive Ordnance Disposal/Low-Intensity Conflict/P206	9.235	12.557	7.786	7.526	7.996	7.938	8.156
Special Reconnaissance Capabilities /P207	22.746	29.246	18.773	19.775	20.061	20.411	20.942
Information Dissemination Concepts /P208	2.940	3.886	3.516	3.538	3.707	3.803	3.900
Irregular Warfare Support (IWS)/P209	0	0	.500	.750	.750	1.000	1.000

A. Mission Description and Budget Item Justification:

P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC Program provides advanced technology and equipment solutions 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 primarily on the access, detection, identification, and neutralization of all types of conventional explosive ordnance and IEDs. 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 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 Global War on Terrorism (GWOT), 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 is a new project within this Program Element, having transitioned from within SO/LIC's Combating Terrorism Technology Support (PE 0603122D8Z); internal resources are being reallocated to support this effort. The IWSP develops cross-domain blended capabilities necessary to enable sustained counterterrorism and counterinsurgency operations. This program leverages ongoing research efforts of US Special Operations Command (USSOCOM), the military departments, Defense agencies, and other federal agencies to analyze, modify, design, and demonstrate enduring counterinsurgency technical and operational

capabilities. Projects support efforts to: conduct counter organization warfare, develop counter motivation capabilities, coordinate infrastructure and sanctuary denial options, and provide counter enterprise and counter financing capability to the tactical counterinsurgent warfighter. The program blends several disciplines including surveillance, operations, policy, information, training and technology.

B. Program Change Summary:

	FY2005	FY2006	FY2007
Previous President's Budget	35.586	34.529	35.021
Current President's Budget	34.921	45.689	30.575
Total Adjustments	-.665	11.160	-4.446
Congressional program reductions			
Congressional rescissions			
Congressional increases		11.900	
Reprogrammings			
SBIR/STTR Transfer	-.617		
Other Program Adjustments	-.048	-.740	-4.446

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

E. Performance Metrics:

SO/LIC Advanced Development - PE 0603121D8Z; Explosive Ordnance Disposal & Low-Intensity Conflict/P206; Special Reconnaissance Capabilities/P207; Information Dissemination Concepts/P208; Irregular Warfare Support/P209	
Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; and establish outreach to leverage institutional knowledge and expertise.	
Performance Indicator and Rating:	
FY 2005 Target	• 70% of currently funded research projects completed on time and within budget • 5% increase in the number of research projects accepted • Complete 90% of scheduled R&D tasks
FY 2005 Rating	ON TARGET
FY 2006 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted

	• Transition scheduled projects to user communities
FY 2007 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted
Basis of FY 2005 to Date Performance Rating	Currently the number of funded research projects are on track to be completed per the target
Verification	The SO/LIC Advanced Development Program projects each track the status of their efforts. Reviews are conducted to assess project status. Oversight of the entire effort is undertaken by ASD SO/LIC.
Validation	Completed research products increase the capabilities of the DoD to effectively detect, deter and defend against terrorist attacks; defeat improvised explosive devices and unexploded ordinance; enable sustained information operations in denied areas; and contribute to resolution of hostile, unconventional conflicts.

Exhibit R-2a, RDT&E Project Justification				February 2006			
Appropriation/Budget Activity RDT&E.DW/BA3	Project Name and Number SO/LIC Advanced Development 0603121D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Explosive Ordnance Disposal/Low-Intensity Conflict/P206	9.235	12.557	7.286	7.026	7.246	6.938	7.156

A. Mission Description and Budget Item Justification: P206, Explosive Ordnance Disposal/Low-Intensity Conflict (EOD/LIC). The EOD/LIC program provides advanced technology and equipment solutions for military EOD operators and SOF to meet the challenges of improvised explosive devices (IEDs), force protection and the war on terrorism. EOD/LIC efforts focus primarily on the 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).

B. Plans/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	9.235	12.557	7.286

FY 2005 Accomplishments: Transitioned low-cost unmanned ground vehicle Bombot into production with approximately 2300 vehicles ordered for the Joint Service EOD. Fielded tactical decision aids for Special Operations Forces. Transitioned into operational use the Joint Digital Information Gathering System (JDIGS) that captures all EOD incident reports worldwide to identify threat trends and equipment and manpower utilization. Demonstrated the Combatant Diver Display Mask (CDDM) and received Naval Sea Systems Command approval for operational use by Navy/Marine Corps diving commands. Evaluated a first generation boat ramp installed on an 11meter Zodiac inflatable boat and used by Navy Special Clearance Team One (NSCT-1) for recovery of smaller vessels and mammal systems. Tested an Electric Firing Pin for the percussion actuated non-electricpercus (PAN) disruptor which allows for use of the PAN with all available initiation methods.

FY 2006 Plans: Demonstrate a Laser Aiming Device for the Mk 40 Mod 0 and PAN Stand-Off Disrupters. Transition a low-cost tactical/training projectile for the Mk 40 Mod 0 Disrupter into production. Conduct comparative test and evaluation of candidate Active Thermal Protective garments for Joint Service EOD. Transition an improved Lift Balloon System for Navy EOD into production. Field a Portable X-ray System to Air Force EOD units tasked with port mortuary operations. Transition to an acquisition program a Digital Camera/X-Ray Combination to provide EOD Operators an enhanced targeting capability for the currently fielded portable x-ray systems. Field demonstrate a prototype Remote Firing System for the Joint Service EOD community. Transition to production a rugged Universal Shock Tube Initiator (USTI) that allows for the initiation of standard military and commercial shock tubes from currently available

Remote Firing Devices and robotic platforms. Demonstrate a second generation improved Launch Platform Boat Ramp, installed on an 11-meter Zodiac inflatable boat to be used by NSCT-1 for recovery of current and future assets to include smaller vessels and mammal systems.

FY 2007 Plans: Demonstrate an Improved Underwater Demolition Charge. Conduct field evaluation and transition to commercialization a Special Operations Forces (SOF) specific, low-cost unmanned ground vehicle (Special Operations Forces Robot (SOFBOT)). Demonstrate a High Power IED Standoff Laser Disruption System. Conduct field evaluation of an IED Detection System. Demonstrate a Navy Ship Hull Database for use in underwater hull searches. Field a Special Operations Explosive Methods of Entry Planning software package. Conduct operational test and evaluation of the Augmented Reality Visualization of the Common Operational Picture (ARVCOP) navigational aid on Naval Special Clearance Teams crafts. Commercialize Advanced Robotic Vehicle technologies. Transition to an acquisition program a suite of Modular Integrated Displays for Full Face Masks for use with various EOD Chemical Protective masks and the EOD Bomb Suit. Transition to an acquisition program an Improved Linear Shape Charge Container used in EOD operations, effective against a variety of target materials in multiple environments. Transition to production a second generation improved Launch Platform Boat Ramp, installed on an 11meter Zodiac inflatable boat to be used by NSCT-1 for recovery of current and future assets to include smaller vessels and mammal systems.

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

Exhibit R-2a, RDT&E Project Justification				February 2006			
Appropriation/Budget Activity RDT&E.DW/BA3	Project Name and Number SO/LIC Advanced Development 0603121D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Special Reconnaissance Capabilities /P207	22.746	29.246	18.773	19.755	20.061	20.411	20.942

A. Mission Description and Budget Item Justification: 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 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 Global War on Terrorism (GWOT). SRC also maintains DoD's on-line catalog of tools in order to minimize crisis response time for special reconnaissance and persistent surveillance.

B. Accomplishments/Planned Program

	FY2005	FY2006	FY2007
Accomplishment/Effort/Subtotal Cost	22.746	29.246	18.773

FY 2005 Accomplishments: The SRC Program provided technology support to GWOT to include variants of unattended ground sensor prototypes for maritime and ground persistent surveillance missions with associated technology training. Assessed, evaluated, and initiated the integration of various tag capabilities for end-to-end operations in concert with user CONOPS. Initiated a multi-access tag program in order to combine several devices into one form factor. Developed and tested extremely small beacon devices capable of communicating low-duty factor, short-burst, low-rate data messages over very long ranges using a very small/low power devices. Enhanced and evaluated the capabilities of optical and radio frequency tags exploitation by National and Theater Sensor platforms. Enhanced the previous signal system to result in an improved end-to-end global capability by exploiting communications infrastructures. Studied the feasibility to design, develop and fabricate an integrated vehicle tracking device with advanced capabilities and operational security features. Initiated the program to reduce the form factor and improve the power management of the remote sensor controller. Began to integrate air droppable capabilities to the remote sensor camera controller and unattended ground sensors. Assessed and began integration of an improved day and night optics capabilities into unattended operations. Continued to develop a standoff capability through the use of inherent signature. Continued to improve upon communication by obtaining more robust communication links and improve antenna designs. Integrated improved camera aiming capabilities. Enhanced functionality and expanded access of on-line information to supporting commands, DoD activities and OGAs. Assessed 74 reconnaissance capabilities and conducted 31 technology evaluations to assess operational capabilities. Leveraged advanced sensing, tracking, communications and power technologies with DoD and OGA to accelerate the transition of advanced special reconnaissance (SR) and persistent surveillance technologies to operational community.

FY 2006 Plans: Integrate new micro sensors into prototype remote, unattended capabilities. Conduct end-to-end testing of extremely small, power efficient, beacon device. Continue to provide technology support to the Global War on Terrorism to include, technology training and variants of unattended ground sensor prototypes for maritime and ground persistence surveillance. Continue to identify, evaluate and operationalize sensor and tagging, tracking, and locating technologies to enhance the technical performance of reconnaissance and surveillance missions. Insert operational capable prototypes into operator training exercises to vet tactics, techniques and procedures for employment. Continue development of an operational prototype of a radar tag system. Continue integration of command and control computer for display of tag and aircraft location as well as GIS overlays. Produce a prototype multi-access tag system. Initiate a program to develop a sensor-less visible camera system. Improve data infiltration and exfiltration capabilities through the integration of advanced technology and new communications links. Continue to improve SR optic capabilities through the integration of advanced optic technology and processing. Improve SR power capabilities through the integration of advanced power technologies and device redesign. Exploit remote control capabilities by reducing form factors, improving power management, and integrating air droppable and maritime capabilities. Perform field evaluations of selected SR technologies and document results in the on-line SRC knowledgebase. Support cooperative projects and evaluate technology maturity for new capabilities with the DoD and OGA that accelerates the transition of advanced SR and TTL technology to operational the community.

FY 2007 Plans: Provide technology support to DoD with emerging SR precise location prototype technologies. Develop micro sensor controller for hand emplacement, and air and maritime employment. Continue to: provide technology support to the Global War on Terrorism to include, technology training and variants of TTL and unattended ground sensor prototypes for maritime and ground persistence surveillance; engage the research and development community for technical solutions and candidate technologies to improve DoD SR mission capabilities; evaluate and operationalize sensor and tagging, tracking, and locating capabilities through insertion of maturing mini and micro technologies to enhance the technical performance of SR missions; insert operationally capable prototypes into operator training exercises to vet technologies and to develop tactics, techniques and procedures for employment; research, evaluate and integrate enhanced tagging and sensing capabilities to enable remote and standoff emplacement; research, evaluate and integrate emerging netted sensor technologies into remoted capabilities; integrate improved SR data infiltration and exfiltration capabilities though the development and integration of advanced technology and new communications links; perform field evaluations of selected SR technologies and document results in on-line SRC knowledgebase; and support cooperative projects with DoD and OGA to accelerate the transition of advanced SR technologies to operational community.

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

Exhibit R-2a, RDT&E Project Justification					February 2006		
Appropriation/Budget Activity RDT&E.DW/BA3	Project Name and Number SO/LIC Advanced Development 0603121D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Information Dissemination Concepts/P208	2.940	3.886	3.516	3.583	3.707	3.803	3.900

A. Mission Description and Budget Item Justification: The Information Dissemination Concepts (IDC) program addresses technology shortfalls 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. IDC also includes other aspects of information operations to include advanced analysis and planning techniques.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	2.996	3.972	4.033

FY 2005 Accomplishments: The Multimedia Alert Processing Systems (MAPS) prototype was installed at CENTCOM and at USSOCOM. An additional MAPS system was purchased and deployed to test and provide support to Task Force XIV in Iraq. A Ku-band satellite antenna was installed on the EC-130J Commando Solo aircraft to have video/audio receive capability. This capability will enable the EC-130J to receive PSYOP products while on station increasing the responsiveness of providing distribution of products into denied areas.

FY 2006 Plans: Continue to add operator requested enhancements to MAPS. These enhancements will include the addition of FARSI language, network configuration for data sharing, develop the capability to monitor local radio broadcast, increase data storage, error reduction, web page translation, and integrate a foreign text import function. Continue testing and support MAPS deployment in Iraq. Other efforts include examining technologies, which will specifically address information dissemination techniques into physically denied areas that possess mature information infrastructures.

FY 2007 Plans: Begin the process to transition MAPS to Services for procurement and support. Support counter-terrorism and combating terrorism operations by continuing information operations tools and technologies, and expanding translation capabilities and monitoring of local radio and Internet dissemination of foreign news services. Develop information dissemination requirements in support of instability and counter- narcotic operations. Start new projects defined through collaboration efforts to address technology shortfalls.

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

Exhibit R-2a, RDT&E Project Justification						February 2006	
Appropriation/Budget Activity RDT&E.DW/BA3		Project Name and Number SO/LIC Advanced Development 0603121D8Z					
Cost ($ in millions)		FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Irregular Warfare Support (IWS) /P209		0	0	.500	.750	.750	1.000	1.000

A. Mission Description and Budget Item Justification: The IWS is a new project within the SO/LIC Advanced Development Program. The IWS develops cross-domain blended capabilities necessary to enable sustained counterterrorism and counterinsurgency operations. This program leverages ongoing research efforts of US Special Operations Command (USSOCOM), the military departments, Defense agencies, and other federal agencies to analyze, modify, design, and demonstrate enduring counterinsurgency technical and operational capabilities. Projects support efforts to: conduct counter organization warfare, develop counter motivation capabilities, coordinate infrastructure and sanctuary denial options, and provide counter enterprise and counter financing capability to the tactical counterinsurgent warfighter. The Program blends several disciplines including surveillance, operations, policy, information, training and technology.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	0	0	.500

FY 2005 Accomplishments: Not Applicable

FY 2006 Plans: Not Applicable

FY 2007 Plans: This is the first year of this Project. The IWS Program will collaborate with the US counterinsurgency (COIN) user community to further define technology gaps and incorporate the defined R&D into plans. The IWSP will: coordinate development of a data aggregation system that overlays green data (friendly indigenous demographic data) on a common Geographic Information System (GIS); integrate Clandestine Close Access Surveillance (CCAS) modular training support capabilities; develop indigenous police force informant-network software for host nation applications; research and design a cyber anonymity and denial capability; and research insurgent prevention and disengagement strategies.

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

Exhibit R-2, RDT&E Budget Item Justification				February 2006			
Appropriation/Budget Activity RDT&E.DW/BA3	R-1 Item Nomenclature: Combating Terrorism Technology Support - PE 0603122D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Total PE Cost	116.717	143.949	65.768	78.821	82.321	84.913	88.700
Combating Terrorism Technology Support/P484	116.717	143.949	65.768	78.821	82.321	84.913	88.700

A. Mission Description and Budget Item Justification: Combating Terrorism Technology Support (CTTS). This program develops technology and prototype equipment that address needs and requirements with direct operational application in the national effort to combat terrorism. Projects support antiterrorism, counter terrorism, intelligence, and terrorism consequence management activities to: conduct tactical operations; protect military forces, civilian personnel, installations, infrastructure elements, and the general populace from terrorist attack; detect, neutralize, and mitigate the effects of conventional and unconventional devices; conduct surveillance and tracking of terrorists; conduct threat and incident assessments; and process and disseminate information. The program integrates Defense advanced development efforts with government-wide and international efforts to combat terrorism. The Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD (SO/LIC)) oversees and is responsible for execution of the CTTS Program, which addresses defense, interagency, and international combating terrorism technology requirements.

B. Program Change Summary:

	FY2005	FY2006	FY2007
Previous President's Budget	46.719	55.301	66.624
Current President's Budget	116.717	143.949	65.768
Total Adjustments	69.998	88.648	-.856
Additional appropriation, Title IX		25.000	
Congressional program reductions			
Congressional rescissions			
Congressional increases	53.266	65.575	
Reprogrammings	21.290		
SBIR/STTR Transfer	-2.102		
Other program adjustments	-2.456	-1.927	-.856

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

E. Performance Metrics:

Combating Terrorism Technology Support - PE 0603122D8Z	
Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; establish outreach programs with the interagency to leverage institutional knowledge and expertise; utilize cooperative research and development (R&D) agreements with the United Kingdom, Canada and Israel to leverage technology investments; and initiate full cooperative R&D programs with two new foreign partners.	
Performance Indicator and Rating:	
FY 2005 Target	• 70% of currently funded research projects completed on time and within budget • 5% increase in the number of research projects accepted • Continue threat/technology solutions workshop program
FY 2005 Rating	ON TARGET
FY 2006 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted • Initiate pilot cooperative R&D program with new foreign partners • Continue threat/technology solutions workshop program
FY 2007 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted • Expand pilot R&D programs with two new foreign partners to full cooperative programs • Continue full R&D programs with existing and new foreign partners
Basis of FY 2005 to Date Performance Rating	Currently the number of funded research projects are on track to be completed per the target
Verification	The CTTS Program utilizes a database to track the status of the projects. Quarterly program reviews are conducted to assess project status. In addition, an annual report is produced that assesses the status of current projects and the ability to accept new projects.
Validation	Completed research products increase the capabilities of the DoD to effectively detect, deter, and defend against terrorist attacks; thus the Department's personnel and interests at home and abroad are safer from terrorism.

Exhibit R-2a, RDT&E Budget Item Justification				February 2006			
Appropriation/Budget Activity RDT&E.DW/BA3	Project Name and Number Combating Terrorism Technology Support - PE 0603122D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Combating Terrorism Technology Support	116.717	143.949	65.768	78.821	82.321	84.913	88.700

A. Mission Description and Budget Item Justification: P484, Combating Terrorism Technology Support (CTTS). This program develops technology and prototype equipment that address needs and requirements with direct operational application in the national effort to combat terrorism. Projects are distributed among 13 mission categories: Joint Improvised Explosive Device Defeat; Blast Effects and Mitigation; Chemical, Biological, Radiological, and Nuclear Countermeasures; Explosives Detection; Improvised Device Defeat; Infrastructure Protection; Investigative Support and Forensics; Physical Security; Training Technology Development; Special Projects; Surveillance, Collection, and Operations Support; Tactical Operations Support; and VIP Protection. This program is a non-system, advanced technology development effort that demonstrates the utility or cost reduction potential of technology when applied to combating terrorism requirements. It includes technology development and proof-of-principle demonstrations in field applications and coordination to transition from development to operational use.

B. Accomplishments/Planned Program

ADDITIONAL APPROPRIATION – Title IX, HRept 359.109 FY06 Appropriation

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	0.000	25.000	0.000

FY 2006 Plans: A current-year Congressional Addition to develop and field critical operational capabilities to counter and protect against terrorist chemical, biological, and explosive threats employed against military and civilian targets.

JOINT IMPROVISED EXPLOSIVE DEVICE DEFEAT TASK FORCE (JIEDD TF)

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	20.000	0.000	0.000

FY 2005 Accomplishments: Identified international technologies likely to appear in improvised devices in the near future. Examined hardening methods for handheld and benchtop explosives detectors planned for use in harsh outdoor environments. Investigated approaches for identifying acoustic and vibrational signatures of vehicles potentially carrying an improvised explosive device (IED). Developed preliminary plans for a suite of counter-IED training tools that satisfy warfighter training needs. Identified parameters for assessing blast data to determine the frequency, severity, and entrance locations of blast injuries. Established plans to leverage law

enforcement models in developing tactics, techniques, and procedures for eradicating networks. Analyzed approaches for establishing an international weapons intelligence program that provides deployable IED training for indigenous resources. Identified models for developing a persistent on-demand surveillance system to support operational mission planning and execution.

BLAST EFFECTS AND MITIGATION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	13.806	6.574	3.900

FY 2005 Accomplishments: Conducted a series of test of bridge structural components providing strength to suspender rope bridges against terrorist explosive devices. Demonstrated a robust model to predict close-in blast effects on bridge towers. Initiated a commercial off the shelf testing project to validate new polymer technologies used to retrofit existing buildings. This technology is now in use by Federal agencies. Designed fortifications for forward operating bases to enhance the survivability of personnel from blast. Commissioned a dynamic blast simulator to validate and characterize new materials used in building components.

FY 2006 Plans: Apply blast simulator test data for walls, columns and other structural elements of buildings to validate computer models and full-scale field test data. Populate a computer mapping system and database to identify vulnerabilities of current body armor. Refine advanced high-fidelity instrumentation for measuring the tactical performance of improvised explosives at close distances. Design, test, and field advanced material blast shield walls for checkpoints, entry control facilities, and overhead protection. Design and develop construction of a configurable half-scale urban city used to develop simplified, yet high-fidelity modeling codes to predict effects of terrorist bombings. Publish a best practices blast mitigation guide to be used by bridge owners and Federal and state agencies. Publish design guidance to practicing engineers on types of steel connections that will survive a blast environment. Investigate the effects of enhanced terrorist explosives on aircraft luggage containers and baggage.

FY 2007 Plans: Refine and provide critical blast information to military, industrial, and civil engineers by performing experiments in a configurable urban city test facility. Field laptop software system to aid in designing field fortifications at forward operating bases. Begin evaluation of advanced composite building materials for rebuilding of urban areas damaged by insurgency operations. Promulgate engineering guidance and designs incorporating commercial technologies to protect critical U.S. infrastructure including: tunnels, train/subway stations, ports, electrical power sub-stations, dams, bridges, and border crossings. Investigate homemade terrorist explosive mixtures and their effects on buildings and infrastructure. Test and verify the capability of commercial materials as new products emerge.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR COUNTERMEASURES

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	8.460	14.466	5.000

FY 2005 Accomplishments: Conducted user evaluations of advanced protective clothing for incident response personnel and tactical Self-Contained Breathing Apparatus (SCBA) for tactical response units. Conducted live-agent testing of the personal hydration Chemical, Biological, and Radiological (CBR) filtration system. Delivered the final building disinfection byproducts database. Completed testing of the advanced high-volume air sampling systems for Biological Warfare (BW) and Chemical Warfare (CW) agents. Developed and tested the CW and BW water collection and detection system. Validated improved handheld BW immunoassays. Designed a food security test kit for personnel protection at high-threat overseas government facilities. Evaluated viral suppression methods using a model system. Demonstrated dual use of a polymer system for capture of radioactive particles and for dust suppression.

Tested the first building-scale installation of the fiber-optic-based Distributed Chemical Sensor system. Performed efficacy and toxicity testing of the Electrostatic Decontamination System to meet EPA requirements. Deployed initial lessons-learned database from agricultural bioterrorism exercises and natural outbreak responses for use by the agricultural responder community.

FY 2006 Plans: Test a small portable radio repeater system to maintain voice communication for first responders operating in underground environments. Operationally evaluate a food security test kit for personnel protection at high-threat overseas government facilities. Review initial designs for advanced personal protective equipment with improved heat stress management capabilities. Assess food-borne threat levels of selected biological agents. Design transportable gasifier for contaminated plant and animal matter. Design and evaluate a portable test kit for collective protection filters. Evaluate viral suppression method against transmission of viral particles. Optimize color-based sensor array for chemical agent detection. Field-test the hybrid chemical detection system for building collective protection. Design and develop a self-contained escape respirator for both chemical and smoke protection. Develop advanced alpha and beta radiation detector for water.

Field-test the fiber-optic-based Distributed Chemical Sensor system at a mass-transit location. Assess quality control methods for chemical agent sampling and decontamination. Improve prototype fuel-cell technologies and deliver next-generation fuel cell units for evaluation. Optimize fuel-cell technology for continuity of operations.

FY 2007 Plans: Complete field trials and certification of advanced personal protective equipment with improved heat stress management capabilities. Complete field tests for laboratory testing of a small personal toxic chemical and contact poison detector and dosimeter. Conduct modeling and initial user tests for toxic chemical release mitigation methods in an urban environment. Test and evaluate transportable biomass gasifier. Complete field-testing and user evaluation of the small portable radio repeater system. Design and develop in-building emergency responder tracking system. Initiate lab testing of color-based sensor array for chemical agent detection. Test and evaluate self-contained escape respirator for both chemical and smoke protection. Test and evaluate advanced alpha and beta radiation detector for water.

EXPLOSIVES DETECTION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	7.177	7.642	6.570

FY 2005 Accomplishments: Developed prototype system for screening bottles for explosives and hazardous materials. Determined feasibility of Nuclear Quadrupole Resonance (NQR) for detection of large vehicle bombs. Conducted feasibility studies to assess emerging technologies for standoff explosives detection. Conducted range testing of handheld explosive trace detectors against vehicle-borne improvised explosive device threats.

FY 2006 Plans: Evaluate prototype system for screening bottles for explosives and hazardous materials. Develop and evaluate NQR large vehicle bomb detection. Develop breadboard systems for standoff detection of explosives. Optimize existing explosive trace detectors to increase detection capability and hardening to withstand severe environmental conditions. Investigate methods to improve canine handler selection and training. Conduct comparative study of methods to optimize canine performance. Determine feasibility of laser photothermal acoustic interferometry for suicide bomber detection.

FY 2007 Plans: Evaluate breadboard systems for standoff detection. Implement canine optimization methods in operational pilot program. Examine alternatives to computed tomography X-ray systems for inspection of baggage and cargo. Field test explosive trace detectors with increased detection capability and hardening to withstand severe environmental conditions.

IMPROVISED DEVICE DEFEAT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	6.183	4.428	7.800

FY 2005 Accomplishments: Fielded a scalable Vehicle Borne Improvised Explosive Device (VBIED) disruptor system. Conducted field evaluation of rapidly deployable, multi-configuration Radio Frequency (RF) shielded enclosures as a means to isolate Radio-Controlled Improvised Explosive Devices (RCIEDs) from external influences. Completed characterization testing of the recoil reduction adapter for the Percussion Actuated Non-Electric (PAN) disruptor. Conducted testing and field demonstration of lightweight recoilless disruptors for small platforms for use against Improvised Explosive Devices (IEDs). Evaluated the effect of Electronic Countermeasures (ECM) equipment on selected bomb squad equipment and robotic platforms. Developed and field evaluated prototype tactical timed firing device to support Explosive Ordnance Disposal (EOD) operations. Evaluated commercially available robotic mounted intrusive camera system for visual inspection of suspect vehicle-borne IEDs (VBIED). Developed a prototype remote, robotically deployed disablement system capable of disrupting the firing system of VBIEDs.

FY 2006 Plans: Investigate technologies that can be incorporated into the protective components of the next generation bomb suit. Evaluate the feasibility of miniaturizing previously developed x-ray backscatter imaging system to provide a single sided imaging system for bomb squads. Transition a tactical timed firing device to commercial production. Perform an operational evaluation of the prototype remote, robotically-deployed disablement system and refine to meet user requirements. Develop a multiple IED disruption

system to be integrated with existing robotic platforms. Complete characterization of a select set of general disruption tools. Define specifications and develop the initial design for a low cost sensor detector kit. Develop a prototype power backup system for robotic platforms. Ensure x-ray targeting system compliancy with Joint Architecture for Unmanned Systems (JAUS) specifications and integration with other JAUS compliant components. Develop and evaluate an advanced aiming and standoff measurement device for disruptors.

FY 2007 Plans: Complete field testing of a multiple IED disruption system and power backup system for robotic platforms. Build and evaluate initial prototype of single sided imaging system. Design, model, and evaluate the performance of the next generation bomb suit components, with emphasis on the blast and ballistic mitigation panels. Finalize design and test a low cost sensor detector kit. Continue characterization of a select set of general disruption tools. Investigate compatibility issues with ECM equipment that degrades the performance of electronic equipment and robotic platforms used by bomb squads. Develop a tool kit to assist bomb technicians with suicide bomber vests and backpacks. Evaluate existing RF detection devices. Demonstrate plug-and-play capability by integrating JAUS compliant x-ray targeting system and components onto JAUS compliant robotic platform.

INFRASTRUCTURE PROTECTION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	2.172	2.443	3.250

FY 2005 Accomplishments: Published and distributed the *Securing Your Supervisory Control and Data Acquisition (SCADA) and Industrial Control System* pocket guide. Published and distributed a brochure on the threats of radio frequency weapons (RFW). Developed the software-based Virus Propagation Analysis Tool which is offered for licensing and commercialization. Posted for download from an internet website an open source security best practice guide and automated security configuration verification tool for Linux. Expanded the deployment of PipelineNet water modeling tools to twenty-five additional US cities.

FY 2006 Plans: Field test a secure means of data communication between commercial and military aircraft and air traffic controllers. Field blast engineers an enhanced database with expanded content on the effects of blast to critical infrastructure. Deliver tools for the assessment of data quality in semantic graphs and the data set generator to meet the needs of analysts and information analysis tool evaluators. Automate and deliver an existing cyber security assessment methodology for use by the Nuclear Regulatory Commission and power plant licensees. Study available commercial-off-the-shelf software (COTS) and government-off-the-shelf (GOTS) software tools for critical infrastructure interdependency modeling.

FY 2007 Plans: Commercialize a virtual cyber security testing capability. Publish best practices guide and a notional architecture for infrastructure interdependency modeling. Field a prototype early warning system for critical drinking water infrastructure. Test and deploy configuration-based network security technologies.

INVESTIGATIVE SUPPORT AND FORENSICS

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	4.494	4.133	3.800

FY 2005 Accomplishments: Fielded a counter-encryption tool based on distributive network processing. Transitioned a forensic device to extract stored data from a personal digital assistant and cellular phone to commercial end users. Distributed a software tool for identifying computer drives used to save files on computer storage media. Distributed an improved first responder-emergency software tool. Completed and fielded forensic references for improvised explosive device components and, commercial explosives. Fielded a quick screening booth for detection of deception. Developed a standardized method for assessing the quality of latent fingerprint developers.

FY 2006 Plans: Field a forensic tool to extract and store random access memory from computers. Field a tool for three dimensional crime scene modeling and imaging. Deliver a system for digital authentication of digital video recordings. Publish criteria for forensic document methodology reliability and error rates. Field a computer aided facial recognition software system. Distribute pocket fingerprint recording kits and a pipe bomb investigative reference. Distribute a two-way multifunctional encrypted radio. Evaluate several credibility assessment methods and a real time detection of threat system. Deliver a forensic mobile command post for federal law enforcement deployment. Publish reports on statistical analysis of friction ridge matching criteria. Field a standoff credibility assessment instrument using laser Doppler vibrometry.

FY 2007 Plans: Distribute a digital automotive imaging system on DVD format. Field a statistical verification of camouflage pattern matching. Distribute a system for automatic analysis of text for author attribution. Field new techniques for development of latent fingerprints on post-blast evidence. Improve the performance and scientific defensibility of dog teams by improving the absorption materials used for collecting human scent. Develop a technique for post-blast identification of urea nitrate. Improve the protocol for adsorption of TATP from the gas phase to assist in evidence collection from post-blast exhibits.

PHYSICAL SECURITY

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	6.813	10.603	8.000

FY 2005 Accomplishments: Field tested and transitioned a portable, automated tester for walk-through metal detectors. Initiated a remotely operated, concealed weapons detection capability using magnetic anomaly detection. Developed and evaluated an enhanced mobile back-scatter x-ray screening system for detecting explosives in vehicles and intermodal cargo containers. Conducted a pilot test of a credentialing system integrating a fingerprint biometric device with a smart card reader to enhance entry point security without hindering throughput. Developed a draft merchant vessel inspection guide to consolidate existing tactics, techniques, and procedures for visit, board, search and seizure teams and security personnel. Deployed and evaluated a prototype smart video intrusion detection system providing enhanced situational awareness for perimeter and area security. Demonstrated and transitioned a

perimeter intrusion detection and tracking system using airport ground surveillance radar. Performed vehicle crash tests to support the development of a field guide for deployment of non-standard vehicle barriers in tactical and non-tactical applications. Designed and developed an integrated security system architecture using existing or new radars, optical devices, and security sensors, incorporating a rules-based alerting system with secure communications.

FY 2006 Plans: Conduct field tests and an operational evaluation of a remotely operated concealed weapons detection system using magnetic anomaly detection. Conduct field tests of automated license plate reading systems. Develop requirements for the operational demonstration of an integrated suite of explosive detection tools to meet the high-throughput requirements of vehicle and passenger ferries. Conduct operational assessment of an automatic under-vehicle inspection system. Publish a merchant vessel inspection guide to consolidate existing tactics, techniques, and procedures for Visit, Board, Search and Seizure teams and security personnel. Conduct inter-agency anti-terrorism technology workshop. Conduct assessment of remotely operated integrated vehicle and pedestrian access control system. Develop integrated forward-scatter and back-scatter x-ray screening system to detect concealed explosives and metallic items in vehicles. Develop and publish an updated vehicle inspection checklist to identify hidden explosives, contraband, and weapons in vehicles. Publish a user manual for emplacing non-standard vehicle barriers in tactical and non-tactical applications. Validate design parameters and component/subsystem test results necessary to field a prototype integrated security system architecture using existing and new radars, optical devices, and security sensors, and incorporating a rules-based alerting system with secure communications. Develop a test protocol for evaluating shallow tunnel detection equipment capabilities. Field test an improved long-range, optical intrusion detection, tracking, and assessment system. Design a command and control station to integrate 3-5 stand-alone optical intrusion detection, tracking, and assessment systems to reduce manpower requirements and false alarms while increasing situational awareness.

FY 2007 Plans: Evaluate next generation biometric identification technologies for inclusion in integrated access control systems. Conduct technology assessment of next generation weapons, explosives, and other contraband screening systems for facilities, public venues, and intermodal cargo terminals. Field test an automatic remote identification system for vehicle drivers. Field test a paint that will reveal evidence of tampering when subjected UV light. Conduct international maritime anti-terrorism security workshop. Conduct field test of an integrated suite of explosive detection tools to meet the high-throughput requirements of vehicle and passenger ferries. Conduct crash tests of non-standard installation techniques of vehicle security barriers and update existing vehicle barrier guide. Develop technology concept to detect physical intrusion in rail right-of-ways. Demonstrate a prototype integrated security system architecture using existing and new radars, optical devices, and sensors, and incorporating a rules-based alerting system with secure communications. Evaluate the command and control station integrating 3-5 stand-alone optical intrusion detection, tracking, and assessment systems to reduce manpower requirements and false alarms while increasing situational awareness.

SPECIAL PROJECTS

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	0.423	3.847	0

FY 2005 Accomplishments: Developed a Weapons Intelligence System capability for the U.S. military and provided management and technical support for counter IED practice to various US military and other Government organizations.

FY 2006 Plans: Facilitate interagency and international combating terrorism capability transfer across the public and private sectors. Conduct a detailed analysis of the current counterterrorism enterprise and recommend business based approaches to enhance strategic and operational capabilities. Develop an online, secure methodology to conduct low-level source and reporting operations in a hostile environment. Create a multi-language software suite that is able to run on various operating systems and report through secure message transfer (SMT) protocol.

FY 2007 Plans: Subcomponent efforts are being transitioned to a new Project within the SO/LIC Advanced Development Program (PE 0603121D8Z), Irregular Warfare Support, which will leverage ongoing research efforts of US Special Operations Command (USSOCOM), the Military Services, Defense agencies, and other federal agencies to analyze, modify, design, and demonstrate enduring technical and operational capabilities for counterterrorism and counterinsurgency.

SURVEILLANCE, COLLECTION, AND OPERATIONS SUPPORT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	8.666	20.259	8.536

FY 2005 Accomplishments: Increased channel capacity and added real-time monitoring to multi-media broadcast collection system. Fielded for operational use, two multi-media broadcast systems to two separate locations at CENTCOM, one at Headquarters and one in Iraq. Validated order of magnitude improvement in our facial recognition research effort at the government sponsored Facial Recognition Grand Challenge. Fielded an improved Assault/Attack FLIR video tracker that will be installed in all Army Special Operations Aviation helicopters.

FY 2006 Plans: Expand language capabilities for automated machine language tools for translation and prioritization of foreign language media that are of high interest to senior decision makers. Provide advances in joint tagging, tracking, and locating technology to improve maritime tagging and tracking. Increase access to open source foreign media with broader language domains. Address most challenging aspects of facial recognition technology shortfalls by continuing to improve algorithms and by executing pilot projects to address operational needs. Integrate facial recognition technology into surveillance systems by including multi-spectral imaging and laser vibrometry. Build automated tools for the detection of shallow tunnels. Enhance modular airborne reconnaissance platforms.

FY 2007 Plans: Integrate multiple tagging, tracking, and location technologies as a cue for other sensors or action. Expand existing geolocation and targeting capabilities. Advance capabilities for long-range audio surveillance. Evaluate biometric and other novel technology areas to improve tagging, tracking, and locating.

TACTICAL OPERATIONS SUPPORT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	13.277	19.627	6.400

FY 2005 Accomplishments: Held two large-scale asymmetric warfare exercises under Asymmetric Warfare Center which focused on integrating DOD, Federal, State and Local First Responders for complex terrorist attacks. Successfully conducted two major urban and rural operational assessments of the Muzzle Flash Detection System. Delivered highly detailed Tactical Surveys that will be used by first responders, security personnel and training teams in responding to crisis events for several critical installations. Assessed an acoustical small arms shot detection systems for patrol boats. Fabricated prototype of a Dual Band Night Sight that will provide merged infrared and image intensified images for weapons sights and prepared for transition to user assessment. Built initial prototype of an Omni Directional Imaging Device that provides remote panoramic images of a tactical assault location and can be tossed into an area of concern in preparation for operational testing and evaluation.

FY 2006 Plans: Deliver Muzzle Flash Detection System to enhance counter sniper urban and rural operations for operational testing and evaluation. Deliver first Eyeball preproduction systems, greatly enhancing assaulter tactical awareness. Execute two integrated asymmetric warfare exercises under direction from the Asymmetric Warfare Center, highlighting new technologies for operational consideration. Provide RCIED ECM training and initial equipment to ten select state and local bomb squads. Deliver tactical surveys for select high risk facilities. Conduct minimum of one Tactical Technology Seminar for state and local SWAT teams, introducing new technologies and identifying new SWAT requirements. Deliver Dual Universal Night Sight prototypes for low rate initial production (LRIP). Provide prototype close quarter battle carbine (CQB) for user testing and evaluation. Fabricate first generation Augmented Reality Training System for tactical assault teams. Deliver a next generation diversionary device for tactical teams that enhances safety. Deliver an enhanced tactical rope ascending device that is capable of mechanically lifting individuals to heights of 100 ft at variable speeds, while maintaining tactical awareness. Deliver a system that enables tactical forces to remotely receive images and text sent electronically yet is still affordable to local law enforcement. Deliver an improved small laser target designator that precisely designates targets for engagement by the full range of laser guided munitions. Provide a weapon mounted video display that provides both thermal and CCD images to a display that is bore-sighted to the weapon. Deliver an advanced High Performance In Line Sniper Scope for operational testing and evaluation that will provide enhanced infrared images for sniper weapons.

FY 2007 Plans: Deliver Weapon Mounted Video Display for operational testing and evaluation by Special Forces. Deliver Augmented Reality Training System for operational testing and evaluation by DoD and DOE Security Forces. Deliver a shoulder-fired weapon scope providing both long-range and CQB sighting that is selectable by the shooter without magnification. Deliver a prototype lightweight, weapon-mounted integrated rangefinder to improve sniper rifle applications. Develop an integrated level IIIA ballistic helmet that supports modular tactical attachments, but remains balanced and comfortable. Deliver a Dynamic Breaching Guide for SWAT operations that standardizes operational procedures and incorporates characterization of all SWAT common use dynamic breaching capabilities. Finalize training and equipping of select state and local pilot bomb squads for RCIED ECM. Deliver

high power in-line sniper scope for low rate initial production. Fabricate a launched 40mm listening system to enhance situational awareness for SWAT counter terrorist operations.

TRAINING TECHNOLOGY DEVELOPMENT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	10.228	8.841	2.950

FY 2005 Accomplishments: Validated end-user requirements for distributed, web-based simulation technologies in support of regional and large scale terrorism training exercises. Transitioned technology-enhanced training on personnel screening, railcar inspection, and suicide bombings to the Government Printing Office. Designed and developed an accredited training curriculum for food protection and security. Conducted training requirements analysis in support of Chemical ,Biological, Radiological, and Nuclear Explosives (CBRNE) response. Created an enhanced canine training program for detecting firearms, ammunitions, explosives, and other objects associated with bomb-making equipment.

FY 2006 Plans: Conduct a series of training needs analysis for threats to combating terrorism. Create Advanced Distributed Learning (ADL) software tools to design integrated on-line training and virtual reality training. Develop the next generation ADL registry for combating terrorism related content and assets. Produce a chemical and radiological stimulant kit that is intrinsically safe. Design and develop an online training program for managing an agricultural incident. Integrate interactive simulation technologies with training and mission performance support capabilities. Develop a program that produces the capability for a combined canine and human tracking team. Create a tool for streamlining the creation of ADL conformant content and assets for the DoD. Develop several training aids and devices to complement recently fielded TSWG advanced technologies.

FY 2007 Plans: Improve the knowledge, skills, and abilities of bomb squads through improved curriculum and practical exercises. Produce a distributed language learning system that provides accurate translations for common operational phrases. Enhance the creation of adaptable, autonomous, agent-based simulations that model human behavior and social interactions. Design full-scale, tactical simulation scenarios for engaging a suicide homicide bomber.

VIP PROTECTION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	6.019	5.453	4.300

FY 2005 Accomplishments: Delivered fully armored passenger vehicle performance guidelines. Completed ballistic and blast protocols and guidelines for fully armored passenger vehicles. Conducted testing and characterization of Spinel transparent armor using both single shot and multi-hit testing. Evaluated aging and environmental effects on body armor performance. Successfully demonstrated a scaled deployment of an Instantaneous Personnel Protection System (IPPS) shield for enhanced VIP protection. Validated vehicle tamper alerting system component performance. Investigated and demonstrated alternative design concepts of a

laser detection system for early warning of laser targeting activity directed at windows. Developed components of a rapidly deployable VIP security kit for use in temporary venues. Fielded the initial personal duress system prototype for VIPs to alert protection details of threatening situations. Evaluated deployable armor system performance against standard ballistic threats. Delivered an instrumented head form and test protocols for assessing ballistic blunt trauma to the head which will lead to more objective assessments of helmet performance.

FY 2006 Plans: Develop a sensor system for detecting threats and automatically activating the IPPS shield. Integrate vehicle tamper alerting system components and conduct final system testing. Deliver the window laser detection system for early warning of laser targeting activity. Conduct VIP security kit component validation testing. Expand previously developed projectile database to include frangible and new threat ammunition characteristics, and ammunition performance against selected body armor. Enhance the personal duress system user interface. Evaluate deployable armor system performance against armor piercing ballistic threats. Conduct advanced evaluation of body armor performance in multi-hit scenarios and evaluate metrics for dynamic effects of ballistic blunt trauma. Complete installation of full scale aluminum oxynitride (ALON) transparent windows and conduct multi-hit test scenarios against the seams of large ALON panels. Evaluate the performance of body armor treated with a shear thickening fluid (STF) and develop a concealable, flexible body armor prototype using the STF-treated fabric. Assess blunt trauma to the head and torso using the advanced ballistic helmet and body armor test fixtures. Develop a prototype concrete imaging system to detect possible bombs within flat concrete surfaces.

FY 2007 Plans: Integrate the IPPS sensor and shield components, and conduct final testing. Field the vehicle tamper alerting system. Integrate the VIP security kit components, and conduct final testing. Deploy the updated projectile database with frangible and new threat ammunition information. Deliver the final assessment report of body armor performance in multi-hit scenarios. Deliver the STF-treated body armor prototype. Deliver the final test reports on blunt trauma to the head and torso for selected ballistic helmets and body armor. Enhance the prototype concrete imaging system to detect possible bombs within cylindrical columns. Evaluate methods for rapid detection of a broad range of laser energy that may be directed at VIPs. Develop an IED blast/fragmentation test protocol to determine the effects on VIPs and protective detail armored vehicles.

PROGRAM MANAGEMENT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	8.999	10.633	5.262

FY 2005 Accomplishments: Provided program management oversight and technical support for CTTS R&D projects. Augmented the CTTS program office with contract, financial, and security management personnel. Managed an additional $87 million in funds from other agencies. Managed cooperative R&D programs with the United Kingdom, Canada, and Israel. Negotiated cooperative R&D agreements with Australia and Singapore. Established communication and information sharing with other government agencies for CTTS related initiatives to reinforce interagency and international participation in the identification and prioritization of CTTS mission area requirements. Solicited proposals via Broad Agency Announcement (BAA) for new projects and tasks based on

prioritized requirements. Directed the program, planning, and execution of projects and associated contracts, including the daily management and reporting for more than 325 separate contracts and tasks. Developed and implemented improvements for the BAA Information Delivery System (BIDS) solicitation process including enhanced outreach via training to potential submitters on BIDS use. Developed and implemented process improvement initiatives for general document and action tracking and enhanced Business Information System processes.

FY 2006 Plans: Provide program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of cooperative R&D programs with international partners. Establish goals, objectives, and immediate revisions to plans that will reinforce interagency participation for the identification and prioritization of CTTS mission area requirements. Direct the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Review and revise existing process and execution plans for CTTS mission area management and internal and external reporting responsibilities.

FY 2007 Plans: Provide program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of international cooperative R&D programs. Establish goals, objectives, and immediate revisions to plans that will reinforce interagency participation for the identification and prioritization of CTTS mission area requirements. Direct the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Review and revise existing process and execution plans for CTTS mission area management and reporting responsibilities.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603225D8Z - Joint DoD/DOE Munitions**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	22.005	24.702	16.862	19.362	24.439	24.374	24.668
P225 Joint DoD/DOE Munitions	22.005	24.702	16.862	19.362	24.439	24.374	24.668

A. Mission Description and Budget Item Justification: (U) The Joint DoD/DOE Munitions Technology Program (JMP) has the mission to explore and develop focused technologies needed to meet warfighting needs and bring about major improvements in non-nuclear munitions. A Memorandum of Understanding (MOU) between DoD and DOE provides the basis for the long-term commitment to the enabling support for this effort. The fusion of DOE technology with Joint Services needs has provided major advances in warfighting capabilities and plays a crucial role in the exploration, development, and transition of new technologies needed by the Services. The JMP provides a unique opportunity for the collaboration of DoD and DOE scientists so they can explore technologies of interest to both Departments, within a structured framework of technical reviews and scheduled milestones. The interdepartmental collaboration allows exchange of information and achievement of goals of interest to the Department utilizing the substantial investment in the scientific resources of the DOE. The budgeted JMP funds represented here are supplemented by additional matching DOE funds.

(U) Describing the many technical advances and new munitions capabilities that have been developed by the JMP and benefited DoD and DOE is beyond the scope of this document. A summary of recent accomplishments is provided below. In addition, estimating Return on Investment (ROI) is challenging due to the wide diversity of technologies being developed, multi-year nature of all of the projects, and the tremendous range of products and capabilities that are involved. Several endorsements from Department labs indicate a strong history of JMP accomplishments and significant ROI. The Army's Picatinny Arsenal has stated that modeling and simulation (M&S) tools developed by the JMP are now routinely used to design all new warheads, and the use of these tools has reduced the number of validation tests required for each new warhead from about 5 to 1, resulting in a substantial cost savings. They also estimated a 3-6 month reduction in design time for two recent warheads (Medium Range Munition and Joint Common Missile), and cost savings of more than $5.000 million. Compared to an FY 2005 investment in the M&S tools of $2.100 million, an ROI of $2.400 million can be estimated. This estimate does not include the 50-50 cost sharing of JMP activities by the DOE. Furthermore, many technologies developed by the JMP are transitioned to other agencies such as NASA, which used the Laser Dynamic Range Imager to inspect critical areas of the Space Shuttle "Discovery" on its recent flight in space. This technology was developed by the JMP for munitions guidance applications but was deployed by NASA to assist with the in-flight inspection of the shuttle. The pictures from the Imager resulted in an unprecedented space walk and repair operation which contributed to the safe return of the shuttle. However, it is very difficult to estimate a ROI to the JMP for a situation like this. Efforts are continuing to further quantify ROI for all JMP activities.

(U) Other JMP successes include the transition of four special-purpose shaped charge munitions which are now deployed by the Special Operations Command (SOCOM) for Weapons of Mass Destruction (WMD)-defeat in Global War on Terror (GWOT) applications. A new penetrator weapon, the Tactical Missile System-Penetrator (TACMS-P), benefited from extensive modeling and materials efforts on penetrators supported by the JMP, and has recently flown three successful flight tests. The Army's Multi-Role Armament & Ammunition System (MRAAS) compact multi-purpose shape-charge warhead was developed by the JMP and exceeds Javelin performance while being 24% smaller in diameter and 41% shorter in length. In addition, modeling and metallurgical technology for rhenium materials needed for the Standard Missile-3 (SM-3) Solid Divert and Attitude Control System (SDACS) was transitioned to NSWC-Dahlgren to resolve a critical system problem. Cheetah, an advanced thermochemical code developed and improved with JMP funds, reached a milestone with the release of version four. This code is used by over 300 DoD engineering staff to design modern munitions. Finally, a major accomplishment was achieved with JMP support in Synthetic Aperture Radar (SAR) technology for guidance and targeting applications. A new prototype SAR was designed and built which is both five times lighter and less expensive than the baseline, with no degradation in image quality or resolution. This "mini-SAR" system was successfully fight-tested in the summer of 2005 and is now being transitioned to industry.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603225D8Z - Joint DoD/DOE Munitions**

(U) Over the last four years, there has been increased programmatic emphasis on developing technologies of particular value to counter-terrorism efforts and asymmetric warfare. Initial successes have already emerged from this focus with some products already in the field. The increase in the JMP budget in FY 2004 and beyond was intended specifically to focus additional efforts on exploring and developing technologies to transform the operational capabilities of the warfighter. Two specific efforts were targeted for this increase: the first is a new and rapidly emerging technology employing Dense Inert Metal-loaded Explosives (DIME) which will enable precision lethality munitions usable in urban settings with minimal collateral damage; the second is the increased capabilities and reduced life cycle costs resulting from an understanding of sub-detonic response of energetic materials. This understanding is vital to addressing compliance with insensitive munitions requirements, as well as exploiting deflagration and other sub-detonic responses to achieve selectable weapon output. Based on modeling and technology developed by the Program, preliminary tests of DIME integrated in a composite case successfully destroyed Rocket Propelled Grenades (RPGs) in flight with minimum collateral damage beyond the immediate target area. Further, the Air Force is considering a development program to incorporate DIME technology into the Small Diameter Bomb.

(U) Attaining JMP goals requires simultaneous and coordinated development efforts in the areas of initiation, energetic materials, modeling, warhead integration, and lifecycle technologies. The integrated efforts within the JMP are speeding the transition of new technologies through the development process and the JMP has strong support from all Services and SOCOM. The JMP is a focal point for collaborative work by over 200 DoD and DOE scientists and engineers, and has been called a model for how both Departments should cooperate, both within their respective organizations (intradepartmental) and with each other (interdepartmental). The JMP also works aggressively, through the Defense Ordnance Technology Consortium, to inform industry of the technologies and tools being developed so that they can be transitioned equitably and efficiently for use by our warfighters as quickly as possible.

(U) The JMP is divided into five munitions technology areas which are important to the Department. They are: Initiation, Fuzing, and Sensors; Energetic Materials; Computational Mechanics and Material Modeling; Warhead & Integration Technology; and Munitions Lifecycle Technologies. These focus areas are described more fully in the accompanying R-2a project exhibit.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	25.202	25.102	25.460
Current BES/President's Budget (FY 2007)	22.005	24.702	16.862
Total Adjustments	-3.197	-0.400	-8.598
Congressional Program Reductions		-0.400	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-2.450		
SBIR/STTR Transfer	-0.713		
Other	-0.034		-8.598

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603225D8Z - Joint DoD/DOE Munitions**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: (U) A Five Year Plan is prepared annually for the JMP which contains detailed technical and programmatic descriptions of the approximately 50 individual projects under this funding line. Each project description includes a task schedule with associated milestones, whereby progress against the end goals is measured. Technical progress as evidenced by these milestones is reviewed by DoD participants at semi-annual Technology Coordinating Group (TCG) meetings, and by senior executives from the DoD and DOE at annual Technical Advisory Committee (TAC) meetings.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603225D8Z - Joint DoD/DOE Munitions**	**P225**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P225	Joint DoD/DOE Munitions	22.005	24.702	16.862	19.362	24.439	24.374	24.668

A. Mission Description and Project Justification: (U) The Joint DoD/DOE Munitions Technology Program (JMP) is a collaborative, jointly-funded effort between DoD and DOE to develop new and innovative warhead, explosive, initiation, and lifecycle technologies and enabling tools in order to bring about major improvements in non-nuclear munitions. The JMP supports the development and exploration of new munitions concepts and enabling technologies which precede system engineering. Through a Memorandum of Understanding (MOU) funding arrangement with DOE, DoD resources are evenly matched. More importantly, this relatively small DoD contribution effectively taps the annual billion-dollar DOE Research, Development, Test, and Evaluation (RDT&E) investment by accessing specialized skills, scientific equipment, facilities, and computational tools not available within DoD.

(U) These efforts exploit the extensive and highly developed technology base resident in the DOE national laboratories which are relevant to achieving the goal of developing capable, cost-effective, conventional munitions, and leverages DoD investments with matching DOE investments. The JMP currently supports 52 projects which are organized in 5 technical focus areas: Initiation, Fuzing, and Sensors; Energetic Materials; Computational Mechanics and Material Modeling; Warhead and Integration Technology; and Munitions Lifecycle Technologies. Specific Service laboratories lead each of these focus areas. The JMP is administered and monitored by OSD, and reviewed annually by a Technical Advisory Committee (TAC) composed of senior executives from the Army, Navy, Air Force, Special Operations Command, OSD, and DOE. Projects are peer-reviewed semi-annually by DoD Service Laboratory/Technical Center personnel organized in Technology Coordinating Groups (TCGs) in order to monitor technical performance and ensure that the technologies under development address high priority DoD needs.

The JMP is further integrated with Service efforts through the Project Reliance Weapons Panel and by participation in the Defense Technology Area Plan for conventional weapons. The JMP is reviewed under the Technology Area Review and Assessment (TARA) process. After reviewing the JMP, a recent Weapons TARA panel assessed the JMP as follows: broad range of products transitioned to DoD as a result of JMP efforts; effectively leverages DOE expertise and funding; critical computational tools provided to DoD; well integrated into Service efforts; TCGs provide an effective forum for technical collaborations.

Please see the R-2 document for additional JMP background information and justification. More details of each of the technical focus areas are described below.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) Initiation, Fuzing, and Sensors:	4.722	4.546	3.156

(U) Initiators, fuzes, and sensors are critical components in every Department munition system. A fuze must ensure personnel safety by preventing unintended weapon detonation, allow arming of a firing mechanism, detect the target through the use of sensors, and initiate detonation when required. With the need for robust, hard-target-defeat capability, advanced fuze systems must be able to survive and function in increasingly higher-velocity and higher-g penetration environments. One method of surviving high-g environments is through the miniaturization, integration, and/or robust packaging of conventional fuze components such as detonators, switches, transformers, capacitors, sensors, and advanced batteries. In support of this technology area, the JMP continues to demonstrate advances in

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miniaturizing high-voltage Electronic Safe and Arm Devices (ESAD), through research and development of low-energy detonator/booster combinations, and with miniature Capacitive Discharge Units (CDUs). This focus builds on recent advances in micro-detonic/energetic materials research and MicroElectroMechanical Systems (MEMS) device development. Efforts in this portion of the JMP generally advance fuze technology and ultimately provide the DoD and DOE with next generation fuzing components for all weapons, particularly hard-target-defeat munitions (penetrators), and small, intelligent low-cost applications (artillery). Over the next five years, this portion of the JMP will work toward demonstrating emerging technologies that support robust, intelligent fuzing that can survive and function in environments exceeding 30,000 G's. Advanced initiation technology is an enabler for the next generation of warheads that can be aimed, are target adaptable, and extremely robust.

(U) Recent Accomplishments:
(U) In the area of Electronic Safe and Arm Devices (ESAD), a batch assembly process for monolithic micro-CDUs was completed. A design for a MEMS-based g-switch with low cross-axis sensitivity was also completed. Both designs are in the process of being transitioned to industry. Component development and evaluation continued for compact firesets. Nanostructure multilayer (NML) technologies for high voltage capacitors and multilayer dielectric breakdown switches successfully produced 20-layer capacitors with up to 102 nF of capacitance in a footprint of 8 mm by 10 mm. These technologies can be integrated into micro-CDUs for smaller and more cost-effective components. Advanced initiation systems work continued with development of diagnostics for monitoring the current distribution in multipoint initiators. The latest miniaturization technology was transitioned to production facilities and to the Services in order to begin implementation. Rapid prototyping of systems for individual control of multiple initiation sites demonstrated 1-by-4 and 4-by-4 arrays of slappers on alumina and printed circuit board substrates. Further experiments were performed to investigate the theory and models of explosive behavior in very small geometries (micro-detonics). Micro-fireset development included the ink-jet deposition of energetics on MEMS-scale substrates. A miniature Synthetic Aperture Radar (mini-SAR) was designed with reduced size and cost (both by a factor of over 4) and a prototype was successfully tested. Initial experiments were performed to measure the run-to-detonation distance for HNS-IV for both low pressure and slapper-driven initiation. The pressure output of a CL-20 based explosive, RSI-007, was measured as a function of pellet size in femtosecond-laser-machined pellets as small as 0.5 mm diameter by 0.5 mm length. A new project was started with a focus on millimeter scale initiation and detonation. This work is attempting to understand the behavior and response of thin layers and small quantities of explosives, as are required for all MEMS-based fuzes and micro-firesets.

FY 2006 / FY 2007 Plans:
(U) The JMP intends to further explore the effects of firing slappers at the low inductances associated with miniature firing systems, and this slapper and firing systems technology will feed into an integrated fireset demonstration in FY 2007. A "hard-science" question associated with miniature munitions is the transfer of detonation from a miniature detonator into the main charge explosive. This could dramatically affect the performance of a small munition. We will continue to study microdetonics, which refers to detonation initiation, detonation acceleration (buildup), and detonation curvature effects in small explosive systems. We plan to conduct numerous small-scale tests to determine the performance of insensitive high explosives of interest. The other portion of the microdetonics effort is to develop the diagnostics for characterizing detonator/booster explosive behaviors and a design code that will make effective use of the microdetonics data for miniature munitions design. We have multiple tasks associated with a sophisticated experiment to explore the initiation source. In FY 2005, the NML technology development advanced through the preparation and start-up of a new cleanroom for the cluster tool. In addition, we produced capacitors using baseline processes with enhancements for evaluation in weapons applications. For the mini-SAR development project, existing circuits will be migrated/converted to single a CMOS ASIC. In addition, 10 and 20 W solid state power amplifiers using GaN monolithic integrated circuits will be designed and developed. Finally, a new project focused on developing innovative technologies for advanced thermal batteries has been initiated.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) Energetic Materials:	5.681	6.682	4.455

(U) Background:
(U) There is a growing need in the United States to develop energetic materials (EMs) that, when integrated into munitions, offer advantages of enhanced lethality against a variety of targets. Lighter and/or less bulky munitions significantly reduce the logistics burden of military actions and are also highly desirable. Similarly, a decrease in hazard classification brought about by the use of insensitive energetic materials and better designs will greatly decrease transportation and storage costs. Smarter munitions, capable of selectable, differential output, are another advantage to military agility. Hence, there is also a need for advanced EMs that can be used in small-scale devices such as distributed fuzing systems. In addition, as the operational environments have become more severe, EMs must survive setback forces in

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guns and severe impact forces in hard-target penetration applications. Work on energetic materials was aligned with the recommendations from the DoD 2000 Weapons TARA, and is coordinated with the recently established national initiative in Advanced Energetic Materials. This aspect of the JMP is aimed at developing the next-generation EMs that have increased energy density over those in the current inventory while maintaining insensitivity to extreme environments. An additional requirement is that the energy be released in an appropriate time domain to allow optimized coupling to the target.

(U) For enhanced lethality effects, the energy in EMs must be released either in the detonation reaction zone, or early enough in the expansion so that it couples to impulse loading or sustains high temperatures. Material ingredients that contribute to energy release later than that offer no enhancement in lethality. A fundamentally new approach to increasing lethality while simultaneously reducing collateral damage is being investigated. Holding much potential for modern warfighting scenarios, this new material formulation provides increased performance while meeting insensitive munitions standards. For microdevices suitable for distributed fuzing systems, the requirement on energy release is very exacting in order to sustain reaction propagation in environments with extensive shock and heating losses. Like advanced initiation, advanced energetic materials are an enabling technology for the next generation of weapon systems that will be safer, smaller, and more lethal.

(U) Recent Accomplishments:
(U) Efforts to synthesize, characterize and scale-up new EMs with increased or tailored performance and decreased sensitivity have been continued. Coordination with the national Advanced Energetic Materials initiative continued to re-invigorate the energetic materials skill base within the Department. The new explosive, LLM-105 (developed by the JMP), continues to look promising as an insensitive main charge and as a booster material. As part of the scale-up of fabrication processes, nearly 4 kg of this material were synthesized for testing at Department labs. A stream of other new energetic materials continues to be developed by JMP activities. Significant progress was made on scale-up and characterization of 3,4-DNP, a candidate melt-castable explosive with good safety characteristics, and samples were delivered to Picatinny Arsenal for testing. Significant effort was also made to synthesize LLM-146, a target insensitive explosive, and material was produced in an impure form. Several candidate gun propellant ingredients were also synthesized with an emphasis on high nitrogen and tetrazole-based materials. JMP scientists synthesized N-hydroxy derivatives of heterocycles which offer the possibility of forming nitrogenous salts. Samples of these materials were provided to NSWC-Indian Head for evaluation. Also, an updated version (#4) of Cheetah, a thermochemical detonation simulation code widely used in the U.S, was released to the DoD for making enhanced performance predictions for an extended set of energetic materials.

(U) FY 2006 / FY 2007 Plans:
(U) Development will be continued of nanoscale, microscale, and mesoscale energetic materials with enhanced performance which are less sensitive and more cost effective enablers for defense transformation. Specific activities will include the investigation of reaction mechanisms and kinetics parameters for the thermal decomposition of selected energetic materials such as HMX and RDX. Computer codes for modeling cookoff behavior with coupled thermal/mechanical response will also be developed. Improved diagnostics for cookoff testing and thermobaric explosive performance of new materials will be evaluated. Technology will be investigated for producing nanoenergetic explosives based on the formation of fine particles from supercritical solutions. New instrumental techniques for collecting spatially resolved data on aging/aged energetic materials are being studied. The development and characterization of an LLM-105 booster composition will continue. Further work is needed on the particle morphology of LLM-105, and continued cooperation between the Departments will help ensure that this compound is given every chance to succeed. Its performance and insensitivity are very attractive, particularly in this era of closer attention to meeting IM criteria. Models for the prediction of response of energetic materials to cookoff will be further developed. Specifically, numerical methodologies to deal with the flow of energetic materials within confined volumes are being addressed, and fracture and fragmentation models are being integrated with the new multi-physics code ALE-3D to allow estimation of fragment sizes and velocities. Burn rates are being measured for pristine and damaged materials based on RDX, HMX, and TNT (alone or in combination with each other and other ingredients), and the basic thermal and mechanical properties of the explosives are being measured as needed if they are not available in the literature.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) Computational Mechanics and Material Modeling:	6.070	6.967	5.024

(U) Background:
(U) The ability to accurately predict the behavior of weapons in operating environments of extreme pressure, temperature, and velocity is essential to the development of lethal, accurate, and cost effective systems. To meet the needs of the DoD and DOE communities, there is a requirement for validated models using high-performance computing hardware and software that are capable of carrying out a broad

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class of continuum mechanics simulations where shock waves, nonlinear dynamics, and multi-materials gas dynamics are important. In particular, this aspect of the JMP focuses on numerical and algorithmic improvements to enhance our problem-solving capabilities for munitions development, advanced energetics, and target lethality predictions with significantly improved material models that accurately represent the materials of interest in dynamic states.

(U) Three general classes of modeling codes offer solutions to the varied requirements posed by the defense community for the shock analysis regime. Eulerian shock physics tools are effective for a large number of conventional weapons and advanced energetics-related simulations. In situations where there is significant material deformation and turbulent mixing, Eulerian formulations are the most efficient. A second class of codes addresses the large, nonlinear dynamics that can be important for weapons design and development. Such Lagrangian calculations provide design information that complements information provided by the Eulerian shock physics codes. For example, many penetration problems involve detailed structural mechanics that are not appropriate for Eulerian codes but can be addressed by Lagrangian methods. A third class of tools combines these capabilities by using Arbitrary Lagrangian-Eulerian (ALE) algorithms to solve the conservation equations appropriate for shock analysis. This class of codes performs a range of simulations such as penetration mechanics, thermal cook-off, and fragment impact, where multi-physics phenomena descriptions are required across a wide range of time scales that cannot be addressed adequately with either Eulerian or Lagrangian codes. These ALE codes and associated validated material models represent the future in modeling complex dynamics encountered in a broad spectrum of applications across the defense community. To date, the Department's utilization of these capabilities has primarily been in the Science and Technology (S&T) community. It is desirable to extend the use of modeling and simulation tools into the engineering design community, and this JMP will pursue this objective and continue to provide and enhance these advanced modeling tools.

(U) Recent Accomplishments:
(U) The projects in this focus area relate to the modeling of the mechanical properties of explosives and the generation of test data to validate the computational models. The development of Eulerian, Lagrangian, and ALE codes relevant to the design and evaluation of munitions continued. Emphasis continues on the development and demonstration of ALE3D, a multi-physics code. Significant progress was made on modeling system level responses, blast loading of structures, and multiphase flow. ALE3D was shown to model slow cookoff experiments with high fidelity and is now being used to model fast (laser) cookoff experiments. Progress was made in the development of a formalism for treating anisotropic plasticity. The implementation of this formalism in ALE3D has been extended to include dynamic evolution of the yield surface and rate dependent hardening. The importance of anisotropy to various systems is being evaluated by inserting values of anisotropies in simulations and assessing the significance of the event. CTH, a workhorse shock physics code developed by the JMP, is used everywhere from desktop PC's to massively parallel High Performance Computing (HPC) centers across the community. It is the number 1 "go-to" hydrocode for the weapons community and has been instrumental in the development of a number of DoD weapon systems. CTH continues to be improved and made available to both Departments. The JMP also provides a conduit into the DoD for the improved materials models emerging from the DOE Advanced Strategic Computing Program (ASC), providing high resolution, accurate predictions of materials behavior and failure relevant to the analyses of weapon systems. The transition and support for these tools and models, along with user training, were provided to the DoD community.

(U) FY 2006 / FY 2007 Plans:
(U) The JMP will continue to develop, extend, and apply the hydrocodes and associated materials models to warhead and explosives design and evaluation. Ongoing code and material model development will continue to focus on greater accuracy, improved physics, and extension to mixed phase flow problems. The JMP will continue to support the transition of these tools as well as the training of, and consulting for, the DoD user community. User support for CTH from the JMP will come to an end in FY 2007, and but maintaining this support is being considered by the Services and by specific projects. New materials models will be migrated into CTH. A new thrust in non-shock initiation of energetic materials has been established to support the broader evaluation of hazards. This task is well aligned with, and supports a new project on, munitions impact response analysis. SIERRA, a new modeling concept for integrating individual physics codes together into a single application is under development and promises to reduce the time needed to apply models to new physical situations. A new emphasis has been placed on improving the multi-phase flow modeling capability in CTH which supports the DIME initiative within the JMP. A new task started in FY05 uses line Video Image Stabilization and Registration (VISAR) to study the character of the "detonation" wave in DIME materials. Efforts include the study of natural fragmentation processes in ductile metals. Numerical methods, e.g. meshless methods, are being developed to overcome deficiencies in hydrocodes to maintain numerical stability and predict damage softening, localization, and failure. These numerical methods will then be incorporated into hydrocodes across DOE and DoD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) Warhead & Integration Technology:	3.131	3.575	2.455

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(U) Background:
(U) In the area of warhead and integration technology, there is a worldwide trend to harden more military facilities. Increasingly, such facilities are being buried in layered earth and concrete, "cut and cover" constructions, tunneled into mountainsides, or mined into rock far beneath the earth's surface. Buried structures accounted for a significant number of targets attacked by our forces during the Gulf, Afghanistan, and Iraq wars, and much of our military planning is being devoted to defeating them. A major thrust of the JMP continues to be hard-target-defeat. As hard-target weapons evolve, several technical issues need to be addressed. Specifically, penetrators striking targets with obliquity or at high angles of attack experience violent dynamic responses that can cause their cases to fail or interfere with the functionality of fuzes. Similarly, oblique, low velocity target impacts can result in ricochet, undesirable shallow trajectories, or bouncing out of the target.

(U) In general, new delivery vehicles tend to be smaller and faster, requiring smaller penetrators that carry less payload, and must survive more stressing impacts. Developing improved penetrating weapons depends on a solid understanding of the physics of penetration as well as affordable materials and processes to execute new designs that require more strength and durability from the penetrator. Although we can predict penetration depth with acceptable confidence, there are some targets for which we have insufficient data and experience; consequently, predicting the path a penetrator will take and whether it will survive is much less certain. The JMP provides a fundamental penetration technology base that addresses many of these issues and enables our future strike weapons. Additionally, warhead concepts which greatly extend the current range of capabilities in speed and tailored target effects are being explored. With increasing emphasis and interest in defeating targets of military interest in civilian areas and of defeating and neutralizing Weapons of Mass Destruction (WMD) facilities, the application of energy to targets must be thoroughly controlled and understood. This requirement places increased demands on warhead output which is being pursued under the JMP.

(U) Recent Accomplishments:
(U) Integration of all the components necessary for a low collateral damage munitions concept was accomplished. JMP efforts were focused on the use of the Global Local Optimization (GLO) code to evaluate the potential for multi-phase blast (MPB) explosives, including DIME materials, for non-traditional warhead applications where impulse delivery to the target is the primary mechanism of defeat, as opposed to penetration or perforation. The main area of development has been on ways to deflect incoming Rocket Propelled Grenades (RPGs) to protect ground vehicles as part of an active protection system. Significant fundamental progress was made in this area with data showing that non-fragmenting composite cases delivered twice the blast performance compared to traditional steel cases. Progress was also made in Low Collateral Damage Munitions (LCDM) for use on medium and soft targets in urban areas. Munitions designs were completed using composite cases for minimizing lethal fragments, DIME for maximizing blast impulse, and a multipoint initiation system to tailor the amount of explosive that detonates. MPB explosives are showing significant promise for these applications. Low collateral damage versions of a one-half scale Mk 82 bomb in a composite case were tested, and demonstrated significant advantages compared to the baseline steel case (also scaled). New thermographic phosphor and infrared (IR) imaging techniques for capturing the thermal signature of fracture/fragmentation processes were investigated. The thermographic phosphor technique provides more accurate temperatures at high spatial resolution along a single line and can work at comparatively low temperatures. The IR technique provides an image and therefore provides broad coverage. Tests measuring the ring-up temperature in a simple flat plate loaded by a sweeping detonation wave were executed. Some required improvements are being developed. Computational studies were initiated for DIME, high nitrogen explosives (DAATO3.5) and Metastable Interstitial Composites (MIC). These studies are aimed at identifying and understanding the effects and phenomena produced by these unique energetic materials for applications in warhead geometries. Significant efforts also continued on penetrator systems design and testing.

(U) FY 2006 / FY 2007 Plans:
(U) The JMP will continue low collateral damage verification and validation testing in comparison with current best baseline munitions. This work will include efforts to develop and integrate technology for a new generation of precision lethality munitions based on MPB technology. The effort involves the advancement of the science of multi-phase blast explosives (MPBX) integrated with composite case penetrators to yield discriminate lethality munitions. The goal is to develop the technology for future munitions with two key features: increased near field lethality (at the point of target engagement) and virtually zero far field collateral damage (no fragmentation). Both of these features are critical for enabling discriminant lethality for military operations in urban terrain (MOUT) and close air support (CAS). The focus of the planned work is on understanding the science of MPBX technology (material characterization, modeling and simulation, energetics, and target interaction effects) and integrating it with composite case technology for application to the development of MPB munitions. This includes the ability to model and design warheads and munitions fracture, failure, and post-fracture behavior including fragmentation. High rate continuum modeling technology will be investigated, developed, and demonstrated to provide the capability to predict and therefore control fracture and post-fracture behavior. Studies will continue toward providing a fundamental understanding of the penetration process by conducting carefully designed experiments and analyses. Well-controlled, subscale penetration and

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perforation experiments are planned with clearly defined experimental variables. Penetrators will be instrumented with onboard accelerometers and data recorders to acquire high quality deceleration data for penetrator response. Data from these experiments not only provide a crucial database on the physical phenomena of the penetration process, but also provide researchers with valuable penetration data to benchmark codes and models.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) Munitions Lifecycle Technologies:	2.401	2.932	1.772

(U) DoD and DOE efforts on munitions lifecycle technologies, including stockpile aging, surveillance, demilitarization, and disposal, are coordinated under the auspices of the JMP. The Department has a large and growing inventory of conventional munitions in its demilitarization stockpile. Currently, the stockpile includes more than 400,000 tons and is expanding by about 70,000-100,000 tons per year. As the long-term focus for demilitarization and disposal within the DoD turns from open-burn (OB) and open-detonation (OD) to resource recycle and recovery, alternative technologies are required to turn waste materials into useful products. The technologies developed in this portion of the JMP enhance DoD capabilities to field safe, cost-effective processes for disposal, resource recovery, and reutilization of munitions and munitions components.

(U) For an aged weapon stockpile that has not reached end of useful life, reliability and surety may change with time because of age-related degradation of constituent materials. Existing stockpile assessment methods typically focus on addressing materials aging and reliability problems after they occur, rather than on anticipating and avoiding future problems or failure mechanisms. The predictive materials aging and reliability portion of the JMP is focused on improving our ability to understand, measure, predict, and mitigate safety and reliability problems caused by materials aging and possible degradation in weapons systems. Together with complementary demilitarization technologies, this focus provides a base of scientific knowledge and understanding that enhances the Department's ability to efficiently support the late phases of weapon lifecycle. Efficient management of existing stockpile assets is an economically necessary precursor to weapon systems modernization.

(U) Recent Accomplishments:
(U) In support of rocket motor demilitarization (demil), a stand-off radar sensor for a water-jet cutting tool was designed, and antennas needed for a prototype sensor were built. A watertight enclosure was also built for the electronics and controls of a complete system. This technology will permit more accurate control during the removal of sensitive propellants from rocket motors. Kinetic models were used successfully to correlate the molecular structure of selected explosives with their relative sooting tendencies during combustion. The modeling showed that soot formation occurs during fuel-rich combustion when insufficient oxygen is present to fully react with the hydrocarbon species. With this new understanding of the reaction mechanisms, new approaches can be investigated which will reduce soot and emissions during OB/OD disposal of explosives. Development continued on an instrument for field use in determining the composition in real time of fine particles released by munitions. Efforts were focused on increasing the rate at which analyses can be performed, and progress was made in reducing the time from minutes to seconds. Spectral libraries representing the particles liberated under field conditions during OD were determined. Development of robotic technologies for disassembly of munitions continued with an emphasis on machine vision improvements. Testing was completed and data complied for the elastic, plastic, and creep properties of lead-free solder, and a Unified Creep Plasticity (UCP) constitutive equation was derived to describe fatigue of soldered connections in defense electronics.

(U) FY 2006 / FY 2007 Plans:
(U) The instrument concept design for the rocket motor demil water-jet sensor will be completed for incorporation into washout units. Further, the test bed will be designed and the radar and data acquisition electronics will be completed. Prototype sensors for testing will also be fabricated. The development of a field instrument to identify munitions OB/OD emissions will be continued and particle source signatures for common background aerosols such as soils, sea spray, automobile emissions, common combustion sources, stationary power generation facilities, as well as other primary and secondary atmospheric particle sources, will be determined. This will allow the particles generated during OB/OD operations to be positively attributed to their source. A field demonstration of a prototype instrument operating in open air will be conducted. Chemical kinetic models for combustion of TNT, and RDX will be added to the extensive chemical database already existing for combustion processes. The development of robotic disposal of munitions will be continued amd new automation technologies for removing and safing submunitions that are automatically armed on exit from a projectile will be developed. Also, an ultrasonic sensor feedback system to optimize robot tool positioning will be demonstrated. A new project will develop a network of sensors for monitoring and quantifying the gaseous

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and particulate species of environmental concern in OB/OD plumes. Another new project will demonstrate non-destructive laser-based measurement techniques to quantify and locate TNT, RDX, or HMX surface clumps or residue contamination on steel surfaces. Studies will continue on predictive materials aging of solders, including investigation of tin whiskers, electronics corrosion, and aging of propellants and adhesives.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Lawrence Livermore National Lab	Livermore, CA	Broad scope research will continue in the core areas of warhead technology, energetic materials, component development, munitions lifecycle, and computer simulation and modeling.	21 DEC 2004
	Sandia National Laboratories	Albuquerque, NM	Broad scope research will continue in the core areas of warhead technology, energetic materials, component development, munitions lifecycle, and computer simulation and modeling.	21 DEC 2004

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PE NUMBER AND TITLE
0603400D8Z - J-UCAS Advanced Component and Prototype Development

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		344.935	0.000	0.000	0.000	0.000	0.000	0.000
0603400D8Z	J-UCAS Advanced Component and Prototype Development	344.935	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: The Joint Unmanned Combat Air Systems (J-UCAS) program is a joint effort to develop and demonstrate unmanned combat capabilities for high-threat Suppression of Enemy of Air Defense (SEAD), Information Operations/ Electronic Attack, Persistent Surveillance/Reconnaissance, and related strike missions within the emerging global command and control architecture for the warfighting community. The J-UCAS program combines and expands the efforts that were previously conducted under the DARPA/Air Force Unmanned Combat Air Vehicle (UCAV) program and the DARPA/Navy Naval UCAV (UCAV-N) program. These efforts were targeted towards service-specific needs, however the Department recognized the potential for significant synergy by combining the programs. The accomplishments and ongoing efforts of the X-45A technology demonstrator, as well as the development of the X-47A demonstrator, are reducing the risk of the "operationalized" demonstration system being developed for a joint operational assessment (OA) planned for the FY 2007-2010 timeframe. The J-UCAS concept incorporates the next generation family of demonstrator air vehicles, together with common subsystems (e.g. sensors, payloads, communications) and a Common Operating System to achieve the system's diverse mission functionality. These common system elements will maximize mission flexibility and operational versatility, while reducing overall costs and maintaining schedule toward a joint OA. The J-UCAS Office operates in close coordination with Service users and other operational components. The program is focused on demonstrating capabilities that support both Services and enable an operational system development decision by the end of the decade. PE 0603400D8Z is for Advanced Technology Development and Risk Reduction. These funds are used for the completion of demonstrations of the X-45A technology demonstrator, continued development of the Boeing and Northrop Grumman demonstrator programs, and the development of common systems technology elements.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	354.794	0.000	0.000
Current BES/President's Budget (FY 2007)	344.935	0.000	0.000
Total Adjustments	-9.859	0.000	0.000
Congressional Program Reductions	-8.823		
Congressional Rescissions	-1.036		
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603400D8Z - J-UCAS Advanced Component and Prototype Development**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy The J-UCAS program blends the advantages of both the Advanced Technology Demonstration (ATD) and the Advanced Concept Technology Demonstration (ACTD) concepts to facilitate rapid development and integration of advanced technologies in an experimental system that addresses operational needs. Using the next generation demonstrator air vehicle families, together with common subsystems and a Common Operating System, this nontraditional approach also incorporates key acquisition considerations (i.e., user requirements, comprehensive system lifecycle perspective, and rigorous risk mitigation processes) to provide the necessary insights, operational data and identified options for the services to make an informed decision for accelerated acquisition near the end of the decade. This effort is tightly coupled with PE 0604400D8Z (J-UCAS Advanced Component and Prototype Development), which complements the work under this program element to deliver systems for the joint operational assessment.

E. Performance Metrics: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603618D8Z - Joint Electronic Advanced Technology**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	0.000	9.400	9.500	9.600	9.800	10.200
P619	Joint Electronic Advanced Technology	0.000	0.000	9.400	9.500	9.600	9.800	10.200

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 explosives, mortars, rockets and small aircraft 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.

In the Global War on Terror (GWOT), the U.S must be ready to counter such weapons on short notice. The asymmetric nature of such devices is already well understood by terrorists. Improvised explosive devices are in widespread use. MANPADS and mortars have been used to attack both air and ground forces, and pose a threat to any region due to their portability. Unmanned aerial vehicles capable of short range operations involving chemical, biological or explosive payloads can be found routinely available through commercial purchase and are easily adaptable to conduct precision attacks for terror purposes using commercial radio control systems. GPS civil navigation and autopilot devices capable of precisely controlling UAVs can be held in the palm of ones hand. 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 and costly development cycles associated with U.S. military defensive systems. Together these asymmetries highlight the need to rapidly evolve alternative Electronic Warfare, Information Operations and Counter Terrorism capabilities suitable for neutralizing such threats.

This program element seeks to identify low-cost, near-term solutions (outside of service programs of record) that can effectively mitigate asymmetric threats by rapidly integrating advanced commercial or military off-the-shelf technology in innovative ways. Laboratory and field testing will be used to evaluate the feasibility and military utility of resultant low cost, near term capabilities. FY 2007 efforts will investigate, integrate, test and demonstrate elements of the following technologies:

1. Ground based Counter ManPads concepts and systems that provide area protection in the vicinity of military airports or other high value locations. A distributed ground based missile warning system will be refined, expanded and evaluated for its ability to increase probability of detection and decrease false alarms from the benchmark performance of aircraft based systems. This missile warning system will be initially integrated with aircraft based countermeasures systems. Several potentially viable ground based countermeasures concepts will be refined and tested to assess developmental risk. Subsequent efforts will assess integration of ground based missile warning/tracking systems, ManPADS countermeasures systems and other rapid means of engagement.
2. Low cost, near term technologies to allow DoD aircraft to fly in medium to high ManPAD threat airspace in support of the Global War on Terror. Emphasis is on aircraft and system approaches not covered by existing programs of record; including innovative fused-sensor missile warning, advanced decoys, and preemptive countermeasure systems.
3. Emerging commercially derived technologies; including rapid prototyping of those required to combat adaptive threats in the GWOT including the following:
   a. Warhead fuse defeat mechanisms
   b. Small Unmanned Aerial Vehicle (UAV) detection and engagement.
   c. Wi-Fi and other wireless network defeat mechanisms
4. Innovative ways to locate terrorist activity in near real time, providing actionable intelligence to the warfighter.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603618D8Z - Joint Electronic Advanced Technology**

The objective of this effort is to assess and prototype low cost/near term EW/IO technologies that augment and/or reduce risk when inserted into service programs of record. Opportunities to provide breakthrough technologies and low cost upgrade opportunities are emphasized.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	9.400
Total Adjustments	0.000	0.000	9.400
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			9.400

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603618D8Z - Joint Electronic Advanced Technology**	**P619**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P619	Joint Electronic Advanced Technology	0.000	0.000	9.400	9.500	9.600	9.800	10.200

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In the Global War on Terror (GWOT), the U.S must be ready to counter such weapons on short notice. The asymmetric nature of such devices is already well understood by terrorists. Improvised explosive devices are in widespread use. MANPADS and mortars have been used to attack both air and ground forces, and pose a threat to any region due to their portability. Unmanned aerial vehicles capable of short range operations involving chemical, biological or explosive payloads can be found routinely available through commercial purchase and are easily adaptable to conduct precision attacks for terror purposes using commercial radio control systems. GPS civil navigation and autopilot devices capable of precisely controlling UAVs can be held in the palm of ones hand. 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 and costly development cycles associated with U.S. military defensive systems. Together these asymmetries highlight the need to rapidly evolve alternative Electronic Warfare, Information Operations and Counter Terrorism capabilities suitable for neutralizing such threats.

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1. Ground based Counter ManPads concepts and systems that provide area protection in the vicinity of military airports or other high value locations. A distributed ground based missile warning system will be refined, expanded and evaluated for its ability to increase probability of detection and decrease false alarms from the benchmark performance of aircraft based systems. This missile warning system will be initially integrated with aircraft based countermeasures systems. Several potentially viable ground based countermeasures concepts will be refined and tested to assess developmental risk. Subsequent efforts will assess integration of ground based missile warning/tracking systems, ManPADS countermeasures systems and other rapid means of engagement.
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4. Innovative ways to locate terrorist activity in near real time, providing actionable intelligence to the warfighter.

The objective of this effort is to assess and prototype low cost/near term EW/IO technologies that augment and/or reduce risk when inserted into service programs of record. Opportunities

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603618D8Z - Joint Electronic Advanced Technology**	**P619**

to provide breakthrough technologies and low cost upgrade opportunities are emphasized.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Ground Based Counter-ManPADS:	0.000	0.000	2.200
Integrate sensor grid with selected countermeasures concepts.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Low Cost/Near Term Counter-ManPADS:	0.000	0.000	5.300
Aircraft integration of sensor fusion missile warning Advanced decoy evaluation IR signature data managment			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Electronic Advanced Technology:	0.000	0.000	1.900
Warhead defeat UAV detection and engagement Commercial technology defeat			

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	34.443	35.553	35.590	35.624	35.613	35.576
P648	Joint Capability Technology Demonstration (JCTD)	0.000	34.443	35.553	35.590	35.624	35.613	35.576

A. Mission Description and Budget Item Justification: In FY 2006, the Deputy Undersecretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)) initiated a new business process, building on the successful ACTD program, to support the Department's transformational reform of addressing future threats from a capabilities focus versus the classical threat based viewpoint. The revised ACTD approach is called the Joint Capability Technology Demonstration (JCTD) program, and is based on proven, positive aspects of the ACTD program. The JCTD model specifically addresses congressional concerns and recommendations made by the General Accountability Office (GAO) regarding rapid development and transitioning of CoCom relevant capabilities to the joint warfighter in a more cost effective, timely and efficient model. Aligning closely with the thrust of with the Joint Staff's Joint Integration and Development System (JCIDS), JCTDs take a more balanced project candidate identification approach, shifting the overall program's focus to identifying specific warfighter capabilities needs up front (requirements pull), and then finding technology or concepts to address these needs, while maintaining the historical ACTD approach, where new technology is introduced to the warfighter to solve existing operational shortfalls (technology push). FY 2006 was the first year of a three to five year transition period from the current ACTD to the improved JCTD program. At the end of this transition period, JCTDs will replace ACTDs, providing an even faster process that rapidly provides demonstrated solutions to joint warfighter needs, and unique transformational capabilities through the application of new operational concepts or technology from the Science and Technology (S&T) domain, with resources aimed at carrying successful projects through the difficult transition stage ("S&T valley of death"). In FY 2006, the ten ACTD/JCTD new start projects consisted of six ACTDs and four JCTDs. To better support the transition of unique or niche operational capabilities, the JCTD business model includes the Defense Acquisition Executive (DAE) pilot program, designed to take a limited number of "joint peculiar" JCTDs past Milestone B, through System Development and Demonstration (SDD), into procurement, followed by initial sustainment---a "cradle to grave" approach. The DAE pilot program will provide overall programmatic oversight of JCTDs that are deemed uniquely joint/combined (i.e., capability directly supports more than one Military Service) and/or transformational.

The appropriation, Program Element (PE) and Budget Activity (BA) structure for the new JCTD process includes the following:

- JCTD PE 0603648D8Z (RDT&E/DW BA-3)
- JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)
- Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5)
- JCTD Procurement (funded in Procurement Defense Wide, OSD Major Equipment: PE 0902198D8Z).

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources ($40 million) from the ACTD PE 0603750D8Z into these program element (PE)s. During the three to five year transition period, additional resources will be shifted into the various JCTD PEs from the ACTD PE, ultimately establishing a funding stream to support approximately ten new JCTDs each year. It is envisioned that the BA-3 JCTD PE will eventually replace the current ACTD BA-3 PE; however, during the transition period, the JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs to ensure continuity of ongoing ACTDs and program flexibility for the new JCTDs. JCTDs may be funded from both the ACTD and JCTD PEs during this transition period. During this period, the overall program will sometimes be referred to as the JCTD/ACTD program, to address the transitional nature of the process. JCTDs are initiated in Budget Activity three (BA-3) and are pre-acquisition demonstrations, characterized by Technology Readiness Levels 4, 5 or 6. Although not fully developed for production, these newly initiated JCTDs can provide a path for transition of Science and Technology to acquisition and are low-to-moderate risk vehicles for pursuing those

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**

objectives. The Defense Wide RDT&E funding managed DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including an "extended user evaluations," providing the Combatant Commanders, Services, Agencies, and operators with adequate time to address transition issues of supportability, maintainability and training identified by the JCTD/ACTD. As described above, the JCTD Program will pioneer a transformational new model for Department of Defense acquisition with the addition of funding in BA4, BA5 and Procurement to provide a path for those capabilities that are so transformational that they require a purposeful transition to acquisition to address some of the transition concerns identified by the ACTD program.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	35.000	35.000
Current BES/President's Budget (FY 2007)	0.000	34.443	35.553
Total Adjustments	0.000	-0.557	0.553
Congressional Program Reductions			
Congressional Rescissions		-0.557	
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			0.553

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
ACTD Program PE 0603750D8Z (RDT&E/DW BA-3/Line #44)	207.818	170.275	158.334	164.696	177.936	182.380	177.252	0.000	1238.691
JCTD Transition PE 0604648D8Z (RDT&E/DW BA-4/Line #83)	0.000	6.889	3.047	3.050	3.053	3.052	3.049	0.000	22.140
Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5/Line #99)	0.000	0.985	6.015	6.016	6.017	6.017	6.016	0.000	31.066
JCTD Procurement (OSD Major Equipment: PE 0902198D8Z)	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined below. Refer to the specific Budget

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**

Exhibit for more details on each funding line.

D. Acquisition Strategy •Only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in the JCTD model provided in the JCTD BA4 and DAE BA5 program elements.

•JCTD/ACTDs completing ACD&P will be at TRL 6 or 7 and a logical progression of program phases to include development and funding will be established via a documented transition plan.

•Fifty percent of the products from at least 80% of all completing JCTDs will transition to acquisition programs of record, a GSA schedule, CoCom sustainment or, in the case of software-based products, into operationally-sustained systems (such as the Global Command and Control System (GCCS).

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07	Project Selection Focus					
	Spiral Technologies					
	Time to Final Demonstration					
	Adequately Shared Funding and Visibility					
	Independent Assessment Capability					
	Successful Military Utility Assessment (MUA)					

Comment: The JCTD/ACTD performance metrics are centered on how fast relevant joint and/or transformational technologies can be demonstrated and fielded 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. The table below defines these metrics and helps compare/contrast the current ACTD program with the new JCTD business process model.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**

Performance Metrics Comparison between ACTDs and JCTDs:

• Project Selection Focus: ACTDs are Threat Based (Shared Military Service and CoCom influence). JCTDs are Capability Based with greater CoCom influence looking at nearer term needs.

• Spiral Technologies: For ACTDs no Metric currently established. For JCTDs Spiral Technology available within one year of JCTD initiation.

• Final Demonstration Completed: For ACTDs - (Starting Point: Approved ID) 3 to 4 years after initiation (Implementation Directive (ID) Signed), 50% completed by the end of the 2nd year. All JCTDs completed by the end of the 3rd year.

• Shared Funding and Visibility of resources: For ACTDS - OSD provides no more than 30% of the budgeted resources. Funding provided from many different program elements. For JCTDs OSD provide significantly more funding (more than 50% OF THEIR PRODUCTS), especially in the first two years.

• Military Utility Assessment (MUA) conducted by an independent activity: MUA is traditionally tied to a specific planned exercise for evaluation. For JCTDs - not necessarily tied to an exercise. Greater flexibility to establish military utility via operational "real-world" demonstration or specifically designed test/venue.

• Transition of technology: For ACTDs 70% transition at least one product to sustainment. For JCTDs 80% transition at least 50% of their products to sustainment.

• Fifty percent of the products from at least 80% of all completing JCTDs will transition to acquisition programs of record, a GSA schedule, CoCom sustainment or, in the case of software-based products, into operationally-sustained systems (such as the Global Command and Control System (GCCS).

• JCTD/ACTDs completing ACD&P will be at TRL 6 or 7 and a logical progression of program phases to include development and funding will be established via a documented transition plan.

The JCTD/ACTD performance metrics are centered on how fast relevant joint and/or transformational technologies can be demonstrated and fielded 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. The table below defines these metrics and helps compare/contrast the current ACTD program with the new JCTD business process model.

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• Military Utility Assessment (MUA) conducted by an independent activity: MUA is traditionally tied to a specific planned exercise for evaluation. For JCTDs - not necessarily tied to an exercise. Greater flexibility to establish military utility via operational "real-world" demonstration or specifically designed test/venue.

• Transition of technology: For ACTDs 70% transition at least one product to sustainment. For JCTDs 80% transition at least 50% of their products to sustainment.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**	**P648**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P648	Joint Capability Technology Demonstration (JCTD)	0.000	34.443	35.553	35.590	35.624	35.613	35.576

A. Mission Description and Project Justification: In FY 2006, the Deputy Undersecretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)) initiated a new business process, building on the successful ACTD program, to support the Department's transformational reform of addressing future threats from a capabilities focus versus the classical threat based viewpoint. The revised ACTD approach is called the Joint Capability Technology Demonstration (JCTD) program, and is based on proven, positive aspects of the ACTD program. The JCTD model specifically addresses congressional concerns and recommendations made by the General Accountability Office (GAO) regarding rapid development and transitioning of CoCom relevant capabilities to the joint warfighter in a more cost effective, timely and efficient model. Aligning closely with the thrust of with the Joint Staff's Joint Integration and Development System (JCIDS), JCTDs take a more balanced project candidate identification approach, shifting the overall program's focus to identifying specific warfighter capabilities needs up front (requirements pull), and then finding technology or concepts to address these needs, while maintaining the historical ACTD approach, where new technology is introduced to the warfighter to solve existing operational shortfalls (technology push). FY 2006 was the first year of a three to five year transition period from the current ACTD to the improved JCTD program. At the end of this transition period, JCTDs will replace ACTDs, providing an even faster process that rapidly provides demonstrated solutions to joint warfighter needs, and unique transformational capabilities through the application of new operational concepts or technology from the Science and Technology (S&T) domain, with resources aimed at carrying successful projects through the difficult transition stage ("S&T valley of death"). In FY 2006, the ten ACTD/JCTD new start projects consisted of six ACTDs and four JCTDs. To better support the transition of unique or niche operational capabilities, the JCTD business model includes the Defense Acquisition Executive (DAE) pilot program, designed to take a limited number of "joint peculiar" JCTDs past Milestone B, through System Development and Demonstration (SDD), into procurement, followed by initial sustainment---a "cradle to grave" approach. The DAE pilot program will provide overall programmatic oversight of JCTDs that are deemed uniquely joint/combined (i.e., capability directly supports more than one Military Service) and/or transformational.

The appropriation, Program Element (PE) and Budget Activity (BA) structure for the new JCTD process includes the following:

- JCTD PE 0603648D8Z (RDT&E/DW BA-3)
- JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)
- Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5)
- JCTD Procurement (funded in Procurement Defense Wide, OSD Major Equipment: PE 0902198D8Z).

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources ($40.000 million) from the ACTD PE 0603750D8Z into these program element (PE)s. During the three to five year transition period, additional resources will be shifted into the various JCTD PEs from the ACTD PE, ultimately establishing a funding stream to support approximately ten new JCTDs each year. It is envisioned that the BA-3 JCTD PE will eventually replace the current ACTD BA-3 PE; however, during the transition period, the JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs to ensure continuity of ongoing ACTDs and program flexibility for the new JCTDs. JCTDs may be funded from both the ACTD and JCTD PEs during this transition period. During this period, the overall program will sometimes be referred to as the JCTD/ACTD program, to address the transitional nature of the process. JCTDs are initiated in Budget Activity three (BA-3) and are pre-acquisition demonstrations, characterized by Technology Readiness Levels 4, 5 or 6. Although not fully developed for production, these newly initiated JCTDs can provide a path for transition of Science and Technology to acquisition and are low-to-moderate risk vehicles for pursuing those

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603648D8Z - Joint Capability Technology Demonstration (JCTD)**
	PROJECT **P648**

objectives. The Defense Wide RDT&E funding managed DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including an "extended user evaluations," providing the Combatant Commanders, Services, Agencies, and operators with adequate time to address transition issues of supportability, maintainability and training identified by the JCTD/ACTD. As described above, the JCTD Program will pioneer a transformational new model for Department of Defense acquisition with the addition of funding in BA4, BA5 and Procurement to provide a path for those capabilities that are so transformational that they require a purposeful transition to acquisition to address some of the transition concerns identified by the ACTD program.

FY 2007 General Program Plan: DUSD (AS&C) will maintain oversight of the JCTD/ACTD program. The FY 2006 review and validation process began at the end of January 2005, with JROC validation in September of 2005. Congressional notification followed in November 2005 with an anticipated start of ten JCTD/ACTDs (4 are JCTDs, 6 are ACTDs). The process will be repeated for FY 2007 JCTD/ACTDs. In FY 2007, we anticipate starting 2 to 4 new JCTDs. JCTD funding will be drawn from both the ACTD and JCTD PEs. Funding available for initiating new FY 2007 JCTD/ACTDs will be approximately $45.000 million from both PEs, $25.000 million of which is in the JCTD program.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Counter Intelligence - Human Intelligence Architecture Modernization Program, Intelligence Operations Now (CHAMPION):	0.000	6.324	1.532

Provide Combatant Commanders with an integrated, dynamic, collaborative Human Domain C4I environment under the Distributed Common Ground Station architecture; and enable real-time Human Domain reporting as components of situational awareness and common operating picture. Fuse existing and emerging systems and technologies into unified portal for timely, actionable intelligence information. This integrated system architecture will then support tactical operations of CI/HUMINT and special operations forces asset management, collection and reporting. CHAMPION user sponsor is the U.S. Central Command with U.S. Special Operations Command as the supporting command user sponsor; the Lead Service being the U.S. Army in cooperation with National Geospatial-Intelligence Agency.

• FY 2006 Plans - Defined joint user functional requirements to be addressed by the selected technological capabilities. Define architecture and identified new and sufficiently mature technologies for insertion or integration into the CHAMPION initial spiral. Developed a spiral model to incrementally grow the architecture while eliminating non-viable alternatives and decreasing risk. Final preparation for initial field trial.

• FY 2007 Plans - Conduct field trials of interim spiral capabilities and operational concepts. Demonstrate and assess concept of operations and the tactics, techniques and procedures in a joint exercise.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Comprehensive Maritime Awareness (CMA):	0.000	7.702	1.862

The CMA JCTD will demonstrate improved Maritime Awareness. There are two major objectives. The first is to assess the value of information exchange to improved MDA. The second will be to assess the value of net-centric information management for improved MDA awareness, applicable across US Government Departments, Combatant Commands and Coalitions (Singapore). This JCTD will field capabilities that will improve the ability to identify and prioritize world-wide maritime threats in a timely manner without inducing information overload on maritime security forces. Information sharing and collaboration will be emphasized to increase overall effectiveness. Metrics will be based on actual improvements to MDA; improvements in the efficient and effective use and application of maritime forces; suitability of CMA technologies for employment; and alignment with DoD Net-Centric initiatives and directives.

• FY 2006 Plans - Baseline, demonstrate and evaluate the information exchange capability with the Republic of Singapore.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**	**P648**

• FY 2007 Plans - Baseline and demonstrate CMA technologies at PACOM, NORTHCOM and EUCOM. Interim Military User Assessments will be conducted.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Modular Intermodal Distribution System (JMIDS):	0.000	6.945	4.487

Provides enhanced modularity, intermodality and visibility thereby decreasing handling and shipping time through the Defense Transportation System (DTS).

• FY 2006 Plans - Implementation Directive developed, staffed, and approved. Initiate and finalize Concept of Operations (CONOPS) and Tactics, Techniques & Procedures (TTPs). Initiate and finalize the Military Utility Assessment Plan (MUAP). Conduct distribution analysis for the JMIDS components. Conduct an In-Process Review, a Preliminary Design Review (PDR) and a Critical Design Review (CDR) during the Hardware Build Phase. Evaluate and select Automatic Identification Technologies (AIT).

• FY 2007 Plans - Complete build of JMICs and JMIPs. Acquire the selected AIT components. Integrate AIT components into the JMIC and JMIP. Conduct Safety Assessment for the JMIC and JMIP. Conduct the Military Utility Assessment (MUA). Initiate transition strategy and prepare for extended user evaluation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
LARGE DATA:	0.000	9.599	2.672

The Large Data Joint Capability Technology Demonstration (JCTD) will demonstrate the military utility of a highly scalable, rapid, and secure integrated capability to retrieve, store and share massive amounts of information effectively between global users. It will provide increased situational awareness by displaying large, fused sets of geospatially-referenced data in a Joint Warfighting context using intuitive navigation techniques. Secure access by all users to vast numbers of large data sized data sets when they need it. Specifically, it will provide: Synchronized databases across all major operational storage nodes, i.e. cache coherency; Timely delivery and sharing of data - instant real time access and collaboration; Intuitive way for users to navigate large data sets (petabytes to exabytes); Ability to easily visualize huge amounts of data that is being generated; Capability to perform "trackback" or change analysis on an unprecedented scale.

• FY 2006 Plans - Develop a large data fast file system, high performance search engine & distributed cache coherent database. Design and demonstrate the Large Data prototype. Begin network certification, Develop CONOPS. Conduct demonstration.

• FY 2007 Plans - Develop holistic target characterization prototypes and deploy to Beta sites for evaluation. Perform multi-node testing on classified and unclassified networks. Refine CONOPs and TTPs. Plan JMUA. Conduct demonstration.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Precision View AOA, Coalition Joint Spectrum Management Planning Tool (CJSMPT) and Coalition Target Indentification	0.000	3.873	0.000

In FY 2006, funding will be provided to perform an Analysis of Alternatives (AOA) Study on promising Precision View technology and an anticipated mid-year project start in response to warfighter's urgent needs. While a final project has not yet been determined, example candidates are a joint warfighter spectrum management system or coalition target identification project.

• The Precision View Program Objectives are to develop, demonstrate, and guide fielding of the next-generation suite of tactical ISR sensors; to accelerate the "kill-chain" by eliminating external ground-based processing; to provide Embedded Image / Digital Elevation Model (DEM) on-the-fly generation and a Geolocation-quality image product that is generated at the sensor. The military utility sought is enhanced target identification and timely precision geo-location performance over land and sea from a multi-mode, high-resolution sensor package. The AoA will determine the range of technological options and provide relevant cost information.

• The Coalition Joint Spectrum Management Planning Tool (CJSMPT) is a software based spectrum management tool to enable the warfighters to overcome a severe shortage in access to electromagnetic spectrum resources. This spectrum shortage is due to the significant growth in demand for deployed spectrum-dependent equipment, increasing warfighter need for information and advanced C2 concepts associated with net-centric operations, and overall spectrum saturation due to host nation spectrum needs in areas of potential DoD deployment. Despite the growing dependence of warfighting systems on the radio frequency spectrum, little progress at standardizing component spectrum demand quantification and identifying warfighting spectrum requirements prior to force employment has been

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603648D8Z - Joint Capability Technology Demonstration (JCTD)**	**P648**

made. This has a significant impact on providing assured spectrum resources for component and coalition forces and has reduced the movement of required data to achieve information superiority. Areas that require immediate attention include: deliberate and crisis operational spectrum planning, warfighting supportability, operational spectrum requirements determination and dynamic frequency reassignment. The Coalition Joint Spectrum Management Planning Tool (CJSMPT) Objectives are to quickly provide the Combatant Commanders with a capability to address critical shortfalls in operational spectrum management via a consistent requirements database and an automated tool to facilitate pre-operations assessment of spectrum requirements during COA and scenario planning.

• The Coalition Target Identification (CTI) project would develop cooperative and non-cooperative technologies at the point of engagement to accurately characterize entities on the modern battlespace. It will also provide enhanced Cooperative Identification CID Training Tools & Situational Awareness information to coalition forces. Currently, U.S. and Coalition warfighters lack the means to accurately characterize enemy, friend, or neutral ground entities in sufficient time to effectively and safely employ weapons. The chain of events required for weapon release to effectively engage the enemy is complex, however, today's target set is highly mobile (80% relocatable, 20% fixed) and the time to accurately identify targets detected is now in seconds. The present Cooperative ID systems do not provide a complete picture of the battlefield. These factors reduce the effective use of stand-off weapons especially in degraded weather and ability to distribute Combat ID (CID) imagery to shooters and decision makers. Targeting decisions often made too far away from warfighters to effectively engage mobile targets. The Coalition Target Identification (CTI) project would develop the means to accurately characterize enemy, friend, or neutral ground entities in sufficient time to effectively and safely employ weapons.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY07 JCTD New Start Projections:	0.000	0.000	25.000

Selection process initiated February 2006. Appropriate Congressional notification will proceed the obligation of these funds.

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
ACTD PE 0603750D8Z (RDT&E/DW BA-3/Line #44)	207.818	170.275	158.334	164.696	177.936	182.380	177.252	0.000	1238.691
JCTD Transition PE 0604648D8Z (RDT&E/DW BA-4/Line #83)	0.000	6.889	3.047	3.050	3.053	3.052	3.049	0.000	22.140
Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5/Line #99)	0.000	0.985	6.015	6.016	6.017	6.017	6.016	0.000	31.066
JCTD Procurement (OSD Major Equipment: PE 0902198D8Z)	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment:

D. Acquisition Strategy •Only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in the JCTD BA4 Transition PE and the DAE BA5 PE.

• Fifty percent of the products from at least 80% of all completing JCTDs will transition to acquisition programs of record, a GSA schedule, CoCom sustainment or, in the case of

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software-based products, into operationally-sustained systems (such as the Global Command and Control System (GCCS).

• JCTD/ACTDs completing ACD&P will be at TRL 6 or 7 and a logical progression of program phases to include development and funding will be established via a documented transition plan.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603711D8Z - Joint Robotics/Autonomous Systems**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	0.000	7.700	11.600	14.600	14.900	15.200
P710	Joint Robotics Program/Autonomous Systems	0.000	0.000	7.700	11.600	14.600	14.900	15.200

A. Mission Description and Budget Item Justification: This program element supports the advanced technology development activities of the Joint Robotics Program (JRP). Projects deliver advanced technology to support enhanced warfighters' capabilities that have been identified during operational assessments and field feedback of current unmanned systems. The program ensures Joint Service coordination and provides for interoperability and commonality among unmanned systems. Through key annual key stakeholder reviews (PM's, user, tech base) critical technologies necessary to meet evolving user requirements are identified. These critical technologies form the basis for investment decisions in the areas of mobility, power, manipulation, system health maintenance, advanced materials, communication, human-robot interaction, autonomous operations, perception, precision location, data fusion, autonomous/tactical behaviors, and collaborative operations. Projects also encompass modeling and simulation activities to support future system development and the transfer of advanced unmanned system capabilities to the warfighter.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	7.700
Total Adjustments	0.000	0.000	7.700
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			7.700

Funds previously allocated to PE 0604709D8Z, Joint Robotics Program (BA5) were transferred to form this Program Element.

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
PE 0603709D8Z (BA4) Joint Robotics Program	20.826	27.264	12.210	12.219	12.300	12.547	12.820	0.000	110.186
PE 0604709D8Z (BA5) Joint Robotics Program	31.549	20.464	6.004	3.004	0.000	0.000	0.000	0.000	61.021

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603711D8Z - Joint Robotics/Autonomous Systems**

Comment:

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603711D8Z - Joint Robotics/Autonomous Systems**	**P710**

PE 0603709D8Z Joint Robotics Program (BA4)	21.314	11.755	12.020	12.017	12.085	12.331	12.613	0.000	94.135
PE 0604709D8Z Joint Robotics Program (BA5)	32.669	13.745	6.000	3.000	0.000	0.000	0.000	0.000	55.414

Comment:

D. Acquisition Strategy The Joint Robotics Program (JRP) will utilize several contracting strategies to achieve its program objectives. The JRP has an established relationship with the National Center for Defense Robotics to support the rapid acquisition and evaluation of promising unmanned system technologies. Additionally, funding will be provided to Joint Service lab partners to promote common technology solutions across platforms and Service.

E. Major Performers Not Applicable.

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		54.911	75.429	67.149	70.977	71.111	72.438	73.920
P470	Strategic Environmental Research and Development Program (SERDP)	54.911	75.429	67.149	70.977	71.111	72.438	73.920

A. Mission Description and Budget Item Justification: (U) 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 by providing new knowledge, cost-effective technologies, and demonstrations in the areas of Environmental Restoration, Munitions Management, Sustainable Infrastructure , and Weapons Systems and Platforms. SERDP does this by (1) addressing high priority, mission- relevant, defense environmental technology needs necessary to enhance military operations, improve military systems' effectiveness, enhance military training/readiness, sustain DoDs training and testing range infrastructure, and help ensure the safety and welfare of military personnel and their dependents; and (2) eliminating or reducing the generation of pollution and use of hazardous materials to reduce operational and life-cycle costs, as well as reducing the cost of necessary remedial actions and compliance with 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 to these priority defense needs; the pursuit of universal, world-class technical excellence; emphasis on constant technology transfer to field use; and sound fiscal management. The increase between FY 2005 and FY 2006 and beyond represents an increased investment in technologies for the detection, discrimination and disposal of unexploded ordnance (UXO) and munitions constituents.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	56.597	64.101	66.104
Current BES/President's Budget (FY 2007)	54.911	75.429	67.149
Total Adjustments	-1.686	11.328	1.045
Congressional Program Reductions		-1.222	
Congressional Rescissions			
Congressional Increases		12.550	
Reprogrammings	-0.750		
SBIR/STTR Transfer	-0.859		
Other	-0.077		1.045

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
	DoD Environmental Requirements					

Comment: Performance in this program is monitored at two levels. At the lowest level, each of the more than 150 individual projects is measured against both technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the development of technologies that address these requirements as well as the transition of these technologies to either to demonstration and validation programs or to direct use in the field.

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**	**P470**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P470	Strategic Environmental Research and Development Program (SERDP)	54.911	75.429	67.149	70.977	71.111	72.438	73.920

A. Mission Description and Project Justification: (U) 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 by providing new knowledge, cost-effective technologies, and demonstrations in the areas of Environmental Restoration, Munitions Management, Sustainable Infrastructure , and Weapons Systems and Platforms. SERDP does this by (1) addressing high priority, mission- relevant, defense environmental technology needs necessary to enhance military operations, improve military systems` effectiveness, enhance military training/readiness, sustain DoDs training and testing range infrastructure, and help ensure the safety and welfare of military personnel and their dependents; and (2) eliminating or reducing the generation of pollution and use of hazardous materials to reduce operational and life-cycle costs, as well as reducing the cost of necessary remedial actions and compliance with 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 to these priority defense needs; the pursuit of universal, world-class technical excellence; emphasis on constant technology transfer to field use; and sound fiscal management. The increase between FY 2005 and FY 2006 and beyond represents an increased investment in technologies for the detection, discrimination and disposal of unexploded ordnance (UXO) and munitions constituents.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Munitions Management (MM):	13.728	16.526	15.417

(U) FY 2005 Accomplishments:
Investment in munitions management yielded advanced technology to address the most difficult and persistent issues facing our military testing and training lands, ranging from advanced signal processing approaches for improved detection and discrimination to next generation sensors to unexploded ordnance (UXO) filler material identification methods to underwater characterization technologies. Investigators continued to use the two standardized test sites for the demonstration and evaluation of UXO technologies. New start projects concentrated on improved sensor designs and improving detection and discrimination methods.

(U) FY 2006 Plans: Continuing efforts in UXO detection and discrimination technologies, projects include developing navigation tools to support collection of geophysical data, characterizing underwater sites, and developing novel sensors and signal processing techniques.

(U) FY 2007 Plans: New initiatives will continue to focus on wide area assessment technologies, advanced sensors, signal processing, supporting technologies and protocols. Continuing efforts include a project to develop model-based, robust methods for UXO discrimination from time and frequency domain Electromagnetic Induction.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**	**P470**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Environmental Restoration:	14.826	24.789	18.643

(U) FY 2005 Accomplishments:
In FY 2005 SERDP-funded research continued to address two major contaminants of concern at DoD facilities: munitions constituents (explosives, propellants and pyrotechnics) found on ranges; and chlorinated solvents (TCE, PCE) found at over half of DoD remediation sites. Significant progress was made in the investigation of the genetic and biochemical processes involved in the breakdown of explosive contaminants by plants. Efforts continued to determine the levels of explosives contamination on training and testing ranges and to determine the fate and transport of these materials into the soil and groundwater at training ranges. SERDP Researchers completed a study to assess the fate, transport and ecotoxicological issues of CL-20, a new energetic material. Researchers continued to develop both biological and abiotic technologies to address the remediation of munitions constituents in soil and groundwater and development of technologies to remediate chlorinated solvent plumes with in-situ alternatives to decades-long "pump and treat" solutions. Other continuing projects researched source zone delineation and the sequestration of toxic heavy metals in soils, such as lead on small arms ranges.

(U) FY 2006 Plans: Efforts will continue in the munitions constituents on ranges and chlorinated solvents areas. Projects will: 1) investigate cost-effective in-situ remediation strategies for sediments; 2) improved understanding of the delivery and distribution of remedial materials in the subsurface; 3) develop technologies to assessment the impact of processes on fate and transport of contaminants in sediments; 4) develop new technologies for containment and/or treatment of energetic materials on ranges. Continue to develop technologies needed to support the sustainability of DoD's training and testing ranges with specific attention on fate and effect of munitions constituents from operational ranges. Characterize the source term of energetic compounds in aquatic environments. Identify and quantify naturally occurring sources of perchlorate and develop new, cost-effective methods for the treatment of perchlorate in drinking water. Congressional additions include $1,000,000 to continue work at Texas Tech University on risk based approaches for improved toxic chemical management; $8,750,000 for continued work on wellhead treatment of perchlorate contaminated well; and $1,000,000 for the remediation of environments contaminated by ammonium perchlorate at the University of Idaho.

(U) FY 2007 Plans: SERDP will aim to improve scientific understanding and develop innovative cost effective methods for the bioremediation of munitions constituents, specifically energetics and nitroaromatic compounds. Additional initiatives will continue work in the areas of source-zone treatment of dense non-aqueous phase liquids, and the phytoremediation of energetic contaminants. Future initiatives that will be funded to ensure the continued use and sustainability of our training ranges include exposure assessments of the fate and transport of energetic materials, and screening level and modeling tools. The knowledge of the potential sources, the movement of residual energetic materials and/or their breakdown products, and the assessment of environmental exposure will assist in total assessment of potential environmental impacts stemming from the use of test and training ranges.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Sustainable Infrastructure:	13.728	16.408	16.485

(U) FY 2005 Accomplishments:
Completed two initiatives under the SERDP Ecosystem Management Project (SEMP) - understanding ecosystem disturbance thresholds and ecosystem indicators of change. Continued to develop land management techniques for installations and ranges. Completed a sensor fusion approach to assess and characterize archaeological artifacts in DoD installations and ranges. Evaluated the impacts of training noise on the endangered Red Cockaded Woodpecker and on marine mammals. Commenced planning for an estuarine and coastal research land/resources management initiative at Camp LeJeune to address impacts of military training operations in these environments. Developed technologies for estimating the impact of DoD activities on marine estuaries and technologies to control invasive aquatic species in Navy ships. New initiatives: developed methods to identify and control the spread of non-native invasive species (NIS) that may be inadvertently transported by DoD vehicles and/or personnel; determined the fundamental relationships that define migratory land bird habitat and routing; and to understand how these elements can lead to improved monitoring strategies; developed models for biogeochemical cycles that can assist land managers in determining appropriate land uses and land management approaches for ecosystems; and developed new remote sensing technologies to detect high priority threatened and endangered species (TES) and their habitat(s) on DoD lands.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603716D8Z - Strategic Environmental Research and Development Program (SERDP)**	**P470**

(U) FY 2006 Plans: Sustaining use of military ranges requires SERDP to continue efforts on developing cost effective quantification of impact of military operations on Threatened and Endangered Species, prediction of marine mammal distribution, and cost effective control of invasive species on ranges. Continuing efforts to understand and manage invasive plant species that negatively affect training activities; predicting marine mammal population densities; characterizing military activities that contribute to the transport of non-indigenous species; monitoring migratory bird species on military lands; and developing remote sensing technologies to identify threatened/endangered species habitats to meet requirements of the Endangered Species Act and Migratory Bird Treaty Act. New initiatives include the Defense Coastal and Estuarine Research Program at Camp LeJeune, developing new techniques for selecting the most effective acquisition of land as buffers for active ranges, understanding the mechanisms of forest decline on installations in the Southeastern US and the impact on habitat, and developing new methods for establishing scientifically defensible population recovery goals for threatened and endangered species. Continue to assess the impact of military noise sources and begin innovative monitoring systems for impulse noise.

(U) FY 2007 Plans: SERDP will continue and initiate new efforts to address persistent issues that severely impact installation readiness and their ability to support force training and testing. Research topics include an assessment of the stressors on military lands caused by future larger/centralized force structures, development of new technologies to reduce and/or treat solid waste and develop technologies to safely and effectively dispose of composite materials that come about as a result of manufacturing and repair processes at military depots.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Weapons Systems and Platforms:	12.629	17.706	16.604

(U) FY 2005 Accomplishments:
New and continuing efforts focused on eliminating hazardous "red water" from explosives (TNT) manufacturing, cadmium plating on high-strength steels, and solvents containing Class II ozone depleting substances. Alternatives to perchlorate in incendiary mixes and pyrotechnic formulations; Hazardous Air Pollutant (HAP)-free solvents, and environmentally benign "green" gun barrels for medium caliber weapons continued. Researchers developed emissions factors for dust generated by unique military activities, air toxic emissions factors for military aircraft engines, and technologies for the measurement and control of air emissions from tactical vehicles.

(U) FY 2006 Plans: SERDP will Continue work on green energetics and determining the emissions factors from exiting and new jet engines including the engines for the Joint Strike fighter. New initiatives include development of a chromium and VOC free paint systems for platforms, reduction of packaging waste for military items, and environmentally benign synthesis of energetic materials and their precursors. The Congressional appropriation included $1,800,000 for ChemNet Environmax 4.0.

(U) FY 2007 Plans: The Weapons Systems and Platforms program will focus on development of "green" energetics, emissions characterization and reduction, and munitions and weapons systems components that have little impact on the environment. Other initiatives include "green biosynthesis routes for energetic materials and elimination of hazardous materials in coatings and coating processes.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

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E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Army Corps of Engineers	Washington, DC	Funds are provided for U.S. Army staff support to the SERDP Executive Director, Scientific Advisory Board and the SERDP Council; the U.S. Army, U.S. Navy, the U.S. Environmental Protection Agency, the U.S. Department of Energy, the U.S. Department of Agriculture (USDA), and the National Institute of Standards and Technology (NIST) for approved FY 2004 SERDP projects in compliance, cleanup, pollution prevention, and convervation.	26 OCT 2004

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603727D8Z - Joint Warfighting**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		10.376	10.043	10.641	11.398	11.431	11.661	11.917
P727	Joint Warfighting	10.376	10.043	10.641	11.398	11.431	11.661	11.917

A. Mission Description and Budget Item Justification: In May 1998 the Secretary of Defense appointed U.S. Joint Forces Command (formerly the U.S. Atlantic Command), as the Defense Department's Executive Agent for Joint Experimentation. Subsequently, the Department realigned resources to support the Joint Forces Commands new role. In FY 1999 funds from this Joint Warfighting Program (JWP) Element (PE: 0603727D8Z) were redirected to support the initial stand-up of Joint Forces Command's Joint Experimentation Directorate. Funding for joint experiments was transferred to Joint Forces Command through the Navy and PE 0603727N in FY 2000 and was established to provide Joint Forces Command with its own funding source. Funding to support the Joint Advanced Warfighting Program (JAWP) concept development, the Information Technology Backplane (ITB), and Technology Feeder Support (TFS) for joint experimentation was retained in the JWP PE. The Defense Adaptive Red Team (DART) was initiated as a pilot project in FY 2002. DART has proven to be very successful by providing an independent team of experts to challenge emerging operational concepts from their origin through the experimentation process. DART is now included in the JWP program across the FYDP.

The Joint Warfighting PE supports four related activities: the JAWP, the ITB, DART and TFS for Joint Experimentation. While these activities strongly support Joint Forces Command's joint experimentation efforts, a separate program element is necessary since the activities support other organizations in addition to Joint Forces Command. Additionally, because of the evaluation role a separate program element, with OSD oversight, provides a necessary degree of independence. The Joint Advanced Warfighting Program (JAWP) was established by the Office of the Secretary of Defense (OSD), with the support of the Vice Chairman of the Joint Chiefs, to serve as a catalyst for innovation and change. This program's focus is on assisting in the formulation and assessment of advanced concepts and capabilities, plus identifying enabling technologies and integration options for the Department. These concepts drive changes in the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) of the Services. The JAWP serves an essential independent role in identifying, exploring and evaluating breakthrough war fighting capabilities. It helps capture and builds on lessons learned from joint contingency operations and earlier joint and Service experimentation. From that foundation, it identifies and helps formulate advanced joint concepts, explores their effectiveness by designing and conducting joint experiments, and helps streamline implementation processes. Its work complements and supports the activities of Joint Forces Command, the Joint Staff, and the OSD by providing a uniquely informed independent source of advice. In identifying and elaborating innovative joint concepts and capabilities and associated enabling technologies, the JAWP helps integrate related Service efforts and those of Combatant Commanders (CoComs) and Defense agencies.

Through its influence in a wide range of DoD transformation efforts, the JAWP promotes integration, bringing greater coherence to efforts that would otherwise be tangential or disconnected. The JAWP is composed of both civilian and military members. Its military component is the JAWP Analytical Project Office (JAWP-APO), a jointly manned activity established by the Deputy Secretary of Defense, consisting of equal numbers of military personnel from all four Services. The active duty military members provide a current operational perspective to concepts under investigation and serve as a vital link to ongoing relevant activities in the Services. The Information Technology Backplane (ITB) provides an advanced network infrastructure that extends commercial capabilities to provide capabilities needed to meet JV2020 needs. Information Superiority is a key JV2020 building block and the ITB provides the means to experiment with the digital transmission capabilities that are projected to be available within five years (from each funding year). The ITB is not a new physical network. It is a virtual network that capitalizes on existing physical networks such as the Defense Information Systems Network (DISN), the DISN Asynchronous Transfer Mode Service Network (DATMS), and the Defense Research and Engineering Network (DREN). The ITB has many users from sites served by existing networks but the funding included in this PE is the incremental funding needed to support joint experimentation. The third effort supported by this PE is Technology Feeder Support (TFS) for joint experiments. TFS empowers

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603727D8Z - Joint Warfighting**

CoComs to conduct joint experimentation within their theaters of operation to address regional capability gaps and unique mission area requirements, often leveraging the ongoing Technology Demonstration. The final effort supported by this Program Element is the Defense Adaptive Red Team (DART), which was established as a separate project starting with the FY 2003 budget. The DART's mission is to challenge JFCOM, JAWP, the Joint Staff and others in the DoD to develop more robust and resilient concepts for conducting joint operations in the future. It does so through four sets of activities:

(1) Involvement in the planning and implementation of JFCOM, JAWP and Joint Staff concept development and experimentation; (2) Support of other CoComs; (3) Support of the ACTD and Foreign Comparative Test Programs; and (4) Development and refinement of red teaming best practices. The DART develops and implements wargames and other activities as appropriate, and provides independent reports relating to its activities. A senior advisory group meets annually to review the DARTs activities and accomplishments, and to recommend changes to focus or operations as required.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	10.696	10.205	10.476
Current BES/President's Budget (FY 2007)	10.376	10.043	10.641
Total Adjustments	-0.320	-0.162	0.165
Congressional Program Reductions	-0.014	-0.162	
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-0.306		
Other			0.165

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603727D8Z - Joint Warfighting**

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
06						

Comment: Performance Metrics: Facilitate solutions to CoCom needs within the resources available to the program. Support concept and technology based capability development. Influence the larger DoD Joint Experimentation investment to serve the needs of the CoComs in balance with other Concept Development and Experimentation goals. Advance interaction with coalition partners.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603727D8Z - Joint Warfighting**	**P727**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P727	Joint Warfighting	10.376	10.043	10.641	11.398	11.431	11.661	11.917

A. Mission Description and Project Justification: The Joint Warfighting PE supports four related activities: the Joint Advanced Warfighting Program (JAWP), the Information Technology Backplane (ITB), the Technology Feeder Support (TFS) and the Defense Adaptive Red Team (DART). Each of these activities is associated with the Joint Experimentation role assigned to the U.S. Joint Forces Command (USJFCOM). While these activities strongly support Joint Forces Command's joint experimentation efforts, a separate program element is necessary since the activities support other organizations in addition to Joint Forces Command (e.g., OSD, JCS, and other CoComs). Additionally, because of the evaluation role a separate program element, with OSD oversight, provides a necessary degree of independence.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Advanced Warfighting Program (JAWP):	5.023	5.000	5.441

FY 2005 Accomplishments - JAWP continued collecting lessons from contingency operations in Iraq, Afghanistan, the Philippines, and other areas where the U.S. and coalition forces are conducting irregular warfare and the Global War on Terrorism. It developed a broad framework encompassing military and non-military considerations for planning and conducting counter-insurgency operations. JAWP personnel interviewed top Hussein regime officials and studied Iraqi documents to understand the regime, the foundations of the insurgency, and relationships with regional countries. Results have been used to educate security, intelligence, and military officials, and briefed to the Vice President. JAWP extended its analysis to al Qaeda and similar movements, providing results to defense and intelligence officials and war colleges. JAWP assisted with planning and execution of JFCOM's Urban Resolve experiments, designed and executed other experiments to protect bases from mortars and rocket attacks, and populated the Joint Mission Modeling Toolkit. JAWP assisted OSD and JFCOM with outreach to CoComs, and completed a number of studies and analyses including an analysis of training and equipping indigenous forces to assume security functions, a study of process improvements for training foreign forces, a study on Joint Programming Guidance formulation and execution, and a Joint Staff study on the concepts-to-capabilities process.

FY 2006 Plans - JAWP will continue to focus on capabilities for conducting irregular warfare and the Global War on Terrorism. It will search for key technologies; continue design and execution support to JFCOM experimentation; continue analysis of operations, expanding to Horn of Africa; provide analytical support to Commander Multinational Forces Iraq; continue analyses of opponents' perspectives and strategies; and continue efforts to improve joint command organization and networking to support future concepts.

FY 2007 Plans - The JAWP will continue support of full spectrum transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align Department processes in ways that make them more responsive to the needs of CoComs and their subordinate forces.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Information Technology Backplane (ITB):	1.485	0.000	0.000

FY 2005 Accomplishments - New protocol development further enhanced national capabilities to link major joint experimentation facilities at US Joint Forces Command in Virginia with CoCom headquarters

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603727D8Z - Joint Warfighting**	**P727**

worldwide. With a very modest investment, this effort explored the means to "export" experimentation to joint warfighters at their headquarters. The ITB developed solutions for wide-area network connectivity for joint warfighting experimentation. ITB advanced the emerging Service Oriented Architecture Enterprise Services through the Evaluation Capabilities Modules efforts. Information assurance and other security technologies for ultra high bandwidth and networking technologies continued to be developed, tested and deployed.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Technology Feeder Support (TFS):	1.368	3.397	3.500

FY 2005 Accomplishments - Major efforts in FY-05 supported regional joint experimentation requirements of CoComs. US Pacific Command and US Southern Command were primary beneficiaries of this support. Both directed their funding to local initiatives including experimentation with capabilities fielded by Advanced Concept Technology Demonstrations.

FY 2006 Plans - As the Joint Capabilities Integration and Development System (JCIDS) is implemented by joint CoCom staffs, there is a rapidly escalating need for local joint experimentation to validate mission area requirements. It is anticipated that implementation of the Standing Joint Forces Headquarters and other Transformation efforts will likewise expand the demand for joint experimentation efforts tied to local conditions and requirements. Technology resources will be focused to support these efforts. This fund will continue to complement the larger US Joint Forces Command effort to provide centralized joint experimentation for force-wide capability development.

FY 2007 Plans - Continue to provide resources to CoComs for joint experimentation that addresses regional capability gaps and improves understanding of new technologies and concepts. Develop concepts for Joint Capabilities Technology Demonstration projects.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
DoD Adaptive Red Team (DART):	1.500	1.646	1.700

FY 2005 Accomplishments - DART provided direct support to US Pacific Command (PACOM) and US Southern Command. Several of these tasks focused on the effects of and countermeasures for biological threats. Counter narco-terrorism efforts were also prominent elements of the tasks undertaken. Its support to US Northern Command and US Forces Korea concluded; however, it began red team support to US Strategic Command on strategic deterrence and related areas. Urban Operations support to US Joint Forces Command was also initiated. ACTD support continued, including both Counter-Bomber 2 (CB2) and Active Denial System (ADS) efforts. Valuable technical, as well as employment and deployment considerations proved invaluable in refining the residual products for DOD. Best practices and Senior Advisory Group activities likewise continued.

FY 2006 Plans - The DART will again support JFCOM, JAWP and Joint Staff concept development and experimentation efforts. The DART expects to complete its work with PACOM on countering biological weapons, and will extend this work by providing red teaming and wargaming that can bring lessons learned to other CoComs. Efforts relating to combating terrorism, including SOUTHCOM work, will continue. Of note, an exercise to counter the effects of Weapons of Mass Destruction (WMD) with military and civilian officials in Argentina is becoming a key element of US efforts to cement positive military-to-military relations. In addition, it is expected that work with STRATCOM will continue, and work with other CoComs will be initiated. ACTD support will continue, as the DART expects to complete work on the CB2 and initiate red teaming of several new starts. Work on defining red teaming best practices will continue. A Senior Advisory Group will review the DART's activities and accomplishments, and recommend appropriate changes in focus and operations as required.

FY 2007 Plans - DART will continue to support the CoComs, JAWP and the Joint Staff concept development and experimentation efforts. Best practices and Senior Advisory Group activities will continue.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603727D8Z - Joint Warfighting**	**P727**

Joint Navigational Warfare	1.000	0.000	0.000

FY 2005 - The Joint Navigational Warfare is a program that is run by the National Security Agency (NSA) with oversight by OASD (NII). These funds were transferred to the appropriate program office for execution as directed by OASD (NII) to support the NSA project in accordance with the intent of Congress.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	207.818	170.275	158.334	164.696	177.936	182.380	177.252
P523	Advanced Concept Technology Demonstration (ACTD)	207.818	170.275	158.334	164.696	177.936	182.380	177.252

A. Mission Description and Budget Item Justification: The Department of Defense (DoD) initiated the Advanced Concept Technology Demonstration (ACTD) program in 1995 with the purpose of demonstrating new, mature technologies in an operational environment and the goal of getting new technology into the hands of the warfighter as quickly as possible. Early successes included the Predator and Global Hawk unmanned aerial vehicles (UAVs). As of year end FY05, DoD has started 144 ACTDs, a total of 64 ACTDs were in process, and 19 had been returned to the technology base or terminated. The program continues to demonstrate success in meeting urgent warfighter needs with 65 ACTDs contributing products that are/ were employed in Operation Iraqi Freedom (OIF) and/or Operation Enduring Freedom (OEF). Some of these ACTDs are completing their operational demonstrations in a wartime environment. A non-exhaustive list of ACTDs deploying products to either OIF or OEF includes: Language and Speech Exploitation Resources (LASER), Expendable Unmanned Aerial Vehicle (XUAV), and the Joint Explosive Ordnance Disposal (JEOD) projects. The streamlined approach to ACTDs brings together technologists and military operators, who together insert advanced technologies into live demonstrations, evaluating their military utility in the field, while tailoring operational concepts and tactics, techniques, and procedures (TTPs) for warfighter employment.

In FY 2006, the Deputy Undersecretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)) initiated a new business process, building on the successful ACTD program, to support the Department's transformational reform of addressing future threats from a capabilities focus versus the classical threat based viewpoint. The revised ACTD approach is called the Joint Capability Technology Demonstration (JCTD) program, and is based on proven, positive aspects of the ACTD program. The JCTD model specifically addresses congressional concerns and recommendations made by the General Accountability Office (GAO) regarding rapid development and transitioning of CoCom relevant capabilities to the joint warfighter in a more cost effective, timely and efficient model. Aligning closely with the thrust of with the Joint Staff's Joint Integration and Development System (JCIDS), JCTDs take a more balanced project candidate identification approach, shifting the overall program's focus to identifying specific warfighter capabilities needs up front (requirements pull), and then finding technology or concepts to address these needs, while maintaining the historical ACTD approach, where new technology is introduced to the warfighter to solve existing operational shortfalls (technology push). FY 2006 was the first year of a three to five year transition period from the current ACTD to the improved JCTD program. At the end of this transition period, JCTDs will replace ACTDs, providing an even faster process that rapidly provides demonstrated solutions to joint warfighter needs, and unique transformational capabilities through the application of new operational concepts or technology from the Science and Technology (S&T) domain, with resources aimed at carrying successful projects through the difficult transition stage ("S&T valley of death"). In FY 2006, the ten ACTD/JCTD new start projects consisted of six ACTDs and four JCTDs. To better support the transition of unique or niche operational capabilities, the JCTD business model includes the Defense Acquisition Executive (DAE) pilot program, designed to take a limited number of "joint peculiar" JCTDs past Milestone B, through System Development and Demonstration (SDD), into procurement, followed by initial sustainment---a "cradle to grave" approach. The DAE pilot program will provide overall programmatic oversight of JCTDs that are deemed uniquely joint/combined (i.e., capability directly supports more than one Military Service) and/or transformational.

The appropriation, Program Element (PE) and Budget Activity (BA) structure for the new JCTD process includes the following:

- JCTD PE 0603648D8Z (RDT&E/DW BA-3)
- JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)
- Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**

• JCTD Procurement (funded in Procurement Defense Wide, OSD Major Equipment: PE 0902198D8Z).

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources ($40 million) from the ACTD PE 0603750D8Z into these program element (PE)s. During the three to five year transition period, additional resources will be shifted into the various JCTD PEs from the ACTD PE, ultimately establishing a funding stream to support approximately ten new JCTDs each year. It is envisioned that the BA-3 JCTD PE will eventually replace the current ACTD BA-3 PE; however, during the transition period, the JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs to ensure continuity of ongoing ACTDs and program flexibility for the new JCTDs. JCTDs may be funded from both the ACTD and JCTD PEs during this transition period. During this period, the overall program will sometimes be referred to as the JCTD/ACTD program, to address the transitional nature of the process. JCTDs are initiated in Budget Activity three (BA-3) and are pre-acquisition demonstrations, characterized by Technology Readiness Levels 4, 5 or 6. Although not fully developed for production, these newly initiated JCTDs can provide a path for transition of Science and Technology to acquisition and are low-to-moderate risk vehicles for pursuing those objectives. The Defense Wide RDT&E funding managed DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including an "extended user evaluations," providing the Combatant Commanders, Services, Agencies, and operators with adequate time to address transition issues of supportability, maintainability and training identified by the JCTD/ACTD. As described, the JCTD Program will pioneer a transformational new model for Department of Defense acquisition with the addition of funding in BA4, BA5 and Procurement to provide a path for those capabilities that are so transformational that they require a purposeful transition to acquisition to address some of the transition concerns identified by the ACTD program.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	212.915	163.649	163.744
Current BES/President's Budget (FY 2007)	207.818	170.275	158.334
Total Adjustments	-5.097	6.626	-5.410
Congressional Program Reductions		-4.800	
Congressional Rescissions	-4.747	-2.774	
Congressional Increases	5.100	14.200	
Reprogrammings	-0.815		
SBIR/STTR Transfer	-4.635		
Other			-5.410

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Joint Capability Technology Demonstration (JCTD) PE	0.000	34.443	35.553	35.590	35.624	35.613	35.576	Continuing	Continuing

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**

0603648D8Z									
Joint Capability Technology Demonstration (JCTD) Transition PE 0604648D8Z	0.000	6.889	3.047	3.050	3.053	3.052	3.049	Continuing	Continuing
Defense Acquisition Executive (JCTD Pilot Program) PE 0605648D8Z	0.000	0.985	6.015	6.016	6.017	6.017	6.016	Continuing	Continuing
Procurement (JCTD Pilot), Major Equipment-OSD Def Wide PE 0902198D8Z	0.000	1.000	2.000	2.000	2.000	2.000	2.000	Continuing	Continuing

Comment: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined in the table below. Refer to the specific Budget Exhibit for more details on each funding line.

D. Acquisition Strategy The strategy for ACTDs has always been to focus on developing a transition path into a program of record or to establish a new program for those projects that show significant military utility. Under the new JCTD program, only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in the JCTD BA4 Transition PE and the DAE BA5 PE. Promising ACTDs may receive transition funding during the transition period to the JCTD program.

- Fifty percent of the products from at least 80% of all completing JCTDs will transition to acquisition programs of record, a GSA schedule, CoCom sustainment or, in the case of software-based products, into operationally-sustained systems (such as the Global Command and Control System (GCCS).
- JCTD/ACTDs completing ACD&P will be at TRL 6 or 7 and a logical progression of program phases to include development and funding will be established via a documented transition plan.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07	Selection focus					
	Ability to spiral technologies					
	Independent assessment of the technology					
	Adequately resourced projects					
	Complete a final					

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**

	demonstration					
	Number of successful capabilities transitioned					

Comment: The majority of funding from this Program Element is forwarded to the Services/Defense Agencies that execute the individual ACTD projects. DUSD(AS&C) maintains and provides overall programmatic oversight for the ACTD program, to include the individual ACTD projects. The JCTD/ACTD 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. The table below defines these metrics and helps compare/contrast the current ACTD program with the new JCTD business process model.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**	**P523**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P523	Advanced Concept Technology Demonstration (ACTD)	207.818	170.275	158.334	164.696	177.936	182.380	177.252

A. Mission Description and Project Justification: The Advanced Concept Technology Demonstration (ACTD) program began in 1995 with the purpose of demonstrating new, mature technologies in an operational environment and a goal of getting new technologies into the hands of the warfighter as quickly as possible. A key ingredient to the relevant and rapid insertion of technology is the ability for an ACTD to be initiated faster than the traditional two year DoD Planning, Programming, Budgeting, and Execution (PPBE) process. Each year the President's Budget submission provides resources for the next slate of ACTDs which are just beginning their selection process. This allows a rapid/accelerated technology insertion process which helps maintain relevancy to the warfighters, compared to a "standard" PPBE process which requires a minimum of two years to initiate new technologies to begin development for a demonstration several years later. The goal is to speed up the acquisition process by operationally demonstrating capabilities, looking for an eighty percent solution so an acquisition decision can be made quicker---a "try before you buy" approach. ACTDs are selected by the Combatant Commanders (CoComs) and the Services. Oversight is provided by the Deputy Under Secretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)). Each year, DUSD(AS&C) forwards a new slate of ACTD to the Joint Staff for mission need validation (capability shortfall validation under JCIDS). Upon JROC validation, the Department informs congress of the new ACTDs, and projects are usually initiated within a few weeks of selection (depending on budget enactment). This selection and validation process can occur in as little as nine months, but is usually based on an annual review process. Each ACTD is included in the Joint Warfighting Science and Technology Plan (JWSTP) as a Defense Technology Objective (DTO) to help leverage the technology being demonstrated and avoid duplication within the Department.

In FY 2006, the Deputy Undersecretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)) initiated a new business process, building on the successful ACTD program, to support the Department's transformational reform of addressing future threats from a capabilities focus versus the classical threat based viewpoint. The revised ACTD approach is called the Joint Capability Technology Demonstration (JCTD) program, and is based on proven, positive aspects of the ACTD program. The JCTD model specifically addresses congressional concerns and recommendations made by the General Accountability Office (GAO) regarding rapid development and transitioning of CoCom relevant capabilities to the joint warfighter in a more cost effective, timely and efficient model. Aligning closely with the thrust of with the Joint Staff's Joint Integration and Development System (JCIDS), JCTDs take a more balanced project candidate identification approach, shifting the overall program's focus to identifying specific warfighter capabilities needs up front (requirements pull), and then finding technology or concepts to address these needs, while maintaining the historical ACTD approach, where new technology is introduced to the warfighter to solve existing operational shortfalls (technology push). FY 2006 was the first year of a three to five year transition period from the current ACTD to the improved JCTD program. At the end of this transition period, JCTDs will replace ACTDs, providing an even faster process that rapidly provides demonstrated solutions to joint warfighter needs, and unique transformational capabilities through the application of new operational concepts or technology from the Science and Technology (S&T) domain, with resources aimed at carrying successful projects through the difficult transition stage ("S&T valley of death"). In FY 2006, the ten ACTD/JCTD new start projects consisted of six ACTDs and four JCTDs. To better support the transition of unique or niche operational capabilities, the JCTD business model includes the Defense Acquisition Executive (DAE) pilot program, designed to take a limited number of "joint peculiar" JCTDs past Milestone B, through System Development and Demonstration (SDD), into procurement, followed by initial sustainment---a "cradle to grave" approach. The DAE pilot program will provide overall programmatic oversight of JCTDs that are deemed uniquely joint/combined (i.e., capability directly supports more than one Military Service) and/or transformational.

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources ($40.000 million) from the ACTD PE 0603750D8Z into the JCTD specific program element (PE)s. During the three

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**
	PROJECT **P523**

to five year transition period, additional resources will be shifted into the various JCTD PEs from the ACTD PE, ultimately establishing a funding stream to support approximately ten new JCTDs each year. It is envisioned that the BA-3 JCTD PE will eventually replace the current ACTD BA-3 PE; however, during the transition period, the JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs to ensure continuity of ongoing ACTDs and program flexibility for the new JCTDs. JCTDs may be funded from both the ACTD and JCTD PEs during this transition period. During this period, the overall program will sometimes be referred to as the JCTD/ACTD program, to address the transitional nature of the process. JCTDs are initiated in Budget Activity three (BA-3) and are pre-acquisition demonstrations, characterized by Technology Readiness Levels 4, 5 or 6. Although not fully developed for production, these newly initiated JCTDs can provide a path for transition of Science and Technology to acquisition and are low-to-moderate risk vehicles for pursuing those objectives. The Defense Wide RDT&E funding managed DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including an "extended user evaluations," providing the Combatant Commanders, Services, Agencies, and operators with adequate time to address transition issues of supportability, maintainability and training identified by the JCTD/ACTD. As described, the JCTD Program will pioneer a transformational new model for Department of Defense acquisition with the addition of funding in BA4, BA5 and Procurement to provide a path for those capabilities that are so transformational that they require a purposeful transition to acquisition to address some of the transition concerns identified by the ACTD program.

AS&C will introduce a new business process as DoD shifts from a threat based to a capability based focus. The ACTD program will be replaced by the JCTD program in a 3-5 year transition period beginning in FY 2006. Emphasis will be placed on serving the unique requirements of CoComs, with coalition and transformational aspects highlighted. A strong commitment to early and aggressive transition management will aim to sustain the capabilities demonstrated. Coalition partnerships and Joint Staff JCIDS integration will characterize support efforts. JROC validation of FY 2006 projects has been accomplished. Numerous demonstrations will be conducted for ongoing ACTDs. FY 2007 candidates will be reviewed in February 2006. Funding will continue for active ACTDs initiated from 1997 to 2005 that have completed or transitioned. Congressional increases totaled $14.200 million. The Department estimates starting ten new JCTD/ACTDs in both FY 2006/2007.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Rosetta STONE	1.000	0.000	0.000

Rosetta STONE (Single integrated picture Topology-driven Optical Nonlinear Engine—SIP-STONE) is a promising joint enabling technology. The Department will develop this enabling technology capable of integrating multi-source sensor data/track inputs from all available sources, correlating the data and fusing it into a single integrated picture. The technology combines the Rosetta gateway technology from the LINK 16 ACTD (1999) that enables multi-datalink translation and forwarding of data with the STONE optical correlator to provide near real-time fusion, sensor registration and correlation of information sources. The overall objective is to reduce engagement decision time, improve target location estimates, and provide enhanced combat identification (CID) from disparate sensors. USJFCOM is the operational manager of the SIP-STONE enabling technology.

- FY 2005 - Operational demonstration of Rosetta STONE full capability at demonstration during Limited Technology Experiment I aboard CVN-72 USS Abraham Lincoln during the 16-18 September 2005 Live-Fly exercise.
- FY 2006 - Transition to Navy.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Secure Hardware Data Encryption Device (SecureD)	2.000	1.000	0.000

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603750D8Z - Advanced Concept Technology Demonstration (ACTD)**	**P523**

Since 2003 Congress has provided additional resources for the Secure Hardware Data Encryption Device (SecureD) project. The Department will develop an enabling capability to insert encryption methods to protect information at rest by interrupting the data bus to hard disk drive path within the computer, improving operational security in the event of lost or overrun computer assets.

• FY 2005 - Completed Federal Information Processing Standards (FIPS 140-2 Level 3) evaluation and certification process. Nearing completion of Common Criteria certification process through independent NIST/NIAP laboratory testing. National Security Agency is conducting assurance analysis of product. Commercial production processes are in place to provide limited number of products for DoD implementation. Miniaturization process and production process for laptop form factor is complete. SecureD products provided for reality based operational scenarios. Completed design work for a certifiable cryptographic key management system (KMS) that will work in conjunction with SecureD.

• FY 2006 - (If funded) will complete development and certification of SecureD KMS. Continue and expand reality based operational scenarios with DoD and other federal government agencies. Expand interface capability of SecureD to include Serial ATA capability of next generation equipments. Provide proximity keying capability to simplify operational implementation. Develop an acquisition strategy for reduced cost organizational deployment.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Remote Unattended Sensing System (RUSS)	1.050	0.000	0.000

Development, design and technology integration of RUSS into the Bio Ops Plan. RUSS will provide a modular platform for a variety of sensors that are able to detect biological warfare activity over long periods of time in a variety of sites, including remote or hostile/denied locations. RUSS will provide remote connectivity to these sensors over a variety of military and commercial networks and radio links. RUSS will support force and area protection requirements for CoComs and civil authorities. RUSS will accept a wide variety of present and future sensors and communications devices.

• FY 2005 - Continue FY 2004 activities. Develop, test, and demonstrate RUSS hardware and software in conjunction with scheduled NVESD CUA ACTD exercises. Demonstrate flexible connectivity with COTS sensors and a wireless network. Integrate results with existing tagging, tracking, and locating (TTL) initiatives.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
JP-8 Pilot Program (see note on funding)	0.000	3.600	0.000

Note 1: * $4.500 million funded in FY 2005 RDT&E , Army Appropriation, page 251, line 14 under Combat Vehicle and Automotive Technology Note 2: *$3.600 million for FY 2006 RDT&E, Defense-wide, under 0633750D8Z Adv. Concept Tech Demos as shown in HAC Report 109-119, June 10, 2005 and $18.000 million for FY 2006 RDT&E, Defense-wide, under 0633750D8Z Adv. Concept Tech Demos as shown in SASC Report 109-69, May 17, 2005. This project is to investigate the feasibility and merits of a capability to produce in-theatre, from local natural gas, a single synthetic fuel that is usable in ground vehicles, aircraft, and ships. The products of this effort will be test reports and evaluations, feasibility study reports, engineering design studies, and concept of operations. The three key areas of this effort will be: 1) definition of the necessary chemical formulation, optimize the hull design for the barge mounted plant, military usefulness of a modular size plant.

• FY 2005 - Continue Military Utility Assessment for modular synthetic fuels plants having a capability of providing fuel, power and water to forward-based forces. Continue development of a formulation for synthetic JP-8 / JP-5.

• FY 2006 - Pre-certification research and testing of freely interchangeable synthetic JP-8/JP-5, particularly testing of the near-term solution based on formulations of synthetic JP-8/JP-5 blended with conventional JP-8/JP-5. Pre-certification evaluations of blend formulations in some DoD ground equipment.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Anti-Terrorist Explosive Ordnance Disposal Real Time Mission Support System	0.000	1.000	0.000

This project is being evaluated for consideration as a potential enabling technology for various ACTD/JCTDs. If an acceptable ACTD/JCTD project(s) cannot be identified, DoD will request the congressional committees approve the redirection of the funds to an appropriate program element under the "prior approval" process established for congressional interest line-items.

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Homeland Security Command/Control Demo	0.000	1.000	0.000

For A Joint Program Involving Louisiana National Guard The South La Economic Council Nicholls State University And Louisiana State Police. Program To Be Conducted With Nicholls State University Facilities.) ATL Congressional liasion currently researching.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Crossed Field Radiation Technology	0.000	1.000	0.000

This project is being evaluated for consideration as a potential enabling technology for various ACTD/JCTDs. If an acceptable ACTD/JCTD project(s) cannot be identified, DoD will request the congressional committees approve the redirection of the funds to an appropriate program element under the "prior approval" process established for congressional interest line-items.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Low Cost Autononomous Attack System	1.000	0.000	0.000

Technical error, transferred to the Air Force for execution.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Spike Missile Development and Production	0.000	1.500	0.000

This project is being evaluated for consideration as a potential enabling technology for various ACTD/JCTDs. If an acceptable ACTD/JCTD project(s) cannot be identified, DoD will request the congressional committees approve the redirection of the funds to an appropriate program element under the "prior approval" process established for congressional interest line-items.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Platform Test bed for Advanced Sensors (PTAS)	1.000	3.000	3.000

The JCTD/ACTD program has a critical need for a medium-high altitude airborne platform test bed to support worldwide projects and demonstrations of various technologies ranging from scientific/experimental to operational/intelligence missions. NASA currently operates the sole remaining operational long-wing WB-57 aircraft. These aircraft have been determined useful to support the JCTD/ACTD program as a demonstration platform of new technologies. The JCTD/ACTD program will provide resources to NASA via the USAF using an Interagency Agreement. DUSD (AS&C) will help establish mission requirements & priorities, defining payload configurations, and the demonstration/testing schedule. NASA will provide maintenance support for the aircraft and engineering support for payload integration. The JCTD program estimates 200 flight hours will be required annually beginning in FY 2006. Support also includes use of hangar and office space for experiment planning/data processing.

- FY 2005 - Program initiation, commence flight hour program for demonstrations and testing.
- FY 2006 - Approximately 200 planned flight hours for technology demonstrations and testing.
- FY 2007 - Approximately 200 planned flight hours for technology demonstrations and testing.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CINC 21	0.400	0.000	0.000

Develop, demonstrate, assess and transition the concept of operations, hardware and software necessary to provide a theater Combatant Commanders with a command and control (C2) environment that addresses improved situational awareness and decision making tools across multiple simultaneous crisis operations and theater engagement activities. The User Sponsor is PACOM.

• FY 2005 Accomplishments - The ACTD completed in FY 2004, however, a small portion of FY 2005 was issued to maintain an operating environment that supports the Extended User Assessment. The funds ensured CINC 21/CRASOC was integrated with and is compatible with emerging technology and the Concept of Operations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Aerial Surveillance and Reconnaissance (CAESAR)	0.600	0.000	0.000

Provided near-real-time, exploited ground surveillance data to multiple echelons of command between critical NATO allies. Developed a concept of operations and tactics, techniques and procedures for coalition employment of ground moving target indicators (GMTI) and synthetic aperture radar capability. U.S. Training and Doctrine Command System Manager / Joint STARS was the operational sponsor.

• FY 2005 Accomplishments - Conducted final integrated simulation exercise and utility assessment at the NATO Communications, Command and Control Agency, to test implementation of STANAG 4607 by the seven CAESAR participating nations (Canada, France, Germany, Italy, Norway, the United Kingdom, and the United States). Published final military utility assessment report. Transitioned products to NATO STANAGs and U.S. concepts of operation, and tactics, techniques, and procedures, as overseen by the Air Force Command and Control, Intelligence, Surveillance, and Reconnaissance Center. Concluded interim capability support phase to complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Active Network Intrusion Defense (ANID)	1.200	0.000	0.000

Improve DoD's ability to protect, monitor, analyze, detect, and respond to unauthorized activity within DoD information systems and computer networks. ANID will improve response time and provide autonomic response capabilities to network intrusions, as well as improving collaboration between agencies to demonstrate a capability for responding in real-time to network intrusions by making changes to network devices like routers, firewalls, intrusion sensors, etc. The user sponsor is U.S. Strategic Command.

• FY 2005 Accomplishments - Installed ANID test suite at Naval Postgraduate School for Military Utility Assessment (MUA) readiness evaluation. Coordinated change in MUA venue with user sponsor to USSOUTHCOM. Negotiated sustainment responsibilities between Defense Information Systems Agency (DISA) and USSOUTHCOM. Conducted MUA, and transitioned residuals for sustainment by DISA at the USSOUTHCOM MUA sites for Extended User Evaluation. Completed the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Adaptive Battlespace Awareness (ABA)	1.700	0.000	0.000

Demonstrate the potential of the Global Command and Control System (GCCS) Common Operating Picture (COP) to provide relevant information to support Combatant Commanders. ABA enhancements to the COP are configuring information and COP views to meet specific, time-sensitive mission requirements. The user sponsor is U.S. European Command.

• FY 2005 Accomplishments - Demonstrated and assessed additional logistics-based common operational picture spiral for EUCOM and CENTCOM, as well as incorporated extended user evaluations of residuals. Additional spiral will provide COP display of logistics in-transit visibility in support of OIF. Finalize concept of operations. Execute plan for transitioning ABA into GCCS-I3. Complete final MUA report. Completed the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Advanced Tactical Laser (ATL)	3.500	1.200	0.000

Integrate a moderate power laser, uncoiled optics, and existing fire-control systems onboard a C-130 aircraft. The user sponsor is U.S. Special Operations Command.

• FY 2005 Accomplishments - Began testing the ATL ACTD subsystems and continued the MUA. Commenced component integration and testing (i.e. beam director fabrication complete and system delivered, turret extension/retraction system complete and delivered, weapons system station delivered and partially assembled, optical bench populated and ready for installation, and laser optical bench delivered). C-130 test aircraft has been modified and certified for ACTD testing. Ground testing of the surveillance and beam control systems and begin integrating them onto the C-130 aircraft begun. Continued work on assembly, integration, and test of the high-power flight test laser module. Complete modifications of the integration and test facilities at Kirtland AFB, NM.

• FY 2006 Plans - Begin flight test of the ATL ACTD system and continue the MUA. Initial flight with surrogate laser scheduled for April/May time frame. Complete build-up, integration and ground test of the high-power flight test laser module and integrate the entire ATL ACTD system on the C-130 host aircraft. Complete ground verification tests of the entire integrated ATL system. Commence integrated system flight testing.

• FY 2007 Plans - USSOCOM will complete the MUA and commence interim capability support (if warrented), using component resources.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Advanced Technology Ordnance Surveillance (ATOS)	0.700	0.000	0.000

Demonstrate a system that will provide ordnance managers (and therefore the warfighter) near real-time total asset visibility (i.e. war reserve storage, battlefield distribution, and the environmental piece of in-transit) of their ordnance stockpile while also providing data for predictions of future condition and performance. The user sponsor is U.S. European Command.

• FY 2005 Accomplishments - Integrated flat file output of ATOS system for input into Ordnance Information System (OIS). OIS Retail availability scheduled for October 2005. Implemented/verified valid corrections for all recommended changes from the Military Utility Assessment (MUA). Finalized and presented MUA Outbrief to OSD and user sponsor. Completed the finalization of a joint CONOPS, joint transition plan, and joint specifications. Work with Naval Postgraduate School on independent cost benefit analysis (CBA). Pursued MIL-SPEC or STANAG for ATOS specifications. Continued installation planning for pilot implementation sites. Install ATOS system at select sites as determined by resource sponsor. Worked Service POM issues and continued to pursue Services buy-in for RFID/MEM POM lines utilizing the ATOS specifications as a minimum baseline. ACTD completed.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Combat Identification (CCID)	2.900	1.800	0.000

Demonstrates and transitions CCID solutions that significantly reduce fratricide and enhance combat effectiveness of allied and coalition forces operating in both traditional and ad-hoc coalitions. Joint Forces Command (JFCOM), in conjunction with Allied Transformation Command, is working with the coalition partners to conduct the final ACTD demonstration in the United Kingdom, September 2005. JFCOM is the User Sponsor.

• FY 2005 Accomplishments - Technically tested the RBCI Air SINCGARS (ASIP) Improved Radio and Digital Knee-Board interface integrated on to an Apache Aircraft and RBCI ASIP on to UAV. Technically demonstrated RBCI interface with Fixed Wing CAS aircraft. Technically tested different analogue and digital RF Tags in preparation for 2005 Operational Demonstration. Continued development of CONOPS, TTPs and training package. Conducted the final ACTD operational demonstration day missions and Joint Military Utility Assessment of the NATO BTID, RBCI and RF Tags. Continued development of transition strategy.

• FY 2006 Plans - Complete final ACTD operational demonstration and Joint Military Utility Assessment of the NATO BTID, RBCI and RF Tags. Implement execution of the transition plan including Extended User Evaluation. Finalize CONOPs, TTPs and training package. Complete the CCID ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Theater Logistics (CTL)	0.300	0.000	0.000

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Integrate deployment planning tools among coalition forces. The user sponsor is U.S. Pacific Command.

• FY 2005 Accomplishments - Complete migration of capability to CENTRIXS Network and conduct operational testing with Australian Defense Force, USPACOM, and USTRANSCOM. Completed the ACTD.

• FY 2006 Plans - Complete transition of CTL applications on CENTRIXS Network.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Hunter Standoff Killer Team (HSKT)	4.100	1.500	0.000

Integrate and demonstrate joint precision targeting of time sensitive targets at standoff ranges and reduced sensor-to-shooter timelines using manned/unmanned aircraft teams and cognitive decision-aiding technologies, and transition into Programs of Record (POR). The User Sponsor of HSKT ACTD is PACOM. The ACTD's top level metrics include increased identification range for manned rotorcraft systems and standoff range for weapons engagement, reductions in mission planning, mission execution times and battle damage assessment timelines, and increased lethality and survivability.

• FY 2005 Accomplishments - Completed final software builds for Maneuver Commander's Associate (MCA) and Warfighter's Associate (WA), providing capability for AH-64 and Army Airborne Command and Control Systems (A2C2S) helicopters to control UAV with 3 sensor Multi-mission Optical Stabilized Package (MOSP). Completed ground and flight testing of Hunter UAV with Tactical Common Data Link (TCDL) and 3 Sensor MOSP. Completed all hardware in the loop integration, ground and flight tests of the MCA A2C2S and WA Longbow Apache systems. Integrated Link 16 precision targeting upgraded message sets (J3.5C3) into the F/A-18, and conducted A2C2S MCA, UAV, and F/A-18 Joint Stand-off Weapon (JSOW) demonstration. Completed Link 16 A2C2S system testing with F-15. Completed both manned / unmanned warfighter training simulation and ground and flight tests between MCA A2C2S, AH-64 WA and Hunter UAV (3S MOSP Configuration). Continued development of CONOPs / TTPs, training package. Continued implementation of transition strategy and plan.

• FY 2006 Plans - Complete system flight demonstration and evaluations involving UAV, AH-64D WA, A2C2S MCA and F/A-18. Complete manned / unmanned teaming warfighter training and conduct operational demonstrations. Complete Extended User Evaluation (EUE) of residual package. Complete Operational Demonstrations and Joint Military Utility Assessment (JMUA). Continue coordination with joint and service organizations to refine / complete the Transformation Change Package focusing on Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) recommendations. Finalize CONOPS / TTPs and Training package. Complete the HSKT ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Network-Centric Collaborative Targeting (NCCT)	1.900	0.600	0.000

Network operational intelligence, surveillance, and reconnaissance sensors to significantly improve the capability to detect, identify, and geo-locate time-critical targets. The user sponsor is U.S. Central Command.

• FY 2005 Accomplishments - Resolved action items from the IMUA. Selected interim communications capability. Initiated transition of USAF specific elements of program. Live-Fly Demonstration to include US Navy participation and UK NIMROD using interim (transition) network communications system originally estimated for Third Quarter FY 2005 is now First Quarter FY 2006 (exercise scheduling issue).

• FY 2006 Plans - Complete final Military Utility Assessment (MUA) in Dec 05. Report out final results. Conclude interim capability support phase and complete the ACTD.

• FY 2007 Plans - ACTD completed.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Personnel Recovery Extraction Survivability Aided by Smart Sensors (PRESS)	0.200	0.000	0.000

Demonstrate and transition near real-time, automated, precision evader location and tracking systems, enhanced survivability and situational awareness technologies. Develop Concept of Operations (CONOPs) and Joint Tactics, Techniques and Procedures (JTTPs). Joint Forces Command JFCOM is the User Sponsor.

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• FY 2005 Accomplishments - Conducted Silent Hammer Exercise demonstrating PRESS ACTD Global Personnel Recovery System (GPRS) ability to provide near real time tracking and communication for isolated personnel and ground Special Operations Forces. Continued development of GPRS Single Card Solution (SCS). Assessed version 1.0 prototype of GPRS SCS functionality and space relay capability. Continued transition activities and initiated acquisition of PRESS ACTD GPRS for follow-on development, procurement and fielding pending successful JMUA. Continued development of CONOPs, TTPs, training package and Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF) recommendations.

• FY 2006 Plans - Conduct a Joint Military Utility Assessment of the GPRS Network Interface Card integrated into a survival radio in an operational demonstration. Complete the PRESS ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Theater Integrated Planning Subsystem (TIPS)	0.300	0.300	0.000

Automate and network the current manual processes to produce decision documents to assist in weapons of mass destruction targeting for the theater Combatant Commanders. The user sponsor is U.S. Strategic Command.

• FY 2005 Accomplishments - Completed Final Report (Assessment dated September 2004), Final ACTD demo conducted April 2005. Incorporated TIPS (as an extant system) for inclusion into the USSTRATCOM Integrated Strategic Planning and Analysis System (ISPAN) modernization effort, beginning FY 2005. Completed "dynamic publish" capability (referred to as Strike Planning Project), which is a Java 2 Enterprise Edition (J2EE), NCES (net-centric) capability for customers to create the Global Strike Support Documents (GSSDs) 'on the fly'—dramatically reduced publish time of GSSD (June 2005) Also allows users to: Create Theater-specific objectives; Select weapon combinations from pre-defined lists; Delete targets from tree, selectively; Incorporated Course of Action (COA) build and decision matrix tool.

• FY 2006 - Complete Web services interface as part of the ISPAN modernization effort, Allows users to "pull" specific target data for use in various applications. Complete development of TIPS application as a Web-based application. Complete residual support phase and end the TIPS ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Active Denial System (ADS)	3.500	3.700	0.000

Demonstrates a breakthrough, non-lethal technology that uses millimeter wave electronic energy to stop, deter, and turn back an advancing adversary from a relatively long range. The user sponsor is U.S. Joint Forces Command.

• FY 2005 Accomplishments - Human effects testing completed. Two military utility assessments (MUA's) completed for the USAF and US Army. Independent assessment by continues. Continued work to optimize system/operator interfaces, tactics, techniques and procedures. Review of legal, treaty, human effects, and exposure limits complete. CONOPS approved by JROC. Initial planning for possible deployment complete.

• FY 2006 Plans - Residual delivered to transition manager for extended user evaluation. Conclude interim capability support phase. Complete extended user evaluation and assessment. Complete the ADS ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Agent Defeat Warhead (ADW)	4.100	0.000	0.000

Demonstrate a high temperature, thermal radiation, incendiary, kinetic energy penetrator warhead to destroy biological and chemical manufacturing and storage facilities. Provide a robust means to neutralize chemical/biological agents while minimizing collateral damage. Efforts are on-going to secure DTRA and service support to develop a robust agent defeat capability for DoD. Lack of counter-WMD mission assignment to a force provider is impeding progress and collaboration on this ACTD and issues are being discussed in QDR 2005 workgroups. Secured assistance of ATSN/CBRNE in achieving this important capability. The user sponsor is U.S. Central Command.

• FY 2005 Accomplishments - Conduct and complete full scale lethality testing with the Defense Threat Reduction Agency (DTRA) and the Air Force Operational Test & Evaluation Center

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(AFOTEC). Results to be briefed at Fall 2005 Oversight Review Group to decide way ahead for the ACTD and pursue full partnership with DTRA and the military services to develop a weaponized agent defeat capability.

• FY 2006 Plans - Develop prototype weapons for operational assessment and demonstration. Conduct flight testing against biological and chemical targets with stimulant agent. Complete fabrication of the residual round and commence interim capability support phase. Conduct demonstrations. Complete the ACTD and transition to SD&D phase by a force provider assigned the mission of supplying this capability to the warfighting combatant commands.

• FY 2007 Plans - Transition with US Navy and Air Force for robust agent defeat capability.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Agile Transportation (AT21)	0.900	0.000	0.000

Demonstrate capability to optimize and schedule all transportation requirements (personnel and equipment) against available lift assets for movement to, from, and within the various theaters of operation; afford continuous visibility into asset management processes; flexibility to address changing and partially defined requirements. Improves quality of service for Joint force and component customers and enables US Transportation Command (USTRANSCOM) to efficiently and effectively manage the assets, infrastructure and resources to support the warfighting commander in a parallel and continuous battlespace. The user sponsor is U.S. Transportation Command.

• FY 2005 Accomplishments - Conducted initial Military Utility Assessment (MUA) at USTRANSCOM demonstrating collaborative capability. MUA participants included USTRANSCOM, U.S. Central Command (USCENTCOM) in Tampa, and USCENTCOM DDOC (CDDOC) in Kuwait. Installed and fielded a residual capability of collaborative tool. USTRANSCOM initiated acquisition of process control and optimization/scheduling for operational use.

• FY 2006 Plans - Complete technical hardening of the collaboration software and user training as first steps in the transition effort. Conclude transition activities and interim capability of TRANSVIZ / Web Services Read and Writeback from/to Global Command and Control System to CoComs.

• FY 2007 Plans - Deploy TransViz to all CoComs. Demonstrate deliberate planning capability. Conduct final Military Utility Assessment. Transition deliberate planning capability to programs of record. Complete ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Boundary Step (BS)	0.600	0.000	0.000

Demonstrated tools and techniques for destruction of certain weapons of mass destruction production facilities. The user sponsor is U.S. Special Operations Command. ACTD is complete.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Contamination Avoidance at Seaports of Debarkation (CASPOD)	1.200	1.200	0.000

Demonstrate contamination avoidance at seaports of debarkation. The user sponsor is U.S. Central Command.

• FY 2005 Accomplishments - Transitioned technology and lessons learned. Procured equipment involved 13 different items ranging from "cherry pickers" to chemical paper. Residual training was conducted in USCENTCOM AOR and CONOPS and TTP's are presently being used in theater, which, as a result, is better prepared for Chemical/Biological attack.

• FY 2006 Plans - Conclude the interim capability support phase. Complete the CASPOD ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Information Assurance Common Operational Picture (CIA COP)	0.600	0.000	0.000

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Demonstrate detailed information assurance and situational awareness of the information system security status of all mission critical systems on a near- or real-time basis in support of Combatant Command and coalition missions. Permit the commander and staff to rapidly assess mission related impacts caused by Information Technology (IT) infrastructure degradation or attack.

• FY 2005 - Terminated technology development activities to pursue requirements satisfaction through commercial tools integration. Extensive market survey and user sponsor coordination to refine Coalition IT Performance Monitoring requirements, IT Risk Monitoring, Geographical Display and Coalition Collaboration proved commercial tools capabilities were not yet mature enough to deliver the breadth of capability required by the ACTD. Provided significant user requirement exposure to commercial vendors which will lead to more operationally useful and cost effective capabilities. With concurrence of user sponsor, terminated the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Expendable Unmanned Aerial Vehicle (XUAV)	0.600	0.000	0.000

Demonstrate covert delivery of off-board sensors, tactical surveillance, battle damage assessments and weapons of mass destruction monitoring without risking personnel. The user sponsor is U.S. Special Operations Command.

• FY 2005 Accomplishments - Resolved MUA after-action items resulting in product improvements for the ALERT baseline system (WSADS) and shortened SDD for the HAWKEYE glider-based payload delivery system. Completed the ACTD.

• FY 2006 Plans - Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Homeland Security Command and Control (HLS C2)	4.300	2.500	0.000

Refine and transition technologies and operational concepts that support the Homeland Security and Homeland Defense missions assigned to the Department of Defense. The user sponsor is U.S. Northern Command.

• FY 2005 Accomplishments - Continue development of concept of operations in conjunction with US Northern Command in order to optimize currently fielded HOLS and ASOCC capabilities. Expand functionality to participating civil agencies and municipalities including the Department of Homeland Security, US Marshal Service, and Bureau of Alcohol, Tobacco and Firearms. Demonstrate utility and develop concepts of operations to employ current capabilities in conjunction with first responder command and control tools to protect military related critical infrastructure facilities within the continental United States.

• FY 2006 Plans - Continue initial operations support to NORTHCOM, PACOM, other COCOMS and selected non-DoD users. Update CONOPS and training based on user feedback, Develop and implement detailed transition plans to programs of record including Net-Centric Enterprise Services, GCCS, and JC2 for AT/FP activities not covered by these programs, work with JROC process to establish requirements and out-year resources.

• FY 2007 Plans - Complete transition activities, conclude interim capability support phase and end the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Hyperspectral Collection and Analysis (HYCAS)	0.900	0.400	0.000

Demonstrates the utility of a deployable hyperspectral system allowing the end user to utilize intelligence derived from spectral data in a tactical environment while providing the Warfighter with an end-to-end hyperspectral capability. Demonstrates the ability of hyperspectral (HSI) to address critical needs via a calibrated HSI sensor. The user sponsor is U.S. Central Command.

• FY 2005 Accomplishments - Completed integration of the AF-COMPASS sensor onboard MQ-1 Predator. Integrated processing, exploitation and dissemination system in Predator Ground Control Station. Performed the final Joint Military Utility Assessment with AF-COMPASS integrated onto Predator, utilizing a high-altitude hyperspectral sensor on a Proteus aircraft (SPIRITT ATD). Began transition of tactical hyperspectral sensor system to Aeronautical Systems Center.

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• FY 2006 Plans - Continue transition of tactical hyperspectral sensor system to Aeronautical Systems Center. Complete the HYCAS ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Distance Support and Response (JDSR)	2.700	2.500	0.000

Demonstrates and transitions joint, common, interoperable, tele-maintenance environment using a collaborative knowledge center and tool suite, with reach-back capability. JDSR ACTD focuses on timely employment of information, both automated and live, to the different service maintainers. Some of the top-level metrics include operational bandwidth in a common collaborative environment, access to multiple subject matter experts, technical information at point of maintenance, interoperable tool suites and maintainer productivity. Planned transition will be to Distance Support (DS), Joint Aviation Technical Data Integration (JATDI), Integrated Maintenance Data System (IMDS), Third Echelon Test Set (TETS) and Technical Data Distribution (TEDD) programs. The User Sponsor is USJFCOM.

• FY 2005 Accomplishments - Continued implementation of the transition strategy including conduct of Extended User Evaluation (EUE) of residual package and follow-on development, acquisition and fielding. Completed the integration of JDSR ACTD with Joint Explosive Ordnance Demonstration (JEOD) ACTD. Continued EUE of residual packages including JDSR / JEOD ACTDs interoperability. Continued development of CONOPs, TTPs, training package and DOTML-PF recommendations. Upgraded common business process with modeling and simulation as needed for establishing joint common maintenance processes based on preliminary EUE results. Continued transition of JDSR products to Program of Records. Initiated fielding of JDSR products.

• FY 2006 Plans - Complete EUE. Finalize CONOPs, TTPs, training package and DOTML-PF recommendations. Continue transition of JDSR products to the POR. Complete the JDSR ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Explosive Ordnance Disposal (JEOD)	0.600	0.600	0.000

Demonstrate a new integrated capability for joint and coalition explosive ordinance disposal forces to meet the evolving, asymmetrical, and sophisticated chemical, biological, radiological, nuclear, and high yield explosive terrorist threats. The user sponsor is U.S. Pacific Command. Metrics include existence of new CONOPS; degree to which in-theater operatives can achieve operational reach-back connectivity to a JEOD MSC ; extent to which connectivity can be achieved to Subject Matter Experts (SME) and web sites; and operational feasibility of CONOPS, TTP, and integrated equipment.

• FY 2005 Accomplishments - Transitioned Joint Digital Information Gather System (JDIGS) to Navy support. Decision Support System capabilities technically integrated into the Horizontal Fusion portfolio of systems and users. Completed final ACTD Operational Demonstration and Military Utility Assessment. Complete Capabilities Development Document. Coordinate deployment with MNC-I.

• FY 2006 Plans - Field initial operational capability. Commence interim capability support phase. Complete network system security accreditation. Transition tools into EOD advanced IED training. Complete final ACTD reports.

• FY 2007 Plans - Complete interim capability support phase and complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Language and Speech Exploitation Resources (LASER)	0.700	0.000	0.000

Demonstrate technologies, concepts, and architecture paths providing language translation capabilities with improved interoperability, accuracy, deployability and timeliness of translation for speech and document exploitation. Assessments include users within the sponsoring Pacific Command, as well as warfighters in other combatant commands and INSCOM with immediate and critical language translation needs in the Global War On Terrorism. Products from LASER have been deployed for operational use in OEF and OIF. The user sponsor is U.S. Pacific Command.

• FY 2005 Accomplishments - Conducted limited utility assessments on more language translation tools and a final capstone military utility assessment report. Provided machine language translation tool residuals in combatant command areas other than the sponsor's area of operations.Continued fielding interim products for demonstration and extended user evaluations in coalition and intelligence operations. Finalize concepts of operations and tactics, techniques and procedures for user adoption. Facilitated establishment of a machine language translation program and centralized management office. Begin implementation of transition plan and joint transition program.

• FY 2006 Plans - Conduct extended user evaluations during the residual phase. Continue modification to CONOPs and procedures for those language translation tools found to have utility.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
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Complete LASER ACTD product transitions, interim capability support phase and end the ACTD. Complete the LASER ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Micro Air Vehicle (MAV)	2.900	1.200	0.000

Provide small, ground combat units with situational awareness of enemy activity using an affordable, responsive, easy-to-operate, backpackable reconnaissance and surveillance system as an organic asset at the platoon level. The final demonstration is planned for Fiscal Year 2006. The Micro Air Vehicle (MAV) will be transitioned in Fiscal Year 2007 by the Program Manager for Tactical Unmanned Air Vehicles. DARPA is the executing agency. U.S. Pacific Command is the user sponsor.

• FY 2005 Accomplishments - Conducted laboratory evaluations, trainer training, and test flights of the Phase I development of the air vehicle with a commercial-off-the-shelf gasoline engine. Developed system tactics, techniques and procedures. Designed and developed a small, heavy fuel engine.

• FY 2006 Plans - Conduct field experiments of the Phase 1 MAV system. Continue development of small, heavy fuel engine. Integrate heavy fuel engine and feedback from Phase 1 field evaluations into the Phase 2 MAV system development and production. Produce and test 25 heavy-fuel MAV systems. Assess military utility. Conclude the MAV ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Pathfinder	0.700	0.800	0.000

Pathfinder is integrating a modular system consisting of unmanned sensors and unmanned aerial and ground platforms, display components, and high-bandwidth wireless networks to provide system connectivity to provide real-time reconnaissance and surveillance data for early entry SOF operations. The user sponsor is U.S. Special Operations Command. Metrics include the degree to which small reconnaissance teams can be assisted in emplacement of sensors and deployment of unmanned platforms for collecting information and relaying to inbound assault forces. Effectiveness of ad hoc networking, offset surveillance, fire support coordination, UAV-directed close air support will be assessed.

• FY 2005 Accomplishments - Conducted final military utility assessment of the Pathfinder system. Supported system deployment and utilization with 75th Ranger Regiment for multilateral joint training exercise, both in the fixed-wing and rotary-wing phases. Began the Extended User Evaluation (EUE) period of the ACTD. Finalized and delivered the Pathfinder residual package to the experimental force (EXFOR). Supporting transition efforts to improve Tacticomp handheld computer and integrate into Ranger Regiment equipment (non-Pathfinder funded). Demonstrated multiple emerging Small Unmanned Aerial Vehicle (SUAV) technology efforts, including a reduced modular ground control unit with size and weight reduction over the standard unit, integration of next generation GPS module, and improved thermal imager integration. Support transition of laser target designation capability via unmanned ground vehicle to a Program of Record. Additional transition work completed for the Pathfinder Raven SUAV (independent of Pathfinder ACTD funding) included the contracting of 117 systems to support the Global War on Terror (GWOT), conduced several training classes which certified dozens of Special Operations Forces to operate the system in theater, and the completion of a Level IV approval for the Raven SUAV communications package from the Joint Spectrum Manager (this allows worldwide usage of the Pathfinder Raven SUAV).

• FY 2006 Plans - Continue to provide training and materiel support (maintenance and repair) for the Pathfinder EUE. It is anticipated that the system will require many repairs and updates to remain compatible with legacy equipment. Complete transition activities and bring the Pathfinder ACTD to completion.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Space-Based Moving Target Indicator (SBMTI)	1.200	1.099	0.000

Demonstrate space-based moving target indicator capabilities using existing platform assets. The user sponsor is U.S. Strategic Command.• Classified content only.

• FY 2005 Accomplishments - Conducted initial demonstrations and interim MUA.

• FY 2006 Plans - Complete MUA and final demonstration. Complete the SBMTI ACTD.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Signals Intelligence (SIGINT) Processing	0.600	0.000	0.000

Provide a SIGINT processing mode to more precisely identify signals of interest and determine its military utility. The user sponsor is U.S. Pacific Command.

- Classified content only.
- FY 2005 Accomplishments - Conducted demonstrations and interim MUA. Initial data is very promising. On track with ACTD goals/objectives.
- FY 2007 Plans - Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
SPARTAN	4.200	3.700	5.200

A modular, multi-mission, unmanned surface vehicle (USV) used to deploy sensors and weapons as low-cost force multipliers with integrated expeditionary sensor and weapon systems for use against asymmetric threats. The expanded range provides a layered defense, early warning/intercept capability for incoming threats, thereby improving protection of surface combatants, noncombatants, and other national and strategic assets. The user sponsor is U.S. Pacific Command. SPARTAN has three basic operational capabilities objectives: 1. Conduct critical missions Antisubmarine Warfare (ASW); Mine Warfare (MIW); Intelligence, Surveillance, and Reconnaissance/Force Protection/precision Engagement (ISR/FP/PE): 2. Prepare the waterspace for Amphibious and Sealift Ops: 3. Provide port-protection when launched/operated from shore. The SPARTAN Critical Operational Issue (COI) is "To what extent do SPARTAN warfighting modules demonstrate a capability as a force leveler and force multiplier against surface and subsurface threats?" SPARTAN has three overarching Measures of Effectiveness (MOEs): (1) Does the system provide capabilities/functionality needed to address the requirements? Does it accomplish the warfare areas objectives? (2) Does the system demonstrate a capability as a force leveler and force multiplier against surface and subsurface threats? (3) Can the system be effectively integrated within the force structure? Is it supportable? Is it affordable?

- FY 2005 Accomplishments - Completed development of the Spiral 2 ISR/FP/PE module. Demonstrated the US Navy's first live fire ISR/FP capability from a USV at Aberdeen Proving Ground (APG) in April 2005 and in Singapore AOR in June 2005. Demonstrated Spiral 1 MIW module in technical test in May 2005. Additional testing will be completed in August and September, 2005. The PE module's Kongsberg stabilized weapon mount (provided in kind by the Army) failed to adequately stabilize and track targets. The Army has determined that the mount issues cannot be corrected without substantial investment. Since the Army will not permit the integration of the Javelin on to another mount, the PE capability will not be demonstrated. Complete development of ASW module with France. Begin interim capability support phase planning.
- FY 2006 Plans - Complete the final technical demonstration and conduct final MUA, which has been delayed due to technical issues (above) and to align with planned Navy testing in FY 2006. Begin Residual and Transition Phase. Support Extended User Evaluations (EUEs). Support Navy program offices in the transition of SPARTAN to a Program of Record (POR) within the Littoral Combat Ship (LCS) Program and for backfit to existing surface ships.
- FY 2007 Plans - Complete transition activities and the interim capability support phase. Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Thermobarics (TB)	4.700	2.500	0.000

Demonstrate an energetic, thermobaric payload to defeat enemy tunnel facilities and weapons with two-to-three times the lethality of conventional high explosive payloads. The user sponsor is U.S. Pacific Command.

- FY 2005 Accomplishments: Conducted weapon qualification tests (i.e. sled track, insensitive munitions and captive-carry tests); Produced test assets and conducted operational demonstrations; Conducted a planning exercise with USFK/USPACOM staff for the operational demonstrations; Completed final concept of operations (CONOPs) in conjunction with USFK/PACOM staff; Initiated manufacturing study to reduce cost/improve production efficiency for Bomb Live Unit (BLU)-121/B warhead; Conducted a Military Utility Assessment; Began an alternative target study for the BLU-121/B warhead evaluating the utility of the warhead for other target types.

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• FY 2006 Plans: Provide a transition support plan to transition the weapon into an acquisition program for the services; Deliver residual warhead assets to theater; Provide sustaining support and training for Thermobaric residual weapons; Complete the alternative target study for the Thermobaric weapon; Analyze the suitability of alternative guidance kits for use with the BLU-121/B warhead; Conduct demonstration with alternate guidance kit with BLU-121/B warhead.

• FY 2007 Plans: Provide sustaining support and training for residual weapons; Conduct demonstration with BLU-121/B warhead and alternate guidance kit.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Adaptive Joint C4ISR Node (AJCN)	5.700	0.800	0.844

Develops, integrates, demonstrates and transitions a multi-mission radio frequency system that provides seamless interoperable communications, simultaneously with signal intelligence (SIGINT), electronic warfare (EW), and information operations (IO) capabilities. Some of the top level metrics include number of simultaneous missions and reconfigurable levels of security, mission reconfigurable timelines, and number of scalable architectures and compliant radio transmissions. JFCOM is the User Sponsor.

• FY 2005 Accomplishments - Completed integration and testing of payloads and demonstrated functionalities in the laboratory. Held a VIP day with principles from Air Force, Army, OSD, and Navy to demonstrate payload functionality. Installed payloads and antennas on the Paul Revere aircraft and two Hunter unmanned aerial vehicle aircraft. Conducted flight tests to verify operation of AJCN ACTD payload and network. Conducted a final operational demonstration and performed JMUA in conjunction with Extended Awareness III exercise at Ft. Huachuca. Initiated transition strategy and began preparation for EUE.

• FY 2006 Plans - Refine CONOPs/TTPs and prepare JMUA report based on JMUA results. Conduct EUE exercises. Initiate finalization of CONOPS / TTPs, training package and recommendations for Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF). Transition AJCN ACTD products to programs of record / programs.

• FY 2007 Plans - Complete EUE of AJCN ACTD residual package. Finalize CONOPS / TTPs, training package and recommendations for Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF). Transition AJCN ACTD products to programs of record / programs. Complete AJCN ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Counter Bomb/ Counter Bomber (CB2)	5.800	6.200	2.600

Provide new capabilities for Warfighters to detect, identify, and mitigate terrorist improvised explosive device threats to military installations. Objectives include improving force protection of deployed and CONUS-based forces. CB2 was a late FY 2003 new start in reaction to the escalating terrorist threat prior to Operation Iraqi Freedom (OIF). The operational managers are U.S. European Command (EUCOM) and U.S. Southern Command (SOUTHCOM). Technology evaluations and lessons learned from CB2 have been spun-off to OIF. All technology assessments and demonstration results are coordinated and shared with the Joint Improvised Explosive Device Integrated Product Team (Joint IED IPT).

• FY 2005 Accomplishments - Continue to assess and integrate counter bomb/bomber detection tools including intelligence analytical capabilities in support of demonstrations at forward deployed bases within both EUCOM and SOUTHCOM. Continue technology search and transitions of new capabilities to operationally deployed forces in coordination with other, designated DoD organizations and task forces. Developing plans for extended user evaluation and transition of four systems identified as result of SOUTHCOM LMUA One. Conducting detailed planning with EUCOM and USN and USMC personnel at NS Rota for Spiral 2 demo. Developed architecture and fabricating an integrated threat detection and mitigation capability including centralized C3/COP for use in the Rota demo. Initiated preliminary planning with SOUTHCOM for Spiral 3 demo at Soto Cano, Honduras.

• FY 2006 Plans - Conduct Spiral 3 demo at Soto Cano, Honduras. Plan and conduct Spiral 4 demo at a EUCOM forward operating location. Initiate planning activities for extended user evaluation and transition activities resulting from Rota Spiral 2 demo. Prepare MUA reports for Spirals 2 and 3. Continue transition activities.

• FY 2007 Plans - Complete Spiral 4 LMUA report, and the Extended User Evaluation (EUE) for specific capabilities identified for transition during the EUCOM and SOUTHCOM operational demonstrations. Transition activities will continue for deployment of systems at the fixed bases and forward operating locations. Initial systems will be acquired and deployed. Installation and operator training will be provided. Maintenance activities will be established. Tactics, techniques, and procedures will be finalized based on local threat conditions and deployment scenarios.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Deployable Cargo Screening (DCS)	0.000	1.400	0.000

Provide a deployable capability to detect explosive threats in pallet loads of cargo moving in the defense transportation system. The operational sponsor is U.S. Transportation Command. The Air Mobility Command provides operational manager and acts as customer representative. Transition will be managed through Warner-Robins Air Logistics Center.

• FY 2005 Accomplishments - Performed interim military utility assessment of the prototype commercial device for detecting explosives. Accelerated fielding of interim system for assessment and current operational imperatives Concepts of Operations, tactics, techniques and procedures drafted for use in operational assessment environment. Performed baseline survey to determine presence of any existing persistent residue of explosives in the trans-shipment environment.

• FY 2006 Plans - Complete the final demonstration and military utility assessment report. Transition lessons learned during extended user evaluation of demonstration systems to objective cargo screening system procurements and fielding. Complete the extended user evaluation and the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Foliage Penetration Synthetic Aperture Radar (FOPEN)(FOPEN/SAR)	1.200	1.200	0.000

Provide real-time detection and cueing of stationary targets obscured by foliage and under camouflage using tactical sensors. Document technical requirements to better describe the characteristics and technology needed to develop a fully operational sensor system. The user sponsor is U.S. Southern Command.

• FY 2005 - Re-started ACTD. Took delivery of the DARPA produced Wide-area All Terrain Change Indication and Tomography (WATCH-IT) software, necessary to improve processing of radar data for operational applications. Successfully deployed baseline capability to theater with excellent results. Initiated system improvements (data link integration and improved on board processing).

• FY 2006 Plans - Continue technical improvements to include provision to remotely operate the radar (elimination of one operator position on aircraft), improve the database management system and refine CONOPs. Deploy back to theater in second/third quarter FY 2006 for Military Utility Assessment.

• FY 2007 Plans - Provide for 1 operational deployment to theater. Provide refined technical characteristics of an operational FOPEN radar system. Return the FOPEN modified RC-12 aircraft to technical applications. Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Gridlock	2.366	0.000	0.000

Provide Unified and Joint Task Force Commanders the capability to quickly and automatically tie the time-sensitive advantage of tactical battlefield sensors to geospatial coordinate in support of time-sensitive targeting of precision guided munitions. The user sponsor is U.S. Central Command.

• FY 2005 Accomplishments - Achieve accuracy and timeliness goals in Global Hawk and U-2 field exercises. Complete transition to support Predator and Global Hawk operations. Continue development of Gridlock capabilities for a host of sensors according to a planned schedule. Provide interim capability to Coalition Air Operations Center (CAOC) and Joint Operations Centers (JOC) at selected Combatant Commander sites. Complete the final demonstration and the ACTD.

• FY 2006 Plans - Transition to Military Services and US Combatant Commands. Conduct DoD Oversight Group to determine feasibility of adjusting Predator UAV architecture to allow geo-registration of motion imagery and conduct Analysis of Alternatives (AoA) to determine the degree of accuracy needed by the various GPS weapons, targeting platforms, and scenarios for determining requirements for future battlefield sensors used in joint targeting.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Blue Force Situational Awareness (JBFSA)	0.900	0.500	0.000

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Develops, demonstrates, and transitions seamless integration of joint blue force situational awareness tracking device information for display on the Global Command and Control (GCCS) family of supported systems. Some of the top level capabilities / metrics supporting the Joint Military Utility Assessment (JMUA) include common operational picture track correlation, dissemination, filtering and manipulation, and interoperability with multiple devices and multiple displays. STRATCOM is the User Sponsor.

• FY 2005 Accomplishments - Initiated execution of transition through the Extended User Evaluation (EUE) of the residual package in the U.S. Forces Korea (USFK) theater. Initiated operationalization of the architecture in cooperation with JFCOM and PEO C4I and Space (Navy) and CENTCOM. Completed transition of Mission Management Center-Test bed (MMCT) capabilities to the operational Mission Management Center (MMC). Initiated transition of JBFSA ACTD products to targeted programs of record / programs for follow-on development, acquisition and fielding (i.e. GCCS-J PM). Continued development and refinement of Concept of Operations (CONOPs), Tactic, Techniques and procedures (TTPs) and training package based on EUE.

• FY 2006 Plans - Complete EUE. Finalize CONOPs, TTPs and training package based on EUE. Continue to operationalize the architecture with the support of JFCOM. Complete the JBFSA ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Midnight Stand	1.400	0.000	0.000

Classified content only.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Night Vision Cave and Urban Assault (NVCUA)	6.700	1.800	0.900

Provides suite of lightweight, soldier-borne sensor technologies to enable decisive overmatch for dismounted assault in subterranean and urban environments. Products consist of Approach Sensors for long-range surveillance and identification; Cave Assault Kit and Urban Assault Kit for maneuver and target detection; and new Concepts of Operation (CONOPs) / Tactics, Techniques and Procedures (TTPs) to exploit sensor capabilities. Key Metrics: Target Identification at ranges equal to Detection ranges (Approach Sensors); Human Target Detection at Range of 250m (Cave/Urban Assault Kit). The user sponsor is U.S. Special Operations Command (USSOCOM). ACTD residuals transition to U.S. Army Special Operations Command (USASOC). Products demonstrating military utility will transition to USSOCOM Acquisition Programs of Record. Final Demo occurs FY2005. ACTD complete FY2008.

• FY 2005 Accomplishments - Completed development of Enhanced Cave Assault Kit and Urban Assault Kit. Prepared exercise and evaluation plans for Operational Demonstration II. Refined CONOPs, TTPs and training packages for Demo II based on lessons learned from Demo I. Conducted Operational Demonstration II (Urban). Performed Military Utility Assessment and Measures of Performance (MOPs) and Measures of Effectiveness analysis. Continued preparations for transition to designated acquisition programs.

• FY 2006 Plans - Procure additional residual systems. Field residual systems to USASOC operational units to provide interim capability. Provide residual support. Begin transition to acquisition programs of records.

• FY 2007 Plans - Continue interim capability/ residual support. Complete transition to programs of record.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
OVERWATCH	5.200	4.600	0.000

Provides an operational sensor targeting system capable of detecting, classifying and locating weapons fire in real-time. This capability provides ground forces the ability to immediately direct precision fire support for military police operations in land and urban warfare, peacekeeping and peace enforcement missions. The user sponsor is U.S. Pacific Command. Metrics include: mission operational effectiveness against specific mission criteria to assess the potential of Overwatch capability to provide an apparent contribution to the survivability, effectiveness, and situational understanding of supported forces; percent of firing signatures detected; percent of firing signatures located; overall percent of successful detections resulting in accurate messages; and false target rate and percent of messages garbled or not received.

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• FY 2005 Accomplishments - Developed and integrated an on-the-move capability to locate hostile fire on a HMMWV. Conducted major military utility assessment focused on military police operations, to include convoy protection, securing designated sectors, and area surveillance. One Overwatch system deployed to conduct operational evaluation of capability in support of OIF theater base operations. System netted into the Joint Defense Operation Cell.

• FY 2006 Plans - Develop a remotely operated Overwatch system mounted on a tactical ground vehicle and perform Limited User Tests. Conduct 2 Military Utility Assessments. Transition of the OVERWATCH capability will move to Program Manager, the Night Vision/Reconnaissance, Surveillance, and Target Acquisition.

• FY 2007 Plans - Conduct Extended User Evaluations (EUE). Complete transition activities and the interim capability support phase. Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Theater Support Vessel (TSV)	8.800	0.000	0.000

Provide theater commanders a high-speed, intra-theater sealift capability to support all theater engagement requirements within his area of responsibility including operational movement, repositioning and sustainment of combat forces. The user sponsor is U.S. Central Command.

• FY 2005 Accomplishments - On TSV-1X, demonstrated RF/IR/LWR self-protection capabilities linked to an active countermeasure system (e.g. the Multi-Ammunition Soft-kill System (MASS)). Demonstrated the capability of employing a remote gun system to defeat surface threats (e.g. small boats). Due to maintenance problems with two of the four engines in the vessel the upgrade the C4I suite of the TSV-1X and the ability to demonstrate its capability to communicate in a joint environment and provide capability for EMPR will be delayed. Expect the Battle Command Center Limited User Assessment to be complete in early FY 2006. HSV-1X was ADCON'd and OPCON'd to SOCOM in FY 2005 having been modified so the vessel can meet SOCOM's unique requirements.

• FY 2006 Plans - Finalize the MUA to demonstrate the vessel's capability to communicate in a joint environment and provide the capability for EMPR. The ACTD team will provide assessment reports, lessons learned, and MUA results NLT Feb 06. Transition program to the Joint High Speed Vessel (JHSV) Program for acquisition.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Urban Recon (UR)	2.000	0.000	0.300

Provide advanced airborne and terrestrial 3-D reconnaissance capability to SOCOM (Operational Manager) using LIDAR sensor with rapid processing software and decision aid software. The user sponsor is U.S. Special Operations Command. Metrics include: Extent to which the Urban Recon ACTD sensors and software provide the high-resolution, 3-D data needed to support urban warfare operations; extent to which the equipment and software provided are easy to use and supportable by military personnel; and extent to which the Urban Recon TTPs can be effectively executed in meeting urban reconnaissance objectives.

• FY 2005 Accomplishments - Completed the objective laser systems development supporting vehicle-deployed, soldier-deployed, and UAV-deployed configurations. Finalized the CONOPS for each objective system configuration. Completed Limited Objective Experiment (LOE) #3 at Ft. Lewis, WA. LOE #3 demonstrated mission planning and mission rehearsal of vehicle-mounted, soldier-borne, and UAV-mounted LIDAR sensors, using established CONOPS and TTPs. Completed Limited Objective Experiment (LOE) #4 at Fallon, NV. LOE #4 was a user defined demonstration and assessment of Airborne LIDAR data for mission planning and mission rehearsal scenarios. Completed development of CONOPS, TTPs and training package. Drafted and finalized a Capability Development Document for LIDAR Sensors. Developed transition strategy supporting follow-on development, acquisition and fielding based on successful MUA. Use Urban Recon as a JCTD pilot program for transition.

• FY 2006 Plans - Acquire two additional systems (1 airborne and 1 terrestrial system). Create technical field support and logistics support element such that all Urban Recon systems can be adequately sustained, maintained, and supported across a broad range of GWOT operations; and support system maintenance and spare requirements. Assess and implement product improvements to bring laser systems closer to objective state. Provide continued system training and refinement of CONOPS, TTPs, and training packages.

• FY 2007 Plans - Provide technical field support and logistics support element such that all Urban Recon systems can be adequately sustained, maintained, and supported across a broad range of GWOT operations; and support system maintenance and spare requirements. Provide continued system training and refinement of CONOPS, TTPs, and training packages.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Advanced Tactical Targeting Technology (AT3)	5.800	4.900	0.000

Demonstrates net-centric "sensors forward" RWR (Radar Warning Receiver) capability, performance goals for the ACTD are for significantly more rapid and accurate geo-location than single platform geo-location, develop acquisition strategies and structure programs to transition technology to other platforms. AT3 networks multiple aircraft for rapid and accurate geo-location, builds upon the successful AFRL (Air Force Research Lab) AT3 Advanced Technology Demonstration, completed in 2003.

- FY 2005 Accomplishments - Definitive ACTD contract with Prime (Raytheon); Completed Hardware Critical Design Review - Feb 05; Completed Software Critical Design Review - Jul 05.
- FY 2006 Plans - Complete ALR-69A AT3 Software Development to include, Situational Awareness Data Link, and Host Aircraft Simulator.
- FY 2007 Plans - Complete Integration/Tower Test, AT3 (Advanced Tactical Targeting) System Integration, and Multi-Ship Tower Test (Non-Fly) Phase I.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Agile Rapid Global Combat Support (ARGCS)	4.700	4.900	2.100

The ARGCS ACTD will use existing technologies to demonstrate a family of testers for electronic components capable of providing support across weapon systems, Services, and levels of maintenance. This will reduce costs and the proliferation of testers while improving the availability and performance of support equipment. In addition, ARGCS will demonstrate a knowledge based system will be used to develop a worldwide expert support system. This will further reduce costs and the time to repair. These changes will result in increased availability and improved performance to weapons systems. The user sponsor is U.S. Pacific Command.

•FY 2005 - Complete detailed design, and initiate fabrication and integration of system hardware/software. Perform component level design verification testing of system architecture and communication interfaces in controlled environment and at beta site(s). Initiate development of Concept of Operations and Independent Assessment Plan that will be used to verify military utility of ARGCS. Initiated the development of a Capabilities Development Document (CDD) that will be used to transition ARGCS technologies and products to the Services.

•FY 2006 - Complete fabrication and integration of 2 systems to support JMUA, complete knowledge database collection, perform system testing and correct any pre-deployment testing shortfalls. Complete development of Concept of Operations and Independent Assessment Plan that will be used to verify military utility of ARGCS. Complete CDD and work with Services to support funding through POM process needed to transition ARGCS technologies and products.

•FY 2007: Initiate demonstrations of ARGCS testers and complete JMUA; initiate modifications as required by Combatants; enter Extended User Evaluation (EUE).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Shared Intelligence Network Environment (COSINE)	0.000	0.200	0.200

Implement a flexible secure coalition command, control and intelligence system for sharing and collaboration information to support counter terrorist and combined/joint task force operations. COSINE is sponsored by North Atlantic Treaty Organization Allied Command Operations and Supreme Headquarters Allied Powers, Europe.

- FY 2005 Accomplishments - Analyzed alternative dynamic content-based security systems to replace the original Content Based Information Security system project that was canceled. Conducted laboratory trials of capability and operational concepts. Tested and assessed concept of operations in a broad multinational user environment.
- FY 2006 Plans - Conduct capstone demonstration and military utility assessment. Finalize CONOPS for DoD and coalition operations. Finalize policy modifications and execute transition plan.
- FY 2007 Plans - Oversee extended user evaluation period for the residual capability and concept of operations during the residual period. Modify technologies and procedures as evidenced in extended user evaluation period. Oversee implementation of interconnections of NATO and member nation systems using the COSINE capabilities. Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Reception Staging & Onward Movement (CORSOM)	0.300	0.100	0.100

Demonstrates a set of technologies, provides modeling and simulation support, and establishes procedures to provide Joint Force Commanders with an enhanced Reception, Staging and Onward-Movement

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(RSOM) Planning and Execution Monitoring capability for coalition deployment operations. Four-year project under sponsorship of NATO Strategic Commands and Supreme Headquarters Allied Powers, Europe, with completion of development and demonstration by end of CY 2005, transition to NATO and U.S. logistics systems by FY 2007. The primary metrics to be demonstrated in the ACTD Military Utility Assessment are (1) percent decrease in delays of convoy movements caused by congestion, and as a result decreases in number of units that do not meet Required Delivery Dates, (2) percent decreasc in numbers of movement control personnel needed to manage RSOI efficiently, (3) average time to offload strategic movement assets, move assets through marshalling areas, and on to staging areas, (4) comparison of total cost of RSOI when using CORSOM deliverables compared to current costs, (5) identification of reductions in logistics response times, i.e., reduced sustainability requirements, and reductions in losses in supply chain.

• FY 2005 Accomplishments - Finalized prototypes and Coalition RSOM Tactics, Techniques and Procedures (TTPs). Initial military Utility Assessment conducted in April 05 successfully demonstrated planning functionality of software. Additional, unscheduled field trial was successfully conducted in May 05, taking advantage of HQ Allied Rapid Reaction Corps (ARRC) deployment exercise. The planning functionality and elements of the execution software were demonstrated successfully in a field environment.

• FY 2006 Plans - Final operational demonstration of CORSOM Tool for RSOM planning and execution monitoring to users is scheduled for December 2005 building on the scenario and technical success of the ARRC deployment exercise. Scenario is International Security Assistance Force (ISAF) related to obtain value added prior to ISAF expansion. Begin transition to inclusion of CORSOM in the NATO Logistics Functional Area Services of the Bi-Strategic Command Automated Information System, as well as integration in the U.S. Global Combat Support System (GCSS).

• FY 2007 Plans - Complete transition to NATO Logistics Functional Area Services and integration into GCSS and demonstrate capability. CORSOM ACTD scheduled completion date is December 2007.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Future Tactical Truck System (FTTS)	7.000	1.200	0.700

Demonstrates the operational potential, technical feasibility and maturity of advanced vehicle technologies through integrated demonstrations of subsystems, systems, and system of systems. The user sponsor is U.S. Pacific Command.

• FY 2005 Accomplishments - Continued development of the CONOPS and TTPs. Conducted Technology Rodeo. Conducted In-Process Reviews, a Preliminary Design Review (PDR) and a Critical Design Review (CDR) during the M&S Phase. Awarded contract for the MSV Hardware Build Phase. Continued development of the MUAP.

• FY 2006 Plans - Finalize the CONOPS, TTPs and MUAP. Award contracts for the UV Hardware Build Phase. Complete hardware build and deliver MSV and UV vehicles. Conduct Safety Assessment and operator training for the MSV and UV. Conduct the Military Utility Assessment (MUA). Conduct the TWV Rodeo in parallel with the MUA. Initiate transition strategy and prepare for extended user evaluation.

• FY 2007 Plans - Begin transition to truck acquisition programs. Complete the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Unmanned Systems Common Control (JUSC2)	5.300	0.600	0.434

Provides a reconfigurable and scaleable common control architecture that provides capability to concurrently manage large numbers of unmanned systems of all types, and applies joint interoperability interfaces for joint service and coalition interoperability of unmanned systems. User sponsor is U.S. Joint Forces Command. Metrics include: (1) JUSC2 architecture must be able to concurrently control (manage) all unmanned systems deployed with Littoral Combat Ship (LCS) mission packages. This includes two Firescout UAVs, two RMS USVs, two Spartan USVs, three BPAUV UUVs, and three REMUS UAVs. (2) JUSC2 architecture must provide capability for NATO STANAG 4586 Level 4/5 control handoff of Army Shadow 200 UAV between Army and Navy control stations. (3) JUSC2 architecture must be able to hand-off control of Navy Spartan USV to other services' JAUS-compliant USV control stations to demonstrate joint interoperability.

• FY 2005 Accomplishments - Completed system integration of common UUV interface segment. Developed metrics for warfighter utility evaluations. Initiated integration of common USV interface segment to Spartan USV. Completed Spiral 1 interface segment to Firescout/TCS UAV. Conducted laboratory test and initial at-sea tests of UUV interface segment . Delivered early software product version to LCS Program Office in August 2004 and installed updated software onboard HSV-2 Swift in September 2004. Navy adopted JUSC2 architecture as baseline architecture for integration of

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unmanned systems into all Naval platforms (surface and submarines).

• FY 2006 Plans - Complete USV, UAV, and UGV interface segments. Conduct limited at-sea test of UUV capability in Dec 05. Conduct Army-Navy interoperability test with UAVs & UGVs and Army-USMC interoperability with UAVs. Deliver software Build 3 to LCS Program Office as formal residual/transition product from JUSC2 to Navy. Deliver STANAG 4586 compliant "One System" common UAV ground control station to Army UAV project office as formal residual/transition product from JUSC2 to Army.

• FY 2007 Plans - Complete final warfighting utility assessment with full at-sea test of LCS Flight 0 residual, completing ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Precision Airdrop System (JPADS)	5.100	3.200	1.400

Develops, demonstrates a fast, flexible, direct projection-based distribution system to sustain rapidly deployed forces at any global destination - strategically, operationally, and tactically. The user sponsor is U.S. Joint Forces Command.

• FY 2005 Accomplishments - Completed user prioritization decision on decelerator systems Jul05. 10Klb SCREAMER system was selected to move forward for duration of JPADS ACTD. Completed system integration of JPADS-Mission Planner (JPADS-MP) with Screamer system and demonstrated wireless updates of missions on ground and in flight. Continue technical testing of all systems. Conducted early user training in Sept05. Prepared for Joint Military Utility Assessments (JMUA) Scenario #1 in Dec05. Demonstrated a high altitude (24,500 ft. Mean Sea Level (MSL) capacity) airdrop from 18,000ftMSL of a 10Klb fully rigged weight payload during numerous test weeks from commercial, Marine Corps, and USAF Air Mobility Command C-130 aircraft (C-17 planned for Second Quarter FY 2006). Demonstrated fully autonomous flights and offset distances of over 5miles (goal 5-25 miles offset). Demonstrated wireless updates of weather and ability to deliver separate and distinct payloads (up to 10,000 lbs total, full rigged weight) to multiple locations with scaled SCREAMER systems.

• FY 2006 Plans - Prepare and conduct Joint Military Utility Assessments (JMUA) #1 in Dec05. Prepare and conduct JMUA scenario #2 (May05). Prepare for the final JMUA #3 (Oct06). Transition JPADS ACTD technologies to Army and Air Force Transition Managers (PM Force Sustainment Systems (PM FSS) and Air Mobility Command (AMC)) for System Development and Demonstration (SDD). Integrate JPADS-MP into US Marine Corp C-130K aircraft, test and train with 2K Sherpa system (purchased by USMC under UNS) and assist in rapid fielding of this capability to the AOR by third quarter FY 2006. Integrate JPADS-MP with a personnel (high altitude high opening (HAHO)) heads up display navigation system and rapidly field this capability to the AOR by third quarter FY 2006.

• FY 2007 Plans - Complete JMUA #3 (Oct06). Distribute JMUA final reports and residual JPADS systems to JMUA users. Execute the residual support contracts to support systems. Continue to support and monitor residual system performance and user feedback. Continue to have JPADS Transition Managers (PM Force Sustainment Systems (PM FSS) and Air Mobility Command (AMC)) prepare for Milestone B and planned System Development and Demonstration (SDD) programs. Prepare for FY08 residual phase and support contracts. Prepare to complete the JPADS ACTD in FY08.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
MAGNUM	2.900	1.800	0.000

Classified content only.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Man-Portable Threat Warning System (MANPACK)	7.000	4.300	0.000

Develops a small, lightweight, modular threat warning and tactical SIGINT collection system that is rapidly scaleable based on operational requirements. The individual body worn system will provide a display of threat and friendly force data, automated data analysis to permit hands-free operation, and reach back capabilities through the Team Transportable node to access other operational or intelligence information available in the Regional Combatant Commander's Area of Operation. The ACTD uses emerging COTS capabilities in development, to include Small Business Innovative Research (SBIR) efforts. The user sponsor is U.S. Special Operations Command.

• FY 2005 Accomplishments - Completed four Limited Objective Experiments (LOE) and Demo I. Identified early transition opportunities and continued user training.

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• FY 2006 Plans - Take delivery of Demo II systems. Conduct four LOEs and Demo II (final). Complete Joint Military Utility Assessment (JMUA). Complete the ACTD and transition products having military utility to the Joint Threat Warning System (JTWS). ACTD residuals will be transferred to the JTWS Program of Record to provide interim operational capabilities. Complete the MANPACK ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Multi-Sensor Aerospace/Ground Joint ISR Interoperability Coalition (MAJIIC)	3.200	2.100	2.200

Develop, test and transition a set of standards, eXtensible Markup Language (XML) formats, and information services to promote intelligence, surveillance and reconnaissance (ISR) interoperability between U.S. and Coalition ground stations and systems. Demonstrate near-real-time interoperability of data from electro-optical, infrared, motion video, moving target indicators, synthetic aperture radar, and other sensors. Enhance collaborative targeting operations, improve ISR data accessibility and sense making to support U.S. Joint ISR operations. Transition is planned for FY 2008 by the U.S. Army Training and Doctrine Command (TRADOC) System Manager to the Service Distributed Command Ground Station (DCGS) programs, to satisfy their requirements for coalition ISR interoperability and Network Centric Enterprise Services compatibility. U.S. Joint Forces Command is the operational sponsor and the USAF, AFC2ISRC Langley AFB is lead service.

• FY 2005 Accomplishments - Participated in the Horizontal Fusion operational transition/deployment in support of 18th Airborne Corps with servers at DGS-X Langley AFB, VA. Amended the Coalition Surveillance and Reconnaissance (CSR) Memorandum of Understanding (MOU) to include the Netherlands and Spain. Developed project arrangement and technical arrangement to define participation by the MAJIIC coalition nations: Canada, France, Germany, Italy, the Netherlands, Norway, Spain, the United Kingdom and the United States, and the NATO Consultation, Command and Control Agency (NC3A). Conducted ISRIS laboratory testing and CONOPS validation experimentation to include Coalition nations. Initiated the MAJIIC Project multinational working groups. Expanded ISR Information Service (ISRIS) support to additional platform and sensors.

• FY 2006 Plans - Demonstrate ISRIS capability in U.S. and Coalition environments. Support Coalition test and integration testing with connectivity from DGS-X and NATO C3 Agency. Conduct interim Military Utility Assessment (MUA). Expand ISRIS support to additional platform and sensors. Continue MAJIIC Project multinational working group participation. Participate in first coalition live-fly exercise to demonstrate and test interoperability standards.

• FY 2007 Plans - Participate in the annual MAJIIC coalition exercise with possible NATO Allied Command transformation with NATO Air Group IV ISR capability. Validate CONOPs and conduct MUA. Transition capability into the DCGS Integration Backbone spiral baseline.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Psychological Operations Global Reach (PSYOP)	7.800	4.900	2.600

Provide extended range over which the PSYOP message can be delivered. Develop capabilities to disseminate products multi-dimensionally across extended ranges into denied areas, including over-the-air and new internet based methods. Advance the capabilities of automated planning processes through collaborative technologies, integrated into special operations forces (SOF) planning systems. The operational sponsor is U.S. Special Operations Command.

• FY 2005 Accomplishments - Performed initial military utility assessment (IMUA) for UAV payloads. Delivered Spiral 1 of the mission planning system. Began development/integration of advanced broadcast/relay platforms and scatterable dissemination media. Assessed satellite TV capability (direct broadcast) as a less lucrative technique than others. Initiated additional dissemination schemes for commercial signals (FM from tethered balloon), cellphone Short Message Service (SMS), and internet/telephony systems.

• FY 2006 Plans - Perform initial MUA for A-160 (UAV) carried payloads. Perform IMUA for Spiral 2 of the mission planning system. Perform IMUA on Spiral 2 of scatterable media products. Develop UAV broadcast payload for Predator type UAV. Develop UAV payloads on the high altitude airship or other similar high altitude platform.

• FY 2007 Plans - Demonstrate advanced broadcast/rebroadcast payloads on Predator type UAV platforms. Make Transition Decision for A-160 AM/FM/TV transmission suite. Continue mission planning system development.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Theater Effects-Based Operations (TEBO)	8.400	1.500	5.200

The TEBO ACTD will provide Combatant Commanders with enhanced capabilities to analyze, plan, execute, and assess Effects-Based Operations (EBO) at the strategic and operational levels by integrating computer-aided decision support tools, Concept of Operations (CONOPS), and Tactics, Techniques and Procedures (TTPs) into the command's Mission Architectures. The user sponsor is U.S. Pacific Command.

• FY 2005 Accomplishments - Conducted Operational Demonstration 2 (RSOI and UFL-05), integrated ONA capabilities into the CFC architecture, developed and demonstrated EBO execution enabling capabilities, delivered all Spiral I capabilities, developed a data import/export capability for ONA and SOSA analysts, integrated the EBO Practitioners Guide Tool (EPG) into the TEBO Knowledge Base (TKB) application.

• FY 2006 Plans - Integrate COA planning capabilities into CFC architecture; enhance and integrate ONA capabilities into CFC/Combatant Command architectures; integrate EBO execution enabling capabilities into CFC architecture; integrate DA capabilities into CFC architecture.

• FY 2007 Plans - Enhance and integrate COA planning capabilities and EBO execution enabling capabilities into CFC/RCC architectures ; enhance and transition ONA capabilities into program(s) of record; enhance and integrate DA capabilities into CFC architectures.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Actionable Situational Awareness Pull (ASAP)	3.000	1.800	0.700

Develop, integrate, demonstrate and transition software that provides a "Smart Pull" capability to the tactical, operational and / or strategic user on the Global Information Grid (GIG) for accessing critical situation awareness information resident on distributed databases. Utilizing the Net-Centric Enterprise Services (NCES) architecture a "Smart Pull" service will be operationally demonstrated and transitioned into NCES and other Programs of Record (POR). The ACTD's top level metrics include increased percentage of useable data available to the user, increased performance through decreased latency of data, percentage of increase in data obtained via "pull" vice "push" procedures, and increased interoperability with coalition forces by use of XML Common Message Format Standards. The User Sponsor of ASAP ACTD is PACOM.

• FY 2005 Accomplishments - Generated Concept of Operations (CONOPS), tactics, techniques and procedures (TTPs) to implement a "Smart Pull" capability by the warfighter, and identified associated requirements. Implemented an Other Transaction Agreement (OTA), which brought diverse government / industry team together to work solution. Developed initial design and architecture. Developed basic pull website for IBS data.

• FY 2006 Plans - Continue development and demonstration software builds around the "Smart pull" capability. Conduct Operational Demonstrations and Interim Joint Military Utility Assessment (IJMUA). Add intelligent software agent technology to software builds to help tailor the "Smart pull" capability and an interface to the Command and Control Information Exchange Data Model (C2IEDM) database used by coalition forces. Continue training of operational users prior to conducting operational demonstration and JMUA. Initiate transition of ASAP ACTD products to NCES architecture, User Defined Operational Picture (UDOP), and Integrated Broadcast Service (IBS) programs. Continue development of CONOPs and TTPs.

• FY 2007 Plans - Complete Operational Demonstrations and JMUA. Initiate Extended User Evaluation of ASAP ACTD residual package. Initiate finalization of CONOPs / TTPs, training package and recommendations for Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities (DOTMLPF). Transition ASAP ACTD products to programs of record / programs pending results of JMUA.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Coalition Secure Management and Operations System (COSMOS)	6.061	5.200	5.400

The COSMOS ACTD will do a pilot implementation of the Multilateral Interoperability Programme (MIP) specifications (specifically the Command and Control Information Exchange Data Model (C2IEDM) and the Information Exchange Mechanism (IEM)) in the Combined Enterprise Regional Information Exchange System (CENTRIXS) coalition network environment. The goal is rapid, secure protected sharing of critical C2 information to and among coalition partners on a single and secure integrated coalition network. The ultimate goal is reduced confusion, uncertainty and delay in combat and crisis operations. The net result will be the bridging of Coalition sourced information with US Global Information Grid (GIG) Network Centric Enterprise Services (NCES) for two-way information exchange, when

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approved cross domain solutions are available.

• FY 2005 Accomplishments - Coordinated operational requirements and initial technical arrangements with user sponsors (USPACOM ad USEUCOM) and international partners (United Kingdom, Australia and Canada.) Established operational and security requirements baseline, and technical work with NSA. Began negotiation with Services and CoComs for demonstration exemplars and venues. Provided technical improvements to JFCOM coalition chat capability initiative with Naval Postgraduate School research results.

• FY 2006 Plans - Incorporate MIP-compliant C2 application exemplars and Community of Interest (COI) interfaces, introduce "role- and policy-based protected information sharing" tools through further development of COSMOS related capabilities for protected information sharing using structured information. Participate in USEUCOM Coalition Warfighter Interoperability Demonstration venue to leverage already planned MIP system level and operational level test events as well as coalition partner presence, as well as Combined Endeavor '06, USPACOM Pacific Endeavor'06.

• FY 2007 Plans - Incorporate final Service and coalition partners MIP-compliant C2 application exemplars and Communities of Interest (COI) interfaces, complete development of COSMOS related capabilities, and conduct Military Utility Assessment (MUA). Prepare residual sustainment and transition to identified programs of record supporting multinational information sharing missions.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CBRN Unmanned Ground Reconnaissance (CUGR)	3.600	3.600	1.800

The CUGR ACTD will provide manned nuclear, biological and chemical (NBC) reconnaissance units with two new technology applications to be demonstrated in the Joint Service Light NBC Reconnaissance System's (JSLNBCRS) High Mobility Multipurpose Wheeled Vehicle (HMMWV) variant. The first provides near real time, vehicle speed immaterial, chemical agent surface contamination detection and identification. The second provides a small, remote controlled, sensor-equipped robot to be the recon crew's "point man" in high risk contamination reconnaissance. DTRA provides overarching program management. The Technical Manager is the U.S. Army Research, Development and Engineering Command's Edgewood Chemical and Biological Center. The Joint Program Executive Office for CBD assigned the Joint Product Manager for NBC Reconnaissance as the Transition Manager. The U.S. Pacific Command is the ACTD sponsor with Operational Manager responsibility with the U.S. Army Pacific who is providing the 95th Chemical Company as the ACTD demonstration unit.

• FY 2005 Accomplishments - Developed ACTD Management, Transition and Test Plans. Initiated development of Concepts of Operations (CONOPS), Tactics, Techniques, and Procedures (TTPs) and Training Support Packages (TSP). Initiate JCSD prototyping, systems engineering, technical testing and integration. Initiated modifications to JSLNBCRS shelter design, fabricate and integrate on HMMWVs. Initiated CUGV systems engineering and technical testing. Completed platform modeling and human factors evaluation, and integration of CBRN sensors. Conducted Market Survey, identification, selection and purchase of CBRN detection suite components and UGV platforms. Developed communication specifications for the CUGV.

• FY 2006 Plans - Continue CONOPS, TTPs, TSPs, and Test Plans development. Complete JCSD/JSLNBCRS design integration, system technical manual and user training plan. Conduct early user assessment on dismounted CUGV. Initiate system design and integration of mounted CUGV capability. Complete CUGV engineering design tests and system design, technical manual and user training plan. Conduct JCSD/JSLNBCRS and dismounted CUGV technical and operational demonstrations. Receive JCSD/ JSLNBCRS independent military utility assessment (MUA).

• FY 2007 Plans - Provide two JCSD equipped CBRN Reconnaissance platforms and 2 CUGVs for residual phase support to the 95th Chemical Company (CMLCO) and initiate Extended User Evaluation. Complete mounted CUGV system design and integration on the third JSLNBCRS. Conduct mounted CUGV early user assessment. Complete CUGV test methodology development as well as the technical manual and user training plan. Conduct mounted CUGV technical and operational demonstrations. Receive integrated system independent MUA. The CUGR ACTD will transition an advanced sensor suite to manned NBC reconnaissance platforms providing near-real-time surface chemical detection and identification and demonstrate the utility of unmanned platforms for CBRN reconnaissance. These enhancements will provide the Joint Combined Force Commander with continuous and critical CBRN situational awareness while mitigating the risk to maneuvering and supporting forces.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Gunship Standoff Precision Munition (Danger Close CAS - Viper Strike)	0.000	6.200	6.500

Standoff Precision Guided Munitions (SOPGM) Advanced Concept Technology Demonstration (ACTD). The objective of the SOPGM ACTD is to evaluate the military utility of adding precision guided munitions capability to the AC-130 gunship armament suite. The assessment will be based on ground and flight demonstrations of a SOPGM weapon system employed from an AC-130 against representative gunship targets. The ACTD will be executed in two phases. The funds requested in this document fully fund Phase I. The first phase will provide an Initial Proof-of-Concept (IPOC) of the SOPGM weapon

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system and an interim Military Utility Assessment (MUA). The SOPGM IPOC weapon system will include a variant of the Viper Strike munition demonstrated on the Hunter Unmanned Aerial Vehicle, a battle management system (BMS) being developed as part of the ACTD, and physical, functional, and communications interfaces to integrate the munition and BMS on an AC-130 to safely and effectively employ the munition. The Viper Strike munition will be modified to incorporate GPS aiding of its inertial navigation system to maintain accuracy over longer flight times. The BMS development will leverage technology developed for the Navy's Naval Fire Control system to provide operators with engagement zones and fire control for employing the munition in top attack scenarios. The IPOC SOPGM weapon system will be demonstrated through ground and flight test on an AC-130 to demonstrate the potential military utility of providing the gunship with a precision guided munition capability. Based upon the results of Phase 1, there is a priced contract option to proceed to Phase 2. Funds for Phase 2, if pursued, will be requested in a future budget cycle. The description that follows is included to illustrate the next step in development that will be taken if Phase 1 demonstrates significant military utility. In Phase 2, the SOPGM weapon system capability will be expanded to facilitate Tactical Proof-of-Concept (TPOC) demonstrations to generate a more comprehensive MUA and provide a baseline design for transition into development of a combat capable system. During Phase 2, if it is pursued, the SOPGM weapon system capability will be modified to add capability for shallow attack, engagement of moving targets, and longer standoff ranges up to the limits of existing Viper Strike glide performance. Phase 2 will culminate with assembly and delivery to Air Force Special Operations Command, of 20 TPOC configured Viper Strike munitions, 2 TPOC capable BMSs, residual aircraft integration components, and associated training and technical data to facilitate a potential extended user evaluation.

• FY 2005 Accomplishments - Began design and development of the SOPGM Initial Proof-of-Concept (IPOC) weapon system. Developed a baseline concept to carry and launch the SOPGM from a pylon station of the AC-130. Initiated safety and seek eagle assessments to determine modifications required to adapt the Viper Strike for carriage and release from manned aircraft. Drafted Integrated Assessment Plan to guide the SOPGM demonstrations and began development of concept-of-operations.

• FY 2006 Plans - Complete development and ground integration and test of the SOPGM IPOC weapon system, including the Viper Strike munition, battle management system (BMS), and the physical, functional, and communication interfaces to integrate the munition and BMS on an AC-130. Build up instrumented Viper Strike mass simulation models, conduct separation tests, and obtain flight clearances for proceeding into the IPOC demonstrations. Complete development of the Integrated Assessment Plan for the IPOC demonstrations and begin IPOC flight demonstrations.

• FY 2007 Plans - Complete IPOC flight demonstrations and compile an Interim Military Utility Assessment (MUA). This will complete Phase 1 of the ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Epidemic Outbreak Surveillance (EOS)	9.500	7.400	9.100

Epidemic Outbreak Surveillance (EOS) ACTD is a FY 2005 ACTD that demonstrates and transitions solutions that are transformational dual use for operational and clinical medicine as well as biodefense. EOS will incorporate as series of technologies to rapidly detect and identify a wide range of respiratory pathogens that are frequently and easily confuse in clinical encounters. It is intended to overcome two diagnostic challenges: 1) discrimination between diverse pathogens that present similar (i.e. fever & flu-like) symptoms; and 2) screening rapidly, accurately and simultaneously across multiple (20 - 30+) candidate pathogens (including dark horses and zebras). EOS will leverage sophisticated, advanced molecular biology procedures, bio-informatics, micro array and/or RT-PCR - based technologies integrating into medical command channels to provide all leadership levels key information needed to make time-critical decisions. Ultimately this situational awareness provides a high likelihood that correct diagnostic decisions will be made, potentially even prior to the onset of symptoms in some scenarios. In detect-to-warn and detect-to-treat applications, the EOS diagnostic supports sustainment of warfighter capabilities in biologically active domains by promoting earlier and targeted diagnosis, intervention, minimizing casualty losses, and reducing mission degradation. DUSD/AS&C, USJFCOM, AF/SG and JPEO/CBD are the principals for Development, Assessment/CONOPS and Transition of the required system.

• FY 2005 Accomplishments - Began planning and hardware procurement. Initiate monitoring of basic military trainees at Lackland AFB, TX for outbreaks of candidate pathogens using level 5 research platforms. Conducted user training. Began development of CONOPS and TTPS. Began planning to conduct technical demonstrations. Setup an introduction of requirements for Level III prototype platform for small clinic venues (level III).

• FY 2006 Plans - Continue monitoring military trainees for outbreaks. Refine protocols and collect data for certification of EOS as a diagnostic tool. Continue refinement of CONOPS and TTPs.

• FY 2007 Plans - Continue previous activities and expand demonstrations to Joint arenas to include Carrier Battle Groups, Metro DC (NCR) Metro. Conduct Joint Military Utility Demonstrations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Enhanced Explosive Resistant Coating (JEERC)	0.000	2.600	1.600

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Explosive Resistant Coating (ERC) is a elastomer polymer material demonstrated to have significant capability to mitigate and reduce damage from explosive blasts. The Joint Enhanced Explosive Resistant Coating (JEERC) ACTD will evaluate the utility of ERC in a wide range of Force Protection scenarios. The ACTD will seek to understand ERC's blast mitigation phenomenology to facilitate better utilization of ERC on a wider range of applications. Areas to be examined are the employment of ERC on vehicles, buildings and ships. The U.S. Central Command is the sponsor and the Navy is the technical manager. International agreements are being contemplated with reps from the UK and Australia for potential coalition partnering. These have not yet been finalized.

• FY 2005 Accomplishments - Emphasis in FY-05 was vehicle applications with initial evaluation of ERC on structures and ships. Initiated studies on ERC fire, smoke and toxicity issues. Add-on ERC design modifications were developed for the Marine (Corps) HMMWV Armor Kit (MAK) which enhance underbody blast performance and armor piercing ballistic performance of side armor. Field installation, durability and mobility assessment of HMMVWs with ERC modified MAK was conducted successfully.

• FY 2006 Plans - Complete development of vehicle firewall ballistic protection for added defense against Improvised Explosive Devices (IED). Conduct vehicle live fire tests for final performance validation. Continue development of application techniques for vehicles with a greater emphasis on structures and ships.

• FY 2007 Plans - Focus on application of ERC on ships to include new construction vessels (Littoral Combat Ship, DDX and MPF(E)).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Coordinated Real-Time Engagement (JCRE)	2.500	2.800	2.600

The JCRE ACTD will develop the CONOPS and the GIG-enabled software that enables Joint Real-Time Operations and Engagement across multi-Combatant Command (COCOM) Theaters and Echelons. The JCRE ACTD will support Joint and Combined Operations by providing Net-Centric Command and Control Tools that greatly enhance the Planning and Execution across multi-Combatant Commands. These tools will be provided as web services, so they can easily be extended to supporting Combined Operations as directed by the Operational Sponsor. The JCRE capability will be achieved by extending and integrating the following technologies: Joint Force Global Situational Awareness (SA) Tools; Multi-COCOM Course of Action (COA) Development Tools; Joint Force Engagement Packages; and Joint Force Synchronization Tools. These JCRE technology components will be implemented using a Service Oriented Architecture (SOA) and distributed orchestration of services. These JCRE technologies, tested on the Global Information Grid (GIG), will help validate whether the evolving GIG IP architecture and enterprise services can support the time sensitive performance requirements for global operations. The JCRE will conduct one major demonstration in each year through 2007, beginning with a laboratory demonstration in 2005 and progressing to a field exercise in 2007.

• FY 2005 Accomplishments - Demonstration #1. (Nov 2005) Demonstration of Joint Force Global Synchronization Tools and Multi-COCOM COA Development Tools in a laboratory demonstration environment with collaboration between STRATCOM and SOCOM and one or more JFCC.

• FY 2006 Plans - Demonstration #2. (Fall 2006) Demonstration of Joint Force Global Situational Awareness Tools, Multi-COCOM COA Development Tools, and Joint Force Engagement Packages in a Command Post exercise.

• FY 2007 Plans - Demonstration #3. (Fall 2007) Demonstration of Joint Force Global Situational Awareness Tools, Multi-COCOM COA Development Tools, Joint Force Engagement Packages, and Joint Force Synchronization Tools in a field exercise. A Joint MUA will be performed in conjunction with the final demonstration. Demonstration goals may be changed based on Operational Manager's direction.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Force Projection (JFP)	0.960	4.600	4.000

Provides the joint warfighter with a suite of functional tools and applications to support joint deployment planning and execution to rapidly provide required force capabilities. Provides a timely, coherent and comprehensive capability to plan, model, analyze, and execute the joint deployment process from an end-to-end perspective.

• FY 2005 Accomplishments - Developed execution plan, ontologies, and CONOPS for conducting Capabilities Based Planning. Conducted experimentation on concept and developed architectural baseline for future development. Established necessary relationships with community for experimentation and development of a capabilities-based joint force projection architecture.

• FY 2006 Plans - Develop, test, and demonstrate a semantic-language based workflow portal to link together Force Projection activities from initial planning and requirements for capabilities generation, through sourcing, movement, and delivery to the Joint Force Commander. Gain access to authoritative data sources, develop data structures to link capabilities to forces and forces to capabilities,

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and then provide tracking throughout the deployment process. Focus on integration of existing tools through application of advanced web-technologies. Develop initial concept of operations (CONOPS). Primary metric: 100% Net-centric access to core deployment planning and execution systems; Develop, test, and demonstrate model-based decision support tools to give the Joint Force Commander the ability to be able to conduct rapid, dynamic course of action analysis and predictive assessment of the deployment flow on current operations. Develop, test, and demonstrate a common, joint toolset for Joint Reception, Staging, Onward Movement, and Integration activities to coordinate the flow of forces and sustainment into a theater during execution. Primary metric: Ability to create, manage, and track capability-based force packages and link them to an operational plan (100%).

• FY 2007 Plans - Finalize demonstration activities and delivery of capability into programs of record, primarily Global Combat Control System (GCCS). Primary metric: Crisis Action Planning and Execution (after release of deployment order) Support development and maintenance cycle for Operations Order (OPORD) and associated products. Cycle time reduction from 2 weeks to < 96 hours. Complete JFP ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Medical Situational Awareness in Theater (MSAT)	4.000	3.700	1.300

Provide combatant Commanders and Joint Task Force (JTF) commanders timely, complete, actionable health information for operational decision-making. This capability provided by a fusion of medical data, personnel location information and health threat intelligence for situational awareness in theater. The improved timeliness and actionable nature of the medical situational awareness information allows theater commanders to reduce both disease and non-battle injuries, as well as combat casualties, while improving combat effectiveness and responsiveness to emergencies. MSAT user sponsor is the U.S. Pacific Command with the Executive Agent being the Office of the Secretary of Defense, Health Affairs, Director of Deployment Health Support.

• FY 2005 Accomplishments - Defined joint user functional requirements to be addressed by the selected technological capabilities. Refined architecture and identified new and sufficiently mature technologies for insertion or integration into the MSAT initial spiral. Developed a spiral model to incrementally grow the architecture while eliminating non-viable alternatives and decreasing risk. Final preparation for initial field trial.

• FY 2006 Plans - Conduct field trials of interim spiral capabilities and operational concepts. Demonstrate and assess concept of operations and the tactics, techniques and procedures in a joint exercise.

• FY 2007 Plans - Conduct field trails and integration of spiral upgrades with a full assessment of capabilities, operational concepts and procedures in a capstone demonstration during a joint exercise.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Rapid Airborne Reporting & Exploitation (RARE)	0.900	1.200	0.400

Permits the production of critical, time sensitive Thermal IR MASINT from the SYERS-2 airborne sensor to meet theater commanders needs for certain types of target detection, identification and characterization.

• FY 2005 Accomplishments - Began coordination of Implementation Directive, of Beta capability for OIF and OEF ahead of ACTD planned timeline, and near real time processing of the full collection capability instead of the 10% in the ACTD.

• FY 2006 Plans - Conduct initial flight demonstrations and interim MUA. Complete MUA and final demonstration.

• FY 2007 Plans - Commence transition of capability support into DODISS certified workbench.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Sea Talon	4.000	2.500	1.300

Is a new concept for using over-the-horizon off-board systems to detect and track submarine threats in the littorals and for conducting persistent situational awareness in denied littoral approaches to land-

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based operational areas. Improves the Under Sea Warfare (USW) effectiveness in littoral areas by combining sonar technologies with unmanned undersea vehicles. Will improve the survivability of host platforms by operating at long standoff distances. Metrics include: evaluation of the system against a relevant threat in an environment characterized by water depth, sound velocity profile, clutter and interfering traffic, and sea state; operations demonstrated in passive, and active biostatic acoustic modes; measurement of parameters such as: Probability of detection (Pd), Probability of false alarm (Pfa), Area Search Rate (ASR), Stand-off range, Persistence, Time to detect, Time to classify, Time to Deploy (Td), Time to recover (Tr), Situational awareness of countermeasures or spoofing, System vulnerability, Ability to navigate in obstructed waters. Manning requirements or savings will also be evaluated.

• FY 2005 Accomplishments - Conducted systems engineering design and executed a proof-of-concept demonstration with 2 target submarines. Initiated concept of operations effort. Initiated interface effort with LCS platform.

• FY 2006 Plans - Initiate long lead acquisition for system components and sensors. Continue concept of operations planning, continue engineering design and test.

• FY 2007 Plans - Complete engineering design and testing. Receipt of system sensors. Plan the ACTD demonstration and the Military Utility Assessment (MUA).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Sea Eagle	1.019	2.100	1.000

Demonstrates and transitions technologies to provide persistent, clandestine, and unattended monitoring of maritime areas in a Special Operations Forces (SOF) deliverable "system of systems". These funds will be used to support technical down-select, systems integration, and demonstrations of sensors and communication technologies. The funds will support: 1. Johns Hopkins University Applied Physics Lab (JHU APL) and Naval Surface Warfare Center Panama City (NSWC PC) as the technical integrators for Sea Eagle; 2. Operational Manager support and demonstration costs; and 3. procurement and integration of components for the demonstrations. USSOCOM is the COCOM/User Sponsor; OPNAV N75 is the Lead Service.

• FY 2005 Accomplishments - Approved as an FY 2005 ACTD in January 2005. Selected the land based electro/optical (EO), infrared (IR), seismic, and acoustic sensors. Selected land mesh network protocol and established communication links between network nodes. Began integration of sensor components and the land network. Procured gateway communication device to transmit sensor network information to a Mission Support Center (MSC) for information dissemination on a classified network. Designed and began development of a clandestine maritime platform as a multi-media gateway to breach the sea-air interface. Conducted initial technical evaluation of underwater sensor technologies.

• FY 2006 Plans - Demonstrate the land based network, sensors, clandestine maritime platform and gateway communications in January 2006. Transition capabilities with immediate military utility. Develop CONOPS and Tactics, Techniques, and Procedures (TTPs). Select underwater acoustic, magnetic, and other sensor technology. Incorporate underwater communications into a clandestine, close access, mesh network. Integrate underwater sensors with the underwater network. Communicate through the clandestine maritime device to land-based systems and the MSC. Investigate improved land based sensors and communications protocols.

• FY 2007 Plans - Demonstrate the undersea network and sensors. Demonstrated improved land network capabilities with enhanced networking capability, data rate, and persistence. Transition capabilities with immediate military utility. Refine CONOPS and TTPs. Integrate Naval SOF assets (SDV, ASDS, SAHRV) with the Sea Eagle network.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
SOF Long Endurance Demonstrator (SLED)	3.000	6.200	5.200

Demonstrates an unmanned vertical take off and landing vehicle (the A160 Hummingbird VTOL UAV) capable of flying long range (2000+NM/24+ hours) and employing a wide variety of adaptable payloads, supporting combating terrorism (CT), counter proliferation (CP), special reconnaissance (SR), direct action (DA), psychological operations (PSYOP), and other mission areas.

• FY 2005 Accomplishments - Integrated LIDAR and PSYOP payloads. Developed SIL (Simulated Integration Lab) to speed integration process of other payloads. Began Hellfire missile system integration. Log resupply payload development.

• FY 2006 Plans - Demonstration of LIDAR payload. Demonstration of PSYOP broadcast payload. Continue Hellfire payload integration. Log resupply payload integration and demonstration. Integrate SAR/GMTI, SIGINT, Comm Relay, and Emergency Personnel Recovery capabilities.

• FY 2007 Plans - Complete CONOPs development. Demonstrate Hellfire on A-160. Demonstrate SAR/GMTI, SIGINT, Comm Relay and Emergency Personnel Recovery capabilities. Develop

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slide on/slide off payload capability. Perform final MUA. Begin Extended User Evaluation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Tactical Satellite (TacSat)-2 (Road-Runner)	2.000	2.800	0.000

Demonstrates use of responsive, flexible and affordable tactical satellites to retain a space capabilities advantage in high threat environments and the concepts for dynamic theater tasking, high-rate theater downlinks and horizontal integration of space derived information via SIPRNET.

- FY 2005 Accomplishments - Built and integrated. Launch (slipped to TBD 06?), and perform on orbit check out and begin operations.
- FY 2006 Plans - Complete MUA and final demonstration.
- FY 2007 Plans - Transition capability to operating command (Air Force Space Command) in support of US STRATCOM.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Weapon Data Link Network (WDLN)	5.000	4.900	0.000

The Military Services and Combatant Commanders have numerous standoff weapons programs entering SD&D Phase. Requirements are being identified for a weapon data link capability to enable inflight dynamic re-tasking of the weapons to improve time sensitive targeting and provide a counter-moving target capability. The joint warfighter lacks a currently defined weapons grid with specified standards for information exchange requirements and message sets to facilitate joint interoperability. The WDLN ACTD will define the requirement standards for future weapon data links to enable a fully integrated joint weapons grid where the combatant commanders can fully exploit the capabilities of inherent weapon data links. The residuals of this ACTD will be a defined standard that weapons programs will build to enable the combatant commander to take advantage of a fully integrated weapons grid.

- FY 2005 Accomplishments - Develop network architecture and select a Mil-Std message format that will capitalize on existing joint network standards to provide the earliest benefit to the warfighter, but will not preclude usage of other waveforms or growth to future waveforms. The communication equipment suite would emulate the characteristics of the weapon communicating commands to the weapon control systems and reporting weapon system status and position data to a C2 node after weapon release to insure the weapon can connect successfully to the network and perform its mission.
- FY 2006 Plans - Demonstration of the viability and usability of the network architecture developed during the ACTD effort. The planned approach for the demonstration of the network architecture is to construct a communication equipment suite that will accommodate network enabling hardware and ACTD architecture. Fly a King Air-class aircraft platform carrying a communication suite for the demonstration. The communication equipment suite will be flown and exercised in a simulated vehicle within Line Of Sight (LOS) and Beyond Line Of Sight (BLOS) network configurations that include a surrogate Combined Air Operations Center (CAOC) and other C2 platforms (possibly a surrogate Forward Air Controller (FAC) using Tactical Air Control Party (TACP) hardware). Conduct the final ACTD operational demonstration and Joint Military Utility Assessment of the Weapon Data Link Network (WDLN) ACTD. Begin implementation of transition strategy.
- FY 2007 Plans - Continue execution of the transition plan. Finalize CONOPs, TTPs and training package. The architecture products, standards established, and lessons learned will flow into current and future networking requirements for weapon programs including JASSM, SDB Increment 2, WCMD-ER, JSOW-C, and EW programs such as MALD-J. Complete the WDLN ACTD.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2006 ACTDs/JCTDs	0.000	0.000	0.000

There is approximately $40.000 million for FY 2006 new starts in the ACTD and JCTD PEs. At the time of this writing the below are the most likely candidates without a signed JROCM. Therefore, there are no dollar values assigned.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Counter Intelligence - Human Intelligence Architecture Modernization Program, Intelligence Operations Now (CHAMPION)	0.000	0.000	6.500

Provide Combatant Commanders with an integrated, dynamic, collaborative Human Domain C4I environment under the Distributed Common Ground Station architecture; and enable real-time Human Domain reporting as components of situational awareness and common operating picture. Fuse existing and emerging systems and technologies into unified portal for timely, actionable intelligence information. This integrated system architecture will then support tactical operations of CI/HUMINT and special operations forces asset management, collection and reporting. CHAMPION user sponsor is the U.S. Central Command with U.S. Special Operations Command as the supporting command user sponsor; the Lead Service being the U.S. Army in cooperation with National Geospatial-Intelligence Agency.

• FY 2006 Plans - Defined joint user functional requirements to be addressed by the selected technological capabilities. Define architecture and identified new and sufficiently mature technologies for insertion or integration into the CHAMPION initial spiral. Developed a spiral model to incrementally grow the architecture while eliminating non-viable alternatives and decreasing risk. Final preparation for initial field trial.

• FY 2007 Plans - Conduct field trials of interim spiral capabilities and operational concepts. Demonstrate and assess concept of operations and the tactics, techniques and procedures in a joint exercise.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Comprehensive Maritime Awareness (CMA)	0.000	0.000	6.500

The CMA JCTD will demonstrate improved Maritime Awareness. There are two major objectives. The first is to assess the value of information exchange to improved MDA. The second will be to assess the value of net-centric information management for improved MDA awareness, applicable across US Government Departments, Combatant Commands and Coalitions (Singapore). This JCTD will field capabilities that will improve the ability to identify and prioritize world-wide maritime threats in a timely manner without inducing information overload on maritime security forces. Information sharing and collaboration will be emphasized to increase overall effectiveness. Metrics will be based on actual improvements to MDA; improvements in the efficient and effective use and application of maritime forces; suitability of CMA technologies for employment; and alignment with DoD Net-Centric initiatives and directives.

• FY 2006 Plans - Baseline, demonstrate and evaluate the information exchange capability with the Republic of Singapore.

• FY 2007 Plans - Baseline and demonstrate CMA technologies at PACOM, NORTHCOM and EUCOM. Interim Military User Assessments will be conducted.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Event Management Framework (EMF)	0.000	2.000	2.800

The EMF ACTD will provide a ground breaking capability that allows vertical and horizontal sharing of heretofore stove-piped information among organizations within and outside of DoD. In handling a terrorist event or incident, a horizontal information focus among Federal agencies is necessary during the interdiction phase of an incident. During response and recovery phases, a vertical information sharing focus among Federal, state, and local agencies is needed. A coherent interoperable information sharing mechanism is needed to: (1) Discover and share information resources throughout the incident based coalition domain; (2) Recognize the changing value of temporal information; and (3) Analyze and synchronize the large amounts of data relative to an event. All CoComs, as well as their non-DoD partners, have made large investments in command and control (C2) and collaboration coordination tools. But, to date, effective integration of those investments has been sub-optimal. The event management framework consists of policies, operational concepts and technologies to ensure decision makers can build a situational picture of an event with all relevant facts. Specifically this ACTD will provide: Constant 24/7 information search based on user criteria; Protection of the infrastructure of information to satisfy security needs; Incident and information correlation to "connect the dots"; Visualization of analytic results to aid decision makers in event assessment; EMF database and engine servers; Capability to share information and analytical results across CoComs, Coalitions, Services, and its interagency partners; Reduced time required for event based decision-making; EMF policies; operational concepts; and tactics, techniques and procedures.

• FY 2006 Plans - Develop draft EMF policy, user requirements and business rules to allow rapid information access. Execute MOAs for data sharing among regional and interagency partners. Develop Spiral 1 capabilities -- information access and awareness prototype, integrated information pointers (GUIs and business rules), customized portal, and cryptographic devices. Develop preliminary DOTMLPF required documents. Conduct interagency demonstration.

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• FY 2007 Plans - Develop portal interfaces. Develop Spiral 2 capabilities - incident and event reasoning prototype, ontology and data models. Refine CONOPs and TTPs. Plan Joint Military Utility Assessment (JMUA). Conduct interagency demonstration.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Extended Space Sensors Architecture (ESSA)	0.000	1.800	3.100

Classified content only.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Enable Theater Access - Sea Ports of Debarkation (JETA-SPOD)	0.000	0.000	3.700

Provides enhanced capability to the Joint Force Commanders who currently cannot rapidly deliver materiel through austere sea ports of debarkation by providing a modular causeway system that is compact, tough and rapidly deployable. Further, the existing steel causeway systems cannot be deployed across shallow littoral locations. JETA is an independent and inflatable system that meets this challenge.

• FY 2006 Plans - Implementation Directive developed, staffed, and approved. Initiate and finalize Concept of Operations (CONOPS) and Tactics, Techniques & Procedures (TTPs). Initiate and finalize the Military Utility Assessment Plan (MUAP). Conduct a force structure review and cost benefit analysis to determine viability of replacing existing modular causeways in the Army, and possibly augmenting the engineer bridging assets in both the Army and the Marine Corps. Conduct an In-Process Review, a Preliminary Design Review (PDR) and a Critical Design Review (CDR) during the Hardware Build Phase.

• FY 2007 Plans - Complete the building of JETA. Conduct Safety Assessment for the JETA. Conduct the Military Utility Assessment (MUA). Initiate transition strategy and prepare for extended user evaluation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Modular Intermodal Distribution System (JMIDS)	0.000	0.000	9.100

Provides enhanced modularity, intermodality and visibility thereby decreasing handling and shipping time through the Defense Transportation System (DTS).

• FY 2006 Plans - Implementation Directive developed, staffed, and approved. Initiate and finalize Concept of Operations (CONOPS) and Tactics, Techniques & Procedures (TTPs). Initiate and finalize the Military Utility Assessment Plan (MUAP). Conduct distribution analysis for the JMIDS components. Conduct an In-Process Review, a Preliminary Design Review (PDR) and a Critical Design Review (CDR) during the Hardware Build Phase. Evaluate and select Automatic Identification Technologies (AIT).

• FY 2007 Plans - Complete build of JMICs and JMIPs. Acquire the selected AIT components. Integrate AIT components into the JMIC and JMIP. Conduct Safety Assessment for the JMIC and JMIP. Conduct the Military Utility Assessment (MUA). Initiate transition strategy and prepare for extended user evaluation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
LARGE DATA	0.000	0.000	6.500

The Large Data Joint Capability Technology Demonstration (JCTD) will demonstrate the military utility of a highly scalable, rapid, and secure integrated capability to retrieve, store and share massive amounts of information effectively between global users. It will provide increased situational awareness by displaying large, fused sets of geospatially-referenced data in a Joint Warfighting context using intuitive navigation techniques. Secure access by all users to vast numbers of large data sized data sets when they need it. Specifically, it will provide: Synchronized databases across all major operational storage nodes, i.e. cache coherency; Timely delivery and sharing of data - instant real time access and collaboration; Intuitive way for users to navigate large data sets (petabytes to exabytes); Ability to easily visualize huge amounts of data that is being generated; Capability to perform "trackback" or change analysis on an unprecedented scale.

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• FY 2006 Plans - Develop a large data fast file system, high performance search engine & distributed cache coherent database. Design and demonstrate the Large Data prototype. Begin network certification, Develop CONOPS. Conduct demonstration.

• FY 2007 Plans - Develop holistic target characterization prototypes and deploy to Beta sites for evaluation. Perform multi-node testing on classified and unclassified networks. Refine CONOPs and TTPs. Plan JMUA. Conduct demonstration.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Multi-service Advanced Sensors to Counter Obscured Targets (MASCOT)	0.000	4.000	6.900

The primary objective of the Multi-service Advanced Sensors to Counter Obscured Targets (MASCOT) ACTD is to implement an intelligence-enabled, counter-CC&D framework that provides actionable intelligence by simultaneously leveraging legacy and emerging tactical, theater, and national intelligence capabilities in timelines relevant to the tactical kill chain. MASCOT will specifically introduce Measurement and Signatures Intelligence (MASINT) sensor capabilities with appropriate network-centric (NWC) processing, fusion, dissemination, and data visualization services into an end-to-end multi-sensor architecture that can be employed at the unit and theater levels to counter CC&D targets. This will include development of optimized methodologies for sensor-to-sensor communications to enable tipping and cueing and customizing fusion processing systems to make maximum use of the data to solve this difficult problem. The ACTD will be executed with the goal of transitioning baseline and spiral products of interoperable and reconfigurable ISR capabilities to intelligence and SOF forces for countering CC&D.

• FY 2006 Plans - MWC architecture Definition; begin Phase 1-3 development.

• FY 2007 Plans - Complete Phase 1 JMUA; spiral to Phase 2/3 products; mature fusion capability.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Node Management and Deployable Depot (NoMaDD)	0.000	2.000	3.400

Delays in getting needed supplies to the warfighter; loss of visability of items in the distribution pipeline; the inability to provide realistic delivery dates and to effectively adjust the flows of commodities for delivery at the right place at the right time all continue to be issues that impact the effectiveness of our forces. NoMaDD will address these problems by increasing visibility of item of supply in the distribution pipeline and providing logistic managers, at all levels, the knowledge needed to make the right decision.. In addition, a Deployable Depot will be demonstrated that will provide a rapid deployable capability, supported by a trained staff and information technologies, to effectively process and manage the physical flow of materiel into and through the theater. Together these capabilities will provide the logistic responsiveness needed to provide our warfighters the support they need in any theater of operation.

• FY 2006 - Develop and demonstrate initial spiral of Node Management tools to monitor strategic-to-tactical movement of Class I supplies (food). Initiate development of additional Node Management spirals for other classes of supply. Finalize design and begin to purchase Commercial-Off-The-Shelf (COTS) material management equipment for the Deployable Depot. Initiate the development of Concepts of Operations and an Independent Assessment Plan.

• FY 2007 - Continue development of NoMaDD technology and systems. Demonstrate mature Node Management tools. Deploy field-suitable communications and depot operating software in an existing forward-deployed depot. Test the Deployable Depot at an existing depot. Complete development of Concepts of Operations and an Independent Assessment Plan. Establish transition plan for Deployable Depot and initiate transition of Node Management capabilities developed through NoMaDD into the Army's Battle Command Sustainment Support System (BCS3).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Small UAV (SUAV)	0.000	1.500	3.400

Address Joint operational concerns noted during on-going operations through the integration of new technology across the entire class of Small UAVs. Technology focus areas are: Command, Control and Communications (C3); Payload Integration; Targeting; Platform Related Issues (power, propulsion, etc.); and Simulation and Training. Develop new TTPs across the Services for small unit real-time reconnaissance and surveillance capabilities. Develop integrated training programs with emphasis on simulation. Field new capability in as it is evaluated, but no less than once per year of the ACTD.

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• FY 2006 Plans - Initiate ACTD. Begin work on spectrally compliant data link and C3 structure. Assess other technology areas based on warfighter input. Begin CONOP development. Perform two limited assessments and one Interim Military Utility Assessment to support fielding of capabilities.

• FY 2007 Plans - Continue technology definition and cut in. Begin TTP development. Continue CONOP refinement. Perform two limited assessments and one Interim Military Utility Assessment to support fielding of capabilities.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CoCom Direct Support, Pre-Transition, and Classified programs	15.830	17.476	17.576

Direct support costs for the ACTD program averages between $14-$18 million annually. ACTD Direct Program Support is comprised of four programs broken-out separately from the specific ACTDs projects. The direct funding line is used to provide support for the entire ACTD program (versus individual ACTDs). These four programs include (1) Unified Combatant Commander; (2) ACTD Pre-Transition Support; (3) Interagency Classified Projects, and (4) Joint enabling technologies that are either directed by congress or initiated by DUSD (AS&C).

•1) Unified Combatant Commander (UCC) Direct Support: The UCC's play an essential role in the selection, validation, demonstration, and transition of ACTDs. Many ACTDs have funding allocated for the UCCs from within their specific program funding lines. Additionally, in previous years DUSD (AS&C) would attempt to provide direct ACTD support from OSD if resources became available. This direct support allows for a timely allocation of resources to the UCCs, based on the number of ACTD projects being sponsored and the intensity of effort required. The Department also envisions that the UCCs will play a greater role in the development, support and coordination of JCTD/ACTDs that are coalition oriented (within their specific AOR). UCC direct program funding is estimated between $4.000 million and $5.000 million per year.

•2) ACTD Pre-Transition Support: The ACTD program has been highly successful in rapidly developing and demonstrating new technologies and complementary concepts of operations for the warfighter. In order to successfully transition more ACTDs to the warfighter, the SECDEF established the goal of increasing the number of ACTDs evolving into formal acquisition programs. In order to enhance this transition effort and to respond to GAO recommendations in earlier years, the ACTD program continues to support a pre-transition line in the ACTD budget submission. Funding for pre-transition initiatives will be in the approximately $3.000 million per year.

•3) Special Capabilities Office (SCO)/Interagency Classified Support for ACTDs: ACTDs also support a limited number of classified efforts which are coordinated with other agencies and detailed in separate DoD budget exhibits. Funding for this direct program support is estimated between $9.000 million and $10.000 million each year.

•4) Joint Enabling Technologies: Over the past several years congressional committees have highlighted the potential of mature, joint technologies and provided resources to the ACTD program to investigate the military utility of these technologies. DUSD (AS&C) also becomes aware of promising technologies which may have transformational application to ACTDs. The need for these technologies may be realized until an ACTD is mid-way through its development or after a final demonstration. In most cases, these enabling technologies have broader application across several functional capabilities addressed by various ACTDs. Five enabling technologies were funded in FY 2005. Funding for the Enableling technologies is listed above and not included here.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2007 ACTD New Starts	0.000	0.000	20.180

Funding for FY 2007 ACTD new starts that will result from the ACTD selection process in February 2006.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2005 SIBR/STTR/Rescissions	-9.968	0.000	0.000

Reductions for FFRDC, CAAS, Section 8131, 8122 and SIBR/STTR.

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C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Joint Capability Technology Demonstration (JCTD): PE 0603648D8Z, BA3	0.000	34.443	35.553	35.590	35.624	35.613	35.576	0.000	212.399
JCTD Transition: PE 0604648D8Z, BA4	0.000	6.889	3.047	3.050	3.053	3.052	3.049	0.000	22.140
Defense Acquisition Executive: PE 0605648D8Z, BA5	0.000	0.985	6.015	6.016	6.017	6.017	6.016	0.000	31.066
OSD Major Equipment (JCTD): PE 0902198D8Z, BA P-1	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined in the table below. Refer to the specific Budget Exhibit for more details on each funding line.

D. Acquisition Strategy Only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in the JCTD BA4 Transition PE and the DAE BA5 PE. Promising ACTDs may recieve transition funding during the transition period to the JCTD program.

- Fifty percent of the products from at least 80% of all completing JCTDs will transition to acquisition programs of record, a GSA schedule, CoCom sustainment or, in the case of software-based products, into operationally-sustained systems (such as the Global Command and Control System (GCCS).
- JCTD/ACTDs completing ACD&P will be at TRL 6 or 7 and a logical progression of program phases to include development and funding will be established via a documented transition plan.

E. Major Performers Not Applicable.

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Date: February 2006

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RDT&E/ Defense Wide BA# 3	**0603755D8Z - High Performance Computing Modernization Program**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	216.598	217.489	175.313	183.009	204.048	208.248	194.730
P507	High Performance Computing Modernization Program	216.598	217.489	175.313	183.009	204.048	208.248	194.730

A. Mission Description and Budget Item Justification: The Department of Defense (DoD) High Performance Computing (HPC) Modernization Program supports the needs of the warfighter for technological superiority and military dominance on the battlefield by providing advanced computational services to U.S. weapons system scientists and engineers. By exploiting continuous advances in high performance computing 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 well as enabling advanced test and evaluation environments that allow synthetic scene generation, automatic control systems and virtual test environments. As such, HPC has been identified as a key enabling technology essential to achieving the objectives of the DoD's science and technology (S&T) and test and evaluation (T&E) programs.

The HPC Modernization Program established and supports four major shared resource supercomputing centers (MSRCs). The program also partially supports operations at two allocated distributed centers (ADCs) established by congressional direction. These centers are the Arctic Region Supercomputing Center (ARSC), Fairbanks, AK and the Maui High Performance Computing Center (MHPCC), Maui, HI. Two other ADCs, also congressionally established, do not receive programmed support through HPC Modernization Program funding, but provide supercomputing services to the DoD. These centers are the Army High Performance Computing Research Center (AHPCRC), Minneapolis, MN and the Space and Missile Defense Command (SMDC), Huntsville, AL and receive their support for operations through the Army. During FY2005 and prior years, there were also several smaller, special-purpose dedicated distributed centers (DDCs) that were annually established or upgraded based through a competitive selection process. However, these other centers will be retired as their systems become obsolete and funding for specialized programs will be provided through dedicated HPC project investments (DHPCPIs) beginning in FY2006. DHPCPIs will support a one-time need and have no legacy within the HPC Modernization Program. Centers and DHPCPIs directly support the DoD S&T and T&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 S&T and T&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.

The HPC Modernization Program user base includes 4,572 Scientists and Engineers at about 180 (DoD Laboratories and Test Centers, academic institutions and commercial businesses). The integrated HPC program consists of Shared Resource Centers; the Defense Research and Engineering Network; and Software Application Support. The MSRCs are responsible for as large a fraction of DoD's S&T and T&E computational workload as feasible. These MSRCs provide extensive capabilities to address user requirements for hardware, software, and programming environments. ADCs, existing DDCs (until they are retired), and DHPCPIs augment the MSRCs to form the total HPC Modernization Program computational capability. DDCs (until retired) and DHPCPIs address critical HPC requirements that cannot be met at MSRCs, such as real-time, and near real-time computing requirements, and leverage significant HPC and mission expertise located at these remote sites. All elements of the HPC Modernization Program are interconnected with all S&T and T&E user sites via the Defense Research and Engineering Network (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, builds collaborative programming environments, and develops mechanisms to protect high value HPC application codes.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603755D8Z - 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, test and evaluation environments, and technology development for superior weapons, warfighting, and related support systems. The Program goals are to (1) Provide the best commercially available high-end HPC capability; (2) Acquire and develop joint-need HPC applications, software tools and programming environments; (3) Educate and train DoD's scientists and engineers to effectively use advanced computational environments; (4) Link users and computer sites via high-capacity networks, facilitating user access and distributed computing environments; and (5) Promote collaborative relationships among the DoD HPC community, the National HPC community and MSIs in network, computer and computational science.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	222.927	189.747	192.101
Current BES/President's Budget (FY 2007)	216.598	217.489	175.313
Total Adjustments	-6.329	27.742	-16.788
Congressional Program Reductions		-3.508	
Congressional Rescissions			
Congressional Increases		31.250	
Reprogrammings			
SBIR/STTR Transfer	-6.018		
Other	-0.311		-16.788

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0902198DZ Major Equipment OSD	0.052	0.049	0.050	0.052	0.053	0.054	0.057	Continuing	Continuing

Comment: Funding exists in the 2006 Procurement budget to provide for approximately five Dedicated High Performance Computing Project Investments. In FY 2005, the MHPCC competed as a DDC and received an upgrade award. The AHPCRC and the SMDC received congressionally added funds for both operations and upgrades. The following DDCs were also provided upgrades through the annual competitive process mentioned earlier: Arnold Engineering Development Center (AEDC), Arnold AFB, TN; Air Force Seek Eagle Office, Eglin AFB, FL; Naval Surface Warfare Center, Carderock Division, W. Bethesda, MD; and Naval Undersea Warfare Center, Newport, RI.

In FY 2005 two MSRCs were upgraded and funding exists in the FY 2006 Procurement budget to upgrade 2 centers. The four MSRCs are: Army Research Laboratory (ARL), Aberdeen

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Proving Grounds, MD; Aeronautical Systems Center (ASC), Wright-Patterson AFB, OH; US Army Engineer Research and Development Center, Vicksburg, MS; and Naval Oceanographic Office, Stennis Space Center, MS.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
05	Selected Resource Centers	72.4	43.4	65.6	Habus	Habus
05	Networking	14.3	4.7	6	Gbps	Gbps
05	Software Applications	4	4	4.2	Customer Satisfaction (0-5 scale)	Customer Satisfaction (0-5 scale)
06	Selected Resource Centers	138	69.4	TBD	Habus	Habus
06	Networking	20.3	1	TBD	Gbps	Gbps
06	Software Applications	4.2	4.2	TBD	Customer Satisfaction (0-5 scale)	Customer Satisfaction (0-5 scale)
07	Selected Resource Centers	207.4	111.1	TBD	Habus	Habus
07	Networking	21.3	1	TBD	Gbps	Gbps
07	Software Applications	4.2	4.2	TBD	Customer Satisfaction (0-5 scale)	Customer Satisfaction (0-5 scale)

Comment: All FY 2005 actual performance metrics exceeded those planned.

Significant funding reductions in FY 2007 will cause program changing adjustments beginning in FY 2006. Three courses of actions to compensate for these reductions have been briefed to the Director Defense Research and Engineering with an expected decision during the second quarter of FY2006. Performance Metrics could also be adjusted depending on the course of action chosen to compensate for budget reductions.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603755D8Z - High Performance Computing Modernization Program**	**P507**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P507	High Performance Computing Modernization Program	216.598	217.489	175.313	183.009	204.048	208.248	194.730

A. Mission Description and Project Justification: The Department of Defense (DoD) High Performance Computing (HPC) Modernization Program supports the needs of the warfighter for technological superiority and military dominance on the battlefield by providing advanced computational services to U.S. weapons system scientists and engineers. By exploiting continuous advances in high performance computing 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 well as enabling advanced test and evaluation environments that allow synthetic scene generation, automatic control systems and virtual test environments. As such, HPC has been identified as a key enabling technology essential to achieving the objectives of the DoD's science and technology (S&T) and test and evaluation (T&E) programs.

The HPC Modernization Program established and supports four major shared resource supercomputing centers (MSRCs). The program also partially supports operations at two allocated distributed centers (ADCs) established by congressional direction. These centers are the Arctic Region Supercomputing Center (ARSC), Fairbanks, AK and the Maui High Performance Computing Center (MHPCC), Maui, HI. Two other ADCs, also congressionally established, do not receive programmed support through HPC Modernization Program funding, but provide supercomputing services to the DoD. These centers are the Army High Performance Computing Research Center (AHPCRC), Minneapolis, MN and the Space and Missile Defense Command (SMDC), Huntsville, AL and receive their support for operations through the Army. During FY 2005 and prior years, there were also several smaller, special-purpose dedicated distributed centers (DDCs) that were annually established or upgraded based through a competitive selection process. However, these other centers will be retired as their systems become obsolete and funding for specialized programs will be provided through dedicated HPC project investments (DHPCPIs) beginning in FY 2006. DHPCPIs will support a one-time need and have no legacy within the HPC Modernization Program. Centers and DHPCPIs directly support the DoD S&T and T&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 S&T and T&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.

The HPC Modernization Program user base includes 4,572 Scientists and Engineers at about 180 (Department of Defense Laboratories and Test Centers, academic institutions and commercial businesses). The integrated HPC program consists of Shared Resource Centers; the Defense Research and Engineering Network; and Software Application Support. The MSRCs are responsible for as large a fraction of DoD`s S&T and T&E computational workload as feasible. These MSRCs provide extensive capabilities to address user requirements for hardware, software, and programming environments. ADCs, existing DDCs (until they are retired), and DHPCPIs augment the MSRCs to form the total HPC Modernization Program computational capability. DDCs (until retired) and DHPCPIs address critical HPC requirements that cannot be met at MSRCs, such as real-time, and near real-time computing requirements, and leverage significant HPC and mission expertise located at these remote sites. All elements of the HPC Modernization Program are interconnected with all S&T and T&E user sites via the Defense Research and Engineering Network (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, builds collaborative programming environments, and develops mechanisms to protect high value HPC application codes.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603755D8Z - High Performance Computing Modernization Program**	**P507**

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, test and evaluation environments, and technology development for superior weapons, warfighting, and related support systems. The Program goals are to (1) Provide the best commercially available high-end HPC capability; (2) Acquire and develop joint-need HPC applications, software tools and programming environments; (3) Educate and train DOD's scientists and engineers to effectively use advanced computational environments; (4) Link users and computer sites via high-capacity networks, facilitating user access and distributed computing environments; and (5) Promote collaborative relationships among the DoD HPC community, the National HPC community and MSIs in network, computer and computational science.

Funding exists in the FY 2006 Procurement budget to provide for approximately five DHPCPIs. In FY 2005, the MHPCC competed as a DDC and received an upgrade award. The AHPCRC and the SMDC received congressionally added funds for both operations and upgrades. The following DDCs were also provided upgrades through the annual competitive process mentioned earlier: Arnold Engineering Development Center (AEDC), Arnold AFB, TN; Air Force Seek Eagle Office, Eglin AFB, FL; Naval Surface Warfare Center, Carderock Division, W. Bethesda, MD; and Naval Undersea Warfare Center, Newport, RI.

In FY 2005 two MSRCs were upgraded and funding exists in the FY 2006 Procurement budget to upgrade 2 centers. The four MSRCs are: Army Research Laboratory (ARL), Aberdeen Proving Grounds, MD; Aeronautical Systems Center (ASC), Wright-Patterson AFB, OH; US Army Engineer Research and Development Center, Vicksburg, MS; and Naval Oceanographic Office, Stennis Space Center, MS.

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. DREN currently provides services to sites throughout the continental United States, Alaska, Hawaii, and can be extended overseas where necessary. Minimal access is DS-3 (45 Mbps) with potential high-end access of OC-768 (40 Gbps) over the next 7 years. Current site connectivity ranges from DS-3 to OC-48 (2 Gbps). A Secret DREN using common Secret systems high key with NSA certified Type-1 encryptors that can transport classified traffic at OC-3 (155 Mbps) has also been deployed.

The HPC Modernization Program employs state-of-the-art WAN security and strong host and user security creating a defense-in-depth security architecture.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Selected Resource Centers:	137.261	123.821	85.492

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. These efforts are planned to continue into future years with no set completion date. The program fully sustains and supports the integration, operation and use of HPC computational resources at four Major Shared Resource Centers. The program partially sustains and supports the integration, operation and use of HPC computational resources at two Allocated Distributed Centers. For several years two other Allocated Distributed Centers, sustained and supported by the Army have received modernization funding through congressional adjustments to the program's annual budget request. The program also makes other specialized systems investments that are sustained and supported by sponsoring Service organizations.
Significant funding reductions in FY 2007 will cause program changing adjustments beginning in FY 2006. Three courses of action to compensate for these reductions have been briefed to the Director

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603755D8Z - High Performance Computing Modernization Program**	**P507**

Defense Research and Engineering with an expected decision during the second quarter of FY 2006. Upon a final decision, funds will be transferred between the program's initiatives to support the final plan.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Networking:	27.052	33.148	31.014

Network services to link all elements of the program are provided by the Defense Research and Engineering Network (DREN) and operation of security systems and enhancements is continuous. The DREN has expanded internet protocol (IPv-6) testing for the Department of Defense and upgraded full point-to-point encryption of the network. Collaborative work with the Federal networking community and standards associations assures that the DREN will remain compatible with future technology change. These efforts are planned to continue into future years with no set completion date. However, significant funding reductions in FY 2007 will cause program changing adjustments beginning in FY 2006. Three courses of action to compensate for these reductions have been briefed to the Director Defense Research and Engineering with an expected decision during the second quarter of FY 2006. Upon a final decision, funds will be transferred between the program's initiatives to support the final plan. Depending on the course of action chosen, required reductions to network service and bandwidth to the community will further limit the support provided DoD laboratories and test centers.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Software Applications:	52.285	60.520	58.807

Development efforts in software programs continue to mature as projects are completed, and others begun. An Academic Outreach Program is supported to encourage and support computational science in universities across the United States. Software Institutes and portfolios develop shared scalable applications to exploit scalable HPC assets. The Programming Environments and Training effort provides computational and computer science support to the DoD HPC user community through interaction and collaborative projects with academic and industrial partners. On-going efforts are maintained to develop technologies and methodologies to protect and limit end-use of high performance computing applications software while minimizing the burden on authorized end-users. These efforts are planned to continue into future years with no set completion date. However, significant funding reductions in FY 2007 will cause program changing adjustments beginning in FY 2006. Three courses of action to compensate for these reductions have been briefed to the Director Defense Research and Engineering with an expected decision during the second quarter of FY 2006. Upon a final decision, funds will be transferred between the program's initiatives to support the final plan. Depending on the course of action chosen, the program could have to reduce Software Protection activities by 10% in FY 2007 and future years.

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
0902198DZ Major Equipment OSD	51.962	49.500	50.600	52.000	53.300	54.700	57.300	Continuing	Continuing

Comment: Funding exists in the FY 2006 Procurement budget to provide for approximately five Dedicated High Performance Computing Project Investments. In FY 2005, the MHPCC competed as a DDC and received an upgrade award. The AHPCRC and the SMDC received congressionally added funds for both operations and upgrades. The following DDCs were also provided upgrades through the annual competitive process mentioned earlier: Arnold Engineering Development Center (AEDC), Arnold AFB, TN; Air Force Seek Eagle Office, Eglin AFB, FL; Naval Surface Warfare Center, Carderock Division, W. Bethesda, MD; and Naval Undersea Warfare Center, Newport, RI.

In FY 2005 two MSRCs were upgraded and funding exists in the FY 2006 Procurement budget to upgrade 2 centers. The four MSRCs are: Army Research Laboratory (ARL), Aberdeen Proving Grounds, MD; Aeronautical Systems Center (ASC), Wright-Patterson AFB, OH; US Army Engineer Research and Development Center, Vicksburg, MS; and Naval Oceanographic Office, Stennis Space Center, MS.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603755D8Z - High Performance Computing Modernization Program**	**P507**

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	19.982	30.762	26.594	29.648	30.340	30.942	31.710
P781	Software Engineering Institute (SEI)	17.784	22.788	21.812	23.507	24.190	24.735	25.418
P782	Software Intensive Systems	2.198	2.507	2.696	2.905	2.990	3.057	3.142
P783	Software Producibility Initiative	0.000	2.023	2.086	3.236	3.160	3.150	3.150
P784	Advanced Lithography	0.000	3.444	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: Software is key to meeting DoD's increasing demand for high-quality, affordable, and timely national defense systems. There is a critical need to rapidly transition state-of-the-art technology and best practices to improve the acquisition, engineering, fielding, and evolution of software-intensive DoD systems.

Project 781 funds the technology development and transition activities of the Software Engineering Institute (SEI) at Carnegie Mellon University. The SEI is an R&D Laboratory Federally Funded Research and Development Center (FFRDC) sponsored by the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. It was established in 1984 as an integral part of the DoD's software initiative to identify, evaluate, and transition high-leverage software engineering technologies and practices. The SEI fosters disciplined software engineering practices by DoD acquisition and life-cycle support programs and by the industrial base where the bulk of defense software is produced. The Institute works across government, industry, and academia to: (1) improve current software engineering activities from acquisition, technical, and management perspectives; (2) facilitate rapid, value-added transition of software engineering technology into practice; and (3) evaluate and calibrate emerging software engineering technologies to determine their potential for improving the evolution of software-intensive DoD systems.
The SEI enables the exploitation of emerging software technology by bringing engineering discipline to software acquisition, development, and evolution. The SEI focuses on software technology areas judged to be of the highest payoff in meeting defense needs. FY 2005 focus areas are: Acquisition Practices for DoD Software-Intensive Systems (including pilot demonstrations of new technologies, dissemination of lessons learned, and provision of selected important services to the DoD acquisition community); Software Engineering Technical Practices (including survivable systems practices, software architecture technology, software component technology, performance-critical systems, and integration of software-intensive systems); and Software Engineering Management Practices [including personal and team software development processes, software engineering measurement and analysis, and Capability Maturity Model Integration (CMMI)].

This funding line includes the Software Intensive Systems (SIS) effort under project 782. The SIS mission stems from the recommendations of the FY 2000 DSB Task Force on Software. The Assessments and Support organization within AT&L/Defense Systems/Systems Engineering manages the SIS mission to improve DoD system acquisition and sustainment. The A&S organization, because of its assessment activities, is strategically positioned to ensure that software acquisition and development technology and best practices are adopted and implemented by DoD acquisition programs. The comprehensive A&S resources ensure coverage of the breadth of responsibilities necessary to achieve the mission of improving system acquisition performance, and to act as the DoD software community focal point. The work is divided into 5 focus areas: Policy & Guidance, Education, Best Practices, Software Engineering Technology, and Collaboration. This DoD function is not affiliated with the Software Engineering Institute.

This funding line also includes the Software-Intensive Systems Produceability Initiative starting in FY 2006 as project 783. The role of software in major Defense acquisition programs has been steadily increasing. Much of the mission functionality demanded from programs such as F/A-22, JSF, Future Combat System, and many others is embodied in large, complex

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**

software systems. Shortcomings in software development often lead to schedule slippage, cost growth, and mission compromises. These shortcomings can frequently be traced to underpowered software development technologies not up to the task of developing the scale and complexity of software needed. Despite the large role of the commercial sector in advancing software technology, there are many key aspects of complex, distributed, robust systems crucial to DoD that are not being addressed directly by commercial technology efforts, as our experience over the past decade shows. The Software Produceability Initiative will focus on developing and transitioning more powerful and effective software development science, techniques, tools, and technologies to improve our ability to design, build, test and sustain software and software intensive systems.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	21.096	25.209	26.180
Current BES/President's Budget (FY 2007)	19.982	30.762	26.594
Total Adjustments	-1.114	5.553	0.414
Congressional Program Reductions			
Congressional Rescissions		-0.497	
Congressional Increases		6.050	
Reprogrammings	-0.500		
SBIR/STTR Transfer	-0.586		
Other	-0.028		0.414

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P781**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P781	Software Engineering Institute (SEI)	17.784	22.788	21.812	23.507	24.190	24.735	25.418

A. Mission Description and Project Justification: P781 Software is key to meeting DoD's increasing demand for high-quality, affordable, and timely national defense systems. There is a critical need to rapidly transition state-
of-the-art technology and best practices to improve the acquisition, engineering, fielding, and evolution of software-intensive DoD systems.

The SEI enables the exploitation of emerging software technology by bringing
engineering discipline to software acquisition, development, and evolution.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Acquisition Practices for DoD Software Intensive Systems:	2.167	2.445	2.077

FY 2005 Accomplishments:
- Conducted Acquisition Support Program, initiating pilot demonstrations of adopting new technology within the DoD program-office environment, coordinating and broadly disseminating lessons learned from these pilots, and providing selected and strategically important software engineering services to the DoD acquisition community.
- Enhanced support to those responsible for acquiring software in the Army, Navy, and Air Force, actively working with each service through Strategic Impact Programs (SIPs) for software-intensive systems.
- Established work plans with DoD programs identified as top priorities by the principal SEI sponsor, the Office of the Secretary of Defense (Acquisition, Technology, & Logistics), and increased interaction and support to DoD agencies and joint programs; the SEI participated with OSD on 804 activities. Activities included acquisition pilots and performing diagnostics to aid in early program and engineering risk identification.
- Delivered Software Leadership course to 25 members of the Army Senior Executive Service and General Officers and Software Acquisition Survival Skills course to 200 DoD professionals.
- Developed survey to assess systems engineering practices and results of defense contractors.
- Developed software case studies for use in DAU curriculum.

FY 2006 Plans:
- Work with key acquisition programs to continually understand and meet the needs of the acquisition community.
- Build delivery teams to support the needs of Army, Air Force, Navy, and civil agency acquisition programs.
- Determine gaps in current acquisition practices and strengthen those practices in support of acquisition programs.
- Define mechanisms to support active and ongoing collection and dissemination of lessons learned in support of the acquisition community.
- Develop tools and methods to improve management of software-intensive systems by program offices.
- Provide templates for collection and broad dissemination of best acquisition practices and lessons.
- Integrate and transition knowledge gained from acquisition engagements.
- Support the development of the CMMI Acquisition model.

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P781**

FY 2007 Plans:
- Drawing on SEI expertise in software engineering, help DoD and other government acquirers improve their ability to acquire, deploy, and sustain systems and capabilities. Identify opportunities for the SEI to create, apply, and amplify technologies that respond to customer needs.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Software Engineering Technical Practices:	11.709	15.203	14.752

FY 2005 Accomplishments:
- Released tool suite, piloted course summarizing traffic and tracking security trends on DoD networks.
- Published practices for Internet forensics.
- Completed prototypes, piloted technology to analyze malicious code.
- Developed process to define security requirements.
- Created prototype method to assess commercial software vendors for mission-critical applications.
- Designed prototype methods to increase Internet traceability and trade off anonymity; investigated policy implications.
- Published guidance to improve robustness of security programs.
- Published guidance to reduce insider threats to critical infrastructure.
- Developed information assurance curriculum to enhance computer science graduates.
- Published technical reports on incorporating sound architecture practices in Acq Strats, RFPs, and SOWs.
- Developed architecture, integrated development environment, and key reasoning frameworks for an automated architecture assistant to provide expert design guidance.
- Published report to aid in understanding the effects of service-oriented architectures on system quality attributes.
- Released economic model to support making the business case for using a product line approach for similar systems.
- Developed variability model that helps manage differing features, platforms, etc., across similar systems in a product line.
- Developed a three-course sequence to help organizations adopt sound product line practices.
- Developed infrastructure and development environment for a technology to make runtime behavior predictable in quality-critical systems.
- Released model-checking reasoning framework that applies model checking to software component technology.
- Published reports on moving existing systems to service-oriented architectures, model-driven architecture, evolution of systems-of-systems, interoperability impacts on the acquisition process, and modeling embedded control systems.
- Conducted experiments, published results on analyses of technologies for interoperability to improve understanding of moving toward net-centricity.
- Developed extensions for the Society for Automotive Engineers Architecture Analysis and Design Language (AADL) standard to improve reliability and fault modeling.
- Established an open source AADL tool environment as a low-cost entry point; automates analyses and encourages contributions from users.

FY 2006 Plans:
- Improve technologies to collect and examine netflow data on large systems to rapidly detect threats and problems.
- Continue development of a virtual training environment for network defense to support Army training needs; transition to other services.
- Continue development of framework and courses for enterprise security management, including information security risk management.
- Publish techniques to embed software assurance throughout the system life cycle, resulting in more secure systems.
- Establish resource center with line and U.S. Secret Service funding to analyze electronic crimes and provide a knowledgebase of practices.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)	Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P781**

- Evolve automated analysis of malicious code to rapidly resolve incidents.
- Enhance processes, develop tools for security requirements engineering.
- Design interactive learning environment to identify and analyze insider threats and prevent attacks.
- Release Web portal on secure software development practices to reduce vulnerabilities in COTS products.
- Extend capability of intelligent, automated architect's assistant; validate with DoD and industry-funded pilots.
- Develop architecture technology appropriate in the systems engineering context, appropriate for Future Combat Systems (FCS) et al.
- Develop effective architecture connections to new technologies such as aspect-oriented development, service-oriented architectures, and autonomic systems.
- Release new quality attribute models, reasoning frameworks, and methods to improve architecture practices.
- Publish guides on practical adoption, automated support, and acquisition strategies for product line practice to improve viability.
- Extend prediction-enabled component technology to address security; validate in the laboratory as well as with DoD and industry-funded pilots.
- Develop and release a starter kit, methods, and courses to make it easy and cost-effective for organizations to use prediction-enabled component technology in quality-critical systems.
- Produce methods for analyzing interoperability risks and guiding programs to service-oriented architectures, such as FCS and DISA Network Centric Enterprise Services.
- Publish guidance on technologies and methods for interoperability to aid in moving to net-centricity.
- Identify DoD software needs, improve decision making for net-centricity; include costs/risks, management, acquisition related to interoperability.
- Publish user guide for modeling and analyzing embedded real-time systems using AADL; transition to community with courses.
- Release additional extensions for the AADL standard to support modeling of partitioned systems and reference architectures.
- Identify assurance case patterns for specialized aspects of embedded systems and develop user guide.
- Develop security assurance case with collaborators to work out issues and demonstrate the method.
- Conduct work in producibility. Enable DoD to "manage the supply chain" for software, hiking productivity, reducing delays, and closing gaps in predicting/understanding development of mission-critical systems.
- Conduct work in systems engineering, which is increasingly inseparable with software engineering; also, improvements in software engineering can inform best practices in systems engineering, and vice versa.

FY 2007 Plans:
- Survivable Systems: Ensure that appropriate technology and systems management practices are being used to design and implement networked systems to recognize, resist, and recover quickly from attacks.
- Product Line Practice: Provide the technical, business, and acquisition techniques and guidance required to achieve the significant cost, schedule, and quality benefits associated with using a product line approach for similar systems.
- Software Architecture Technology: Harness innovations in quality attribute reasoning and software architecture technology for practical use. Provide an effective, integrated, and widely available set of architectural practices, enabling and maximizing automated support.
- Predictable Assembly from Certifiable Components: Provide support for predicting properties of assemblies of components. Ensure that the builders of systems have the ability to select software components on the basis of their predicted runtime behavior within specific assemblies and therefore to predict the runtime behavior of these assemblies or systems.
- Integration of Software-Intensive Systems: Provide principles, methods, and techniques to accomplish broad-based and sustainable integration and interoperation across components, systems, and systems of systems.
- Performance-Critical Systems: Establish a model-based software systems engineering practice for embedded real-time systems. Develop and mature methods for creating and documenting structured rationales showing how evidence gathered during system design and test supports dependability and real-time performance claims for specific systems.
- Initiatives in high-performance computing and ultra-large-scale systems.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P781**

Software Engineering Management Practices:	3.908	5.140	4.983

FY 2005 Accomplishments:
- Held workshops, delivered courses, conducted Standard Capability Maturity Model Integration (CMMI) Appraisal Method for Process Improvement (SCAMPI) appraisals, provided direct assistance to organizations, and supported a vast transition partner program to ensure that the acquisition and development communities can implement process improvement programs, understand the applicability and coverage of CMMI best practices, and understand the relationships these models have to other sets of best engineering, management, workforce, and acquisition practices and standards. More than 40,000 people have been trained in line-developed CMMI methodology.
- Completed the architecture and development strategy, and built the infrastructure for creating CMMI v1.2 model, appraisal methods, and training to improve software and systems processes for DoD, industry.
- Produced secure software development process and training course to reduce developer-injected vulnerabilities; piloted at Naval Oceanographic Office.
- Developed initial software metrics framework to improve acquisition of software-intensive systems; piloted at the Software Engineering Directorate-Aviation and Missile Research, Development, and Engineering Center.
- Investigated ways to measure and evaluate quality of software requirements specifications for software-intensive systems.
- Identified emerging practices for building secure software-intensive systems.

FY 2006 Plans:
- Release Version 1.2 of the CMMI with DoD and industry-recommended updates to model, appraisal methods, and training to improve software and systems processes.
- Develop CMMI acquisition model for DoD acquisition organizations.
- Complete framework for DoD acquisition metrics, including technical reports with guidance for implementation and courses needed for transition to practice
- Publish guidance for use of CMMI by small organizations and Tier 2 and Tier 3 DoD contractors.
- Release a secure software development process; produce courses and transition into defense and commercial industry.
- Investigate application of Team Software Practice (TSP) management practices to DoD acquisition; extend with pilots.
- Research risk indicators for DoD system-of-systems integration efforts.
- Use additional STE for work in risk management. As system complexity increases, the ability to identify and manage risk becomes more critical. A key focus is risk identification for teams developing distributed interoperable systems.

FY 2007 Plans:
- Capability Maturity Model Integration: Provide stewardship for and transition into practice an integrated Capability Maturity Model (CMMI) product suite that provides the DoD and industry with support for process and product improvement.
- Team Software Process: Define explicit team process techniques whose use predictably improves the cost, schedule, quality, and survivability of software-intensive systems developed by an integrated engineering team. Determine cost, schedule, and quality performance that the DoD can expect from teams using the TSP and establish metrics for use in software acquisition.
- Software Engineering Measurement and Analysis: Develop measurement and analysis guidance, information resources, and practices that assist DoD and industry software organizations in managing and improving their software engineering practices.

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P781**

D. Acquisition Strategy: Not Applicable.

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Electronic Systems Center	Hanscom AFB, MA	Funds provided to enable the exploitation of emerging software technology by bringing engineering discipline to software acquisition, development, and evolution.	16 NOV 2004

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P782**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P782	Software Intensive Systems	2.198	2.507	2.696	2.905	2.990	3.057	3.142

A. Mission Description and Project Justification: P782 Software- Intensive Systems (SIS). The Systems Engineering Directorate (AT&L/Defense Systems) manages the Software Intensive Systems (SIS) mission to improve DoD SIS acquisition and sustainment. The SE Directorate is the focal point for DoD initiatives that reduce software risk. The SIS mission stems from the recommendations of the FY 2000 DSB Task Force on Software. The SE Directorate is organized into elements that ensure coverage of the breadth of responsibilities necessary to achieve the mission of improving SIS acquisition performance, and to act as the DoD software community focal point. These elements focus on Policy & Guidance, Education, Best Practices, Software Engineering Technology, and Collaboration. SE Directorate conducts its SIS efforts by understanding DoD needs, issues, and solutions; and acting on/transitioning improvements to DoD Enterprise-, Program- and practitioner-levels.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Software Intensive Systems:	2.198	0.000	0.000

FY 2005 Accomplishments:
Policy and Guidance:
- Complete implementation of Section 804 and transition monitoring function to the Systems Engineering Forum.
- Revise and publish CMMI AM based on pilot feedback.
- Align systems engineering process guidance and software acquisition/development processes.

Best Practices:
- DoD Best Practices Clearinghouse: Develop two prototypes for operational evaluation. Populate Clearinghouse with initial practice set.
- Actively participate in assessments and systemic analysis activities to identify software-related best practices and practice gaps.

Technology:
- Support research into the integration of iterative software development into the traditional systems engineering process.
- Develop technology for program assessments and systemic analysis
- Continue technology watch activities and software engineering technology needs studies

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P782**

Collaboration:
- Continue collaborative efforts across DoD and the international community

FY 2005 Plans:
Policy and Guidance:
- Complete implementation of Section 804 and transition monitoring function to the Systems Engineering Forum.
- Revise and publish CMMI AM based on pilot feedback.
- Align systems engineering process guidance and software acquisition/development processes.

Best Practices:
- DoD Best Practices Clearinghouse: Develop two prototypes for operational evaluation. Populate Clearinghouse with initial practice set.
- Actively participate in assessments and systemic analysis activities to identify software-related best practices and practice gaps.

Technology:
- Support research into the integration of iterative software development into the traditional systems engineering process.
- Develop technology for program assessments and systemic analysis
- Continue technology watch activities and software engineering technology needs studies

Collaboration:
- Continue collaborative efforts across DoD and the international community

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Software Intensive Systems:	0.000	2.507	2.696

FY 2006-2007 Plans:
Policy and Guidance:
- Support systemic analysis of program assessments for software-related issues, inadequate or ineffective guidance, or unintended consequences.

Best Practices:
- DoD Best Practices Clearinghouse: Initiate operations and transfer responsibility to DAU. Continue to support clearinghouse population and update.
- Continue to participate in acquisition program assessments

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603781D8Z - Software Engineering Institute (SEI)**	PROJECT **P782**

Technology:
- Continue the technology watch activities and software engineering technology needs studies

Collaboration:
- Continue collaborative efforts across DoD and the international community

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P783**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P783	Software Producibility Initiative	0.000	2.023	2.086	3.236	3.160	3.150	3.150

A. Mission Description and Project Justification: P783 Software Produceability Initiative. The role of software in major Defense acquisition programs has been steadily increasing. Much of the mission functionality demanded from programs such as F/A-22, JSF, Future Combat System, and many others is embodied in large, complex software systems. Shortcomings in software development often lead to schedule slippage, cost growth, and mission compromises. These shortcomings can frequently be traced to underpowered software development technologies not up to the task of developing the scale and complexity of software needed. Despite the large role of the commercial sector in advancing software technology, there are many key aspects of complex, distributed, robust systems crucial to DoD that are not being addressed directly by commercial technology efforts, as our experience over the past decade shows.

This initiative will conduct integrated program of research from basic through dem-val that advances the state-of-the art in produceability of software for DoD systems, particularly those systems characterized by high complexity, need for robustness, information assurance, real-time performance, and physical distribution. Research and transition efforts will pursue technical goals to (1) meet and ensure mission-critical requirements; (2) control complexities; (3) enable system evolution; (4) ensure seamless interoperability; and (5) model behavior and performance.

Invest in promising software technologies involving (1) specification of complex requirements; (2) correct-by-construction software development; (3) composable and customizable frameworks; (4) high-confidence system software and middleware; (5) system architectures for network-centric environments; (6) technologies for testing, verification, and validation, and (7) modeling and metrics. Establish cost avoidance goals of 10% - requirements phase, 60% - design phase, 80% - code/unit test phase and 40% - integration and test phase in the software development lifecycle. Based on these goals, annuals cost avoidance is estimated at $10.6 billion. Additionally, these software experts would directly advise ongoing acquisition programs.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
	0.000	2.023	2.086

FY 2005 Accomplishments:
N/A

FY 2006 Plans:
Start initial effort to define the Systems and Software Test Track to provide a place (possibly virtual and not a single physical location) for experimental verification of Software-Intensive Systems Producibility technologies due to their novelty and the potential complexity of the underlying theories. The experimental platforms will incorporate software technology to instrument, monitor and test large-scale applications. Challenge problems for the open experimental platforms will be made accessible for all the research teams. The experimental platform research will include subtasks to conduct large-scale

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603781D8Z - Software Engineering Institute (SEI)**	PROJECT **P783**

coordination experiments, and to develop methods and tools for evaluating aggregate performance of applications. This environment will provide a full range of collaborative technology challenges, run-time platforms and applications, experiments, evaluations, and demonstrations. A Common infrastructure will enable control and data flow between both kinds of application components for a distributed environment. The open experimentation environment provides the fundamental reference architecture and underpinnings helping researchers to develop and test their designs as well as facilitates transition of promising technologies into production use.

Initiate a research topic in Interoperability to address software techniques to improve system of system interoperability. Develop and transition new methodologies, tools, technologies and techniques that improve DoD's ability to acquire software for large, net-centric warfighting systems of systems. Key in this effort is to develop and establish principles of interoperability as a foundation for hardware-software. These principles will enable the precise description of components, their construction and their acceptable interactions, leading to new approaches for building and assembling systems.

Conduct a third workshop on software producibility focused on industry needs, interests and motivations.

FY 2007- FY 2008 Plans:
In FY 2007, we will implement the Systems and Software Test track concepts developed in 2006 including establishing facilities, staff, and development artifacts. We will begin collaborative efforts between industry, DoD and academia to prototype and assess new tools and technologies against real-world problems. The testbed will serve to focus the diverse research projects on common problem statements, thereby facilitating comparison of new techniques and measurement of effectiveness in controlled analyses. The supportability aspects of new technologies will be addressed, including tool documentation, maintenance, integration, and upgrade.
We will conduct the second year and the optional third year of interoperability research to deliver useable software methodologies, prototypes, or tools which can be tested and incorporated into DoD R&D programs.
In 2008, begin partial funding for the on-going HPEC-SI program to provide standardized signal processing software for MDAPs, including Joint Strike Fighter. This core funding will allow continued evolution of the code base to new languages and processors, and initiate increasing available functionality to include image processing.
We will also complete the study by the National Academy of Sciences on Advancing Software-Intensive System Producibility.
Depending upon the Service and Agency commitment of research funds for related initiatives and successful completion of the 2006 industry workshop, we will coordinate joint university/industry/Government research efforts to take promising prototype software techniques and tools and mature them for applicability to Defense acquisition programs. We intend to obtain substantial participation, and possible cost sharing, by traditional Defense contractors and commercial software tool vendors, and also by standards bodies for open source development, industry associations, and consortia (such as ESCHER research institute) for tech transition.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603781D8Z - Software Engineering Institute (SEI)**	**P784**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P784	Advanced Lithography	0.000	3.444	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: FY 2006 resources will fund thin film mask technology development.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Advanced Lithography	0.000	3.444	0.000

Congression add for thin film mask technology development.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reactions Special Projects (QRSP)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	127.268	108.942	107.782	112.343	116.315	117.817	112.266
P826	Quick Reaction Fund	35.255	29.241	28.728	30.145	31.913	32.660	31.044
P828	Rapid Reaction Fund *Reprogramming Actions	71.697	50.460	50.326	52.053	52.489	52.495	50.180
P829	Technology Transition Initiative (TTI)	20.316	29.241	28.728	30.145	31.913	32.662	31.042

A. Mission Description and Budget Item Justification: Quick Reaction Special Projects Program supports three separate projects that provide rapid funding to expedite new development and transition of new technologies to the warfighter. The projects that are part of the QRSP are the Quick Reaction Funding (QRF), Technology Transition Initiative (TTI), and the Rapid Reaction Fund (RRF). QRSP provides the flexibility to respond to emergent DoD issues and address technology surprises and needs within the years of execution outside the two-year budget cycle. The TTI program is mandated by Congress and receive high congressional interest. The DACP program transferred in FY2005 and outyears to PE 0604051D8Z to comply with congressional direction.

(U) The Quick Reaction Fund (QRF) program is focused on responding to emergent needs during the execution years that take advantage of technology breakthroughs in rapidly evolving technologies. Examples of the types of projects that are envisioned include: accelerating promising research that will enable transformation; or will fill critical gaps in DoD acquisition programs and will last no longer than 12 months; or maturation of technologies critically needed by combatant commanders for operations. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated. In FY 2005, over 100 proposals were reviewed and 13 projects were funded.

(U) The Technology Transition Initiative addresses the funding gaps that exist between the time a technology is demonstrated and the time it is procured for use in an intended weapons system. The Technology Transition Initiative was authorized under Title 10, Section 215 of the Defense Authorization Act to facilitate the rapid transition of new technologies from S&T into acquisition programs. The initiative's objectives are to accelerate the introduction of new technologies into operational capabilities for the armed forces.

(U) RRF is fully executed through the Combating Terrorism Technology Task Force (CTTTF). The FY 2005 funding in RRF is the result of internal Reprogramming Actions to allow a rapid response to operations in Iraq and other theaters in support of the Global War on Terrorism (GWOT) and is used to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	40.929	110.717	111.026
Current BES/President's Budget (FY 2007)	127.268	108.942	107.782
Total Adjustments	86.339	-1.775	-3.244
Congressional Program Reductions		-1.775	

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reactions Special Projects (QRSP)**

Congressional Rescissions			
Congressional Increases			
Reprogrammings	82.608		
SBIR/STTR Transfer	3.674		
Other	0.057		-3.244

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: QRF/RRF: Program completion and success will be monitored against program schedule and deliverable stated in the proposals.

TTI: In FY 2005, initiate the new start of 13 projects and conclude activities on many continuing projects with the result of at least 10 technologies transitioning to the warfighter.
In FY 2006, initiate the new start of 18 projects and conclude the activities on many continuing projects with the result of at least 12 technologies transitioning to the warfighter.
In FY 2007, initiate the new start of 19 projects and conclude the activities on many continuing projects with the result of at least 14 technologies transitioning to the warfighter.

RRF: In FY 2005, develop high-risk/high-payoff technologies to improve IED threat detection, beyond the short-term focus of the Joint IED Defeat Task Force.

In FY 2006/FY 2007, RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reactions Special Projects (QRSP)**	**P826**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P826	Quick Reaction Fund	35.255	29.241	28.728	30.145	31.913	32.660	31.044

A. Mission Description and Project Justification: The Quick Reaction Fund (QRF) provides flexibility to respond to emergent warfighter needs in the execution years. It takes advantage of technology breakthroughs in rapidly evolving technologies with expected completion within 6 to 12 months.
(U) Quick Reaction Fund - A data call was released on December 1, 2004 requesting proposals in response to emergent operational needs and to capitalize on technologies. To assist in prioritizing the proposals, the call letter requested the Service and Agency Science and Technology Executives and the DDR&E principles submit their top ten proposals. A notification on the DDR&E website was also posted so there was another avenue to submit proposals. Candidate proposals were focused in the areas of technology required to reduce the unanticipated risk in acquisition programs, technology opportunities in rapidly evolving disciplines or technology maturation opportunities to support real-time operational needs. Each proposal addressed the description of the technology/concept, description of any demonstration testing required, description of technical, funding, and schedule risk, proposed executing Service/Agency and User. The proposals were reviewed for technical and warfighter relevance review. Projects awarded with FY 2005 funding include NAVEODTECH DIV Support of CTTTF Yuma Proving Ground Project, MK-82 Phase II Precision Lethality Munition Demo, Enhanced Target Acquisition and Location System (ETALS), Enhanced Capability for Remote Detection of Suspicious Activity, Rapid Response to Part Acquisition Repair and Deployment, et.al. Below is more in-depth discussion of the projects funded. Because these programs are one time efforts, there are currently no plans to fund them in other years. However, for the overall QRF program, FY 2006 and 2007 plans are to continue to respond to critical operational needs and technology opportunities.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Yuma Proving Grounds (YPG):	0.500	0.000	0.000
Provide threat devices, tactics, techniques and procedures for use in testing of all systems developed under Quick Reaction Capability for Force Protection Needs in Support of OIF Military Forces. NAVEODTECHDIV will provide engineering services and test and evaluation support to ensure testing of all prototype equipment is performed against operational significant targets.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Enhanced Target Acquisition and Location System (ETALS):	0.600	0.000	0.000
The ETALS program is an ongoing technology effort to eliminate the dependence on the Digital Magnetic Compass (DMC). ETALS has developed a gyro based north finding azimuth sensor that is nearly ready for production. This system is known as the Miniature Azimuth Gyro compassing Unit (MAGU). The use of DMC compass, under ideal circumstances, yields target location errors on the order of 30 meters at a standoff range of 5 kilometers. Unfortunately, urban environments and operations near vehicles are not ideal circumstances, and these situations adversely affect the compass without warning to the operator.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reactions Special Projects (QRSP)**	**P826**

Phase II Precision Lethality Munition Full-Scale Demonstration:	2.500	0.000	0.000

This project will demonstrate full-scale Precision Lethality Munition (PLM) variants of the Mk-82 and Miniature Munitions Technology Demonstrator (MMTD) in ground-based static detonation tests to characterize their lethal blast footprint range and predict lethality against personnel and urban buildings. The PLM MMTD will also be demonstrated in normal and oblique concrete penetration tests with an inert payload.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Remote Detection of Suspicious Activity:	2.500	0.000	0.000

To develop and field demonstrate a prototype of an advanced UGS (Unattended Ground Sensor) surveillance system designed for remote detection and reporting of suspicious activities critical to urban warfare and border security. This system will greatly enhance the military's ability to obtain real-time alerts to suspicious activity relating to IED emplacement, crossing of borders at remote locations, personnel movement within urban areas, and firing of weapons, through novel, low-cost, easily deployed, miniature sensor technology.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
M1A1 Tank Commander's 50 Cal Thermal Sight:	0.795	0.000	0.000

The objective of this effort is to integrate a remote thermal sight onto the Commander's Weapon Station (CWS) of the M1A1 Main Battle Tank. The CWS on the M1A1 currently has a day sight that enables the commander to engage targets with the station's machine gun. Because the CWS only has a day sight it limits the effectiveness of the Tank Commander to engage targets during night operations and adverse battlefield conditions. PM Tanks has received and continues to receive user feedback from Operational Iraqi Freedom I and Operational Iraqi Freedom II about this limitation and the need to have a thermal sight capability for the CWS. Under this effort PM Tanks will integrate a remote thermal sight onto the CWS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Flexible Aerogel Thermal Protection for the HUMMWV:	0.750	0.000	0.000

TACOM is responsible for overseeing the operations of the existing HMMWVs as well as other military vehicles deployed around the world. Up armoring these vehicles results in a tremendous increase in internal vehicle temperatures in which the soldiers must operate (sometime as high as 130 F in the occupant space). The internal temperature rise is from sources such as the engine bay (additional armor weight increases load on the engine) and solar radiation from the sun heating the exterior shell of the vehicle. With the engine heating from within the vehicle and the sun heating from the outside, heat load far exceeds the air conditioning capacity. Troop health, safety and efficiency are significantly impacted under the existing conditions. TACOM is eager to develop and implement solutions to reduce the interior temperature of the HMMWVs currently operating in hostile environments. The objective of this project is to design, analyze, test and qualify an insulation package based on the superior thermal insulation properties of the flexible aerogel blanket material, in order to reduce the HMMWVs internal temperature as described earlier.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army Tactical Missile - Penetrator (TACMS-P):	3.000	0.000	0.000

The objectives of the TACMS-P ACTD are to develop, integrate, and transition to the warfighter an integrated, military-ready capability to deny, disrupt, or destroy "high value" hard and deeply buried targets.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Tactical RPG Airbag Protection System (TRAPS):	3.500	0.000	0.000

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reactions Special Projects (QRSP)**	**P826**

Develop,integrate and conduct stationary and on the move testing of an airbag system that will detect and defeat RPGs.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Passive Millimeter Wave Imaging System:	1.151	0.000	0.000

Field test prototype passive millimeter wave imaging system to detect and identify suicide bombers. The imaging system detects millimeter waves emitted and reflected from subjects. Clothing is transparent in this wavelength, but weapons (plastics and metals) are not. Device would be used at entry portals, checkpoints or around crowds to detect suicide bombers at a safe range from friendly personnel or critical sites.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Boomerang Power Source:	1.200	0.000	0.000

Design, fabricate, ruggedize and demo a fuel cell generator that would meet power requirements of Generation II Boomerang.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Thermally Adaptive Small Arms Protective Insert Vests (TA-SAPI):	0.100	0.000	0.000

Developmental Testing and Evaluation of The Army Medical Surveillance Agency reported that there were 1,816 heat related injuries to active duty soldiers. The incidence rate was 3.8 per 1000. OIF has added reserve and guard components to the mix, creating the possibility that higher totals will result. The number presented also does not account for the fact that virtually all 135,000 troops serving in OIF are facing these temperature/humidity levels on a daily basis. This project provides a combined capability of armored vest with thermally adaptive vest.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Aircraft Propulsion Risk Reduction:	3.000	0.000	0.000

This Interagency Agreement describes the delineation of responsibility between the Department of Defense (DOD) and the Central Intelligence Agency (CIA) for reducing risk in the development of propulsion systems for air vehicles. This technology will advance the interest of both agencies in accomplishing their respective missions.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Complementary Comb Filters for Night Vision Goggles:	0.250	0.000	0.000

Night vision goggles (NVG) are a key enabling technology allowing our highly-trained personnel enhanced ability to perform tactical operations under the cover of darkness. However, due to their extreme light sensitivity and amplification ability, night vision devices are highly susceptible to negative effects from bright sources of light such as lasers. This project provides complementary protection to each ocular of the NVG while preserving image contrast and scene acuity.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Crossed Dipersion Prism Sensor for Battlespace Threats:	1.250	0.000	0.000

The system utilizes a optical element called the crossed-dispersion prism (CDP), which will simultaneously project the visible, SWIR and MWIR spectra of point targets onto a common focal plane array

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(FPA). By designing the system to have the visible and MWIR spectra displayed orthogonally on the FPA, the system will be spectrally self-calibrating and provide sub-pixel accuracy in the location of point target events.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Suitability Composite for Future LIghtweight Air Platform:	0.250	0.000	0.000
Accomplish a fuselage simulated granite rock impact without airflow or load and with rosette oriented strain gauges.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Component Buy, Long Range Identification (LRID):	0.425	0.000	0.000
The LRID effort has implemented Short Wave InfraRed (SWIR) technology into the current Lightweight Laser Designator Rangefinder (LLDR) production system to provide a man portable extended range target indentification/engagement capability. The LRID system provides either precise far target location coordinates or laser designation of the target for engagement by precision munitions.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Automated Deep Operations Coordination System:	5.200	0.000	0.000
Funds will be used to provide support for the Joint Automated Deep Operations Coordination System (JADOCS). Funds support JADOCS Field Engineers supporting the AOR with OIF and one OEF.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Expendable Unmanned Aerial Vehicle (x-UAV) Payloads:	5.958	0.000	0.000
Provides funds to implement the Joint Staff DEPORD for continued MAKO combat experimentation, and integration, repackaging and in-theater demonstration of payloads upgraded based on "lessons learned" from Phase I of the counter IED "Blitz."			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Wide Area Combustion Detection Systems (WACDS):	1.575	0.000	0.000
These funds will be used to provide improved Fire Reporting in support of USCENTCOM, EUCOM, USPACOM and the United States Army. Funding will provide tools and database development to baseline indications of terrorists activities versus normal activities in support of OIF, Homeland Defense, and GWOT.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Program Support:	0.200	0.000	0.000
Program management support.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Pending QRF Awards:	0.551	0.000	0.000

FY 2005 QRF Proposals under consideration.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2006/2007 Plans:	0.000	29.241	28.728

The FY 2006 QRF Program Proposal selection process for new start candidates are being finalized and FY 2007 Program data call for new start projects will be fielded in fourth quarter FY 2006.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

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Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P828	Rapid Reaction Fund *Reprogramming Actions	71.697	50.460	50.326	52.053	52.489	52.495	50.180

A. Mission Description and Project Justification: The Quick Reaction Special Projects Program (Program Element 0603826D8Z) QRSP supports three separate projects that provide rapid funding to expedite new development and transition of new technologies to the warfighter: The projects that are part of the QRSP are the Quick Reaction Funding (QRF), Technology Transition Initiative (TTI), and Rapid Reaction Fund. The Defense Acquisition Challenge Program (DACP) transferred in FY 2005 and outyears to PE0604051D8Z.

RRF is fully executed through the Combating Terrorism Technology Task Force (CTTTF). The FY 2005 funding in RRF is the result of internal Reprogramming Actions to allow a rapid response to operations in Iraq and other theaters in support of the Global War on Terrorism (GWOT) and is used to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years. Beginning in FY 2006, CTTTF seeks to leverage the DoD science and technology base and those of the other Federal Departments; stimulate interagency coordination and cooperation; and accelerate the fielding of capabilities and concepts to counter emerging threats. The task force works to anticipate adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force works to exploit technology developed outside of DoD in the commercial sector, in academia and internationally; as well as anticipate adversaries application of available and advanced technology. The average length of a Combating Terrorism Technology Task Force program falls within an 8-12 month range in order to more effectively aid the warfighter.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
IED Detection:	20.759	0.000	0.000

Develop high-risk/high-payoff technologies to improve IED threat detection, beyond the short-term focus of the Joint IED Defeat Task Force. Technologies include: investigation of the interactions between RF signals and common devices used by terrorists; follow-on enhancement of JSTARS technology & initial CONOPS development to support tasking, collection, processing, exploitation and dissemination (TCPED) of Improvised Explosive Device (IED) data and information in the centcom Theater of Operations; enable technology for standoff detection of VBIEDs through analysis of trace/residue explosives on vehicle surfaces using Laser Induced Breakdown Spectroscopy and Raman Spectroscopy; test and assess the operational feasibility of new and emerging sensors against buried weapons caches; Accelerate delivery of capability to detect and develop actionable intelligence on GWOT targets hidden under representative foliage in the SOUTHCOM AOR in near-real time; Develop a taggant easily detectable by canines without being easily detectable by humans; and develop and demonstrate combined 3D ladar and video surveillance in support of counter-insurgency operations to provide continuous wide-area surveillance with airborne video, cueing of high resolution 3D ladar and video, and algorithms to identify and track potentially threatening activities. Projects deployed as an operational capability include acceleration of the Foliage Penetrating (FOPEN) Radar integration into aircraft and the GMTI-Centric Counterinsurgency Operational Demonstration.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
IED Defeat:	2.657	0.000	0.000

Develop high-risk/high-payoff technologies to improve IED threat defeat/pre-detonation capability. Projects that are deployed as an operational capability include Supernova technique development and enhancements to Compass Call aircraft.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Behavior Analysis:	3.209	0.000	0.000
Develop intelligence capability enhancements, including the operational deployment of the Counter Insurgent Pattern Assessment Program (CIPA) and operationalizing a Predictive Analysis Collaboration Capability (PACC)which provides US Forces the ability to predict and preempt enemy attacks and optimally task ISR forces to focus on areas where activity will likely occur.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Information Fusion & Analysis:	8.055	0.000	0.000
Improve information analysis and fusion capabilities. Includes voice authentication technologies and real-time automated detection of deception and hostile intent. Projects deployed as an operational capability include SKOPE and Mobile Biometrics.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Surveillance and Recon:	16.476	0.000	0.000
Enhance surveillance and reconnaissance capabilities, including broad area MOVINT for backtracking; sensor nodes to enable target, tracking, and locating in denied and potentially hostile areas; and tools and technology to enhance open source data exploitation for CBRN indications and warnings and MASINT collections. Projects deployed as an operational capability include SIGINT collection using digital video recording systems with VSAT communications; and high resolution imagery systems and sensors for UAV applications which provide detection, tracking, and targeting capabilities in denied areas.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Communications / Information:	3.515	0.000	0.000
Communications/information dissemination improvements. Technologies include advanced wireless technologies to make nearly ubiquitous wideband communications possible over a wide area; and antennas which can operate in the extremely low, very low and high frequency bands to interrogating underground facilities, other denied sites, utilities, etc. Projects deployed as an operational capability include a means to harvest data using a compact, low power, lightweight laser communications system; and an Asymmetric Data Retrieval project.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Test Site:	3.442	0.000	0.000
Fielding and CONOPS support for range time and enhancements to the Joint Experimental Range Complex at Yuma Proving Ground.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Mission Enhancements:	13.584	0.000	0.000
Other mission enhancement technologies such as a study of the future electronics market (as it relates to IED actuating devices); short wave infrared digital fusion goggles; analysis of U.S. and international law enforcement organizations, the DOJ, and DHS for technologies that are either currently available or sufficiently "mature" (i.e., ready for insertion) and applicable to combating terrorism/countering IEDs; implementation of ADEPT tags to worldwide data processing algorithms, enable meta-data, multi-level information sharing to achieve global maritime domain awareness; development of a low cost, simple-			

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to-operate system that is capable of detecting trace amounts of explosives on human hands; enhancement of NQR explosives detection sensitivity by 1 - 2 orders of magnitude using an RF atomic magnetometer for signal detection; development of multi-nodal unattended ground sensors deployed in a portable, quick to set up system to provide intrusions alerts and images via satellite communications link and to integrate with the Critical Area Protection System (CAPS) for visual assessment to allow timely C2 decisions and response from a central location; development of a wireless WMD vessel boarding/inspection system which provides two way communications, streaming video and sensor data to be transmitted back to host vessel in real time; integration of technologies to protect ships in harbors, port facilities, and restricted waterways from boat or swimmer delivered IEDs; and development of a "removable" undercarriage and door field installable explosive resistant coating protection package.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2006 Plans:	0.000	48.960	0.000

(U) RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities. To support force protection, investments will likely be made in support of wide area counter-insurgency surveillance of low signal to noise ratio targets, persons and vehicles, perimeters/borders, maritime locations, and denied areas; information exploitation in the areas of biometrics, information operations, open source exploitation, and data mining and correlation; sensors for MASINT and counter sniper capabilities; detection of facilities supporting chemical, biological, radiological and/or nuclear development; detection of CBRN organizational control and persons involved; toxic industrial chemical and material detection; and counter IED initiatives in coordination with the JIEDD TF. In addition to these emphasized areas of concern, other topics will be considered on a case by case basis.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Test Site:	0.000	1.500	0.000

Fielding and CONOPS support for range time and enhancements to the Joint Experimental Range Complex at Yuma Proving Ground.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2007 Plans:	0.000	0.000	50.326

(U) RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities. research and coordination with organizations and agencies throughout DoD have identified areas as those critical to developing future counterterrorism/counterinsurgency capabilities. These Include: Intelligence capability enhancements; Surveillance and reconnaissance; Training and Education; Tagging, tracking and locating; Communications and information sharing; "Access denial" of insurgents to critical capabilities and needs; Deterrence, Dissuasion and Information Operations; Identification, including Indications and Warnings of threats; Detection of threats, both close in and standoff; Defeat and consequence management; Crisis response capabilities; and Multi-level information sharing. Future programs will focus on developing capability enhancements for these areas

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

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E. Major Performers Not Applicable.

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Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P829	Technology Transition Initiative (TTI)	20.316	29.241	28.728	30.145	31.913	32.662	31.042

A. Mission Description and Project Justification: The Quick Reaction Special Projects Program (Program Element 0603826D8Z) has three sub-elements: the Technology Transition Initiative (TTI), the Quick Reaction Fund (QRF) and the Rapid Reaction Fund (RRF). The fiscal controls above represent the investment of the QRSP Program funding for the TTI Program.

Authorized by Title 10 and Section 215 of the FY2003 Defense Authorization Act, the TTI 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. Typically, these technologies are completed in the laboratories and shelved until procurement funding is made available by the respective Service to transition the item from S&T base into the acquisition community. The TTI Program facilitates the rapid transition of mature technologies from the S&T base into acquisition programs or directly to procurement. The TTI objectives are to accelerate the introduction of new technologies into operational capabilities for the armed forces and to successfully demonstrate new technologies in relevant environments.

TTI projects are selected by the Technology Transition Manager in consultation with representatives of the Technology Transition Council (TTC). (The TTC is comprised of the Acquisition and S&T executives from each service and Defense Agency and representatives from the JROC.) The call for TTI proposals is distributed to the DoD Services and Agencies through the Technology Transition Working Group (TTWG) members, designated by the TTC. The TTWG receives proposals from their Service/Defense Agency S&T base, prioritize them based on Joint, Service or Agency capabilities needed and submits them to the OSD TTI Program Manager. The Technology Manager's senior staff consolidates the proposal submissions, evaluates the Service/Agency recommendations, compares with available resources, and prepares a recommended list to the Technology Transition Manager for funding. The Technology Transition Manager in coordination with the TTC select the highest priority proposals for funding.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
High Altitude Performance Improvements for Global Hawk: (Air Force)	2.682	0.000	0.000

The technology to be transitioned is expected to increase high altitude electrical power generation capability that will provide the Global Hawk with 75 Kilowatt of payload power at high altitude (65,000 feet). This is triple the current onboard power capability and allows the Global Hawk to support planned payloads that cannot be supported with the existing power system. The improved electrical power generation provides the additional power for the Global Hawk system to meet Mission Area Needs for expanded data fusion, ground/airborne target ID, and EO/IR countermeasures. The proposed concept extracts power from the AE3007 engine's low pressure (LP) turbine instead of the high pressure (HP) turbine. LP spool power extraction versus HP spool power extraction enables the Global Hawk to achieve U-2 sensor parity. The system benefits to Global Hawk of LP spool power extraction relative to HP spool power extraction are: 5.1% increase in endurance, 6.7% increase in maximum altitude, and 4.2% increase in range. The TTI initiative accelerates the transition of this technology by 24 months. FY 2005 Accomplishments: Installed LP Generator on AE 3007H and performed calibration runs at Allison Advanced Development Company (AADC); shipped engine-generator set to Arnold Advanced Development Center (AEDC) and performed altitude tests. Pretest engine calibration runs began at AADC on 13 June 2005. Conducted altitude test in July 2005 at AEDC. Post test assessment and then begin planned integration on Global Hawk.

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RDT&E/ Defense Wide BA# 3	**0603826D8Z - Quick Reactions Special Projects (QRSP)**	**P829**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Automated Change Detection: (Army)	1.665	1.800	0.000

This effort accelerates transition of an automated change detection capability from the Joint Area Clearance (JAC) ACTD into the U.S. Army, Airborne Standoff Minefield Detection (ASTAMIDS) and Ground Standoff Minefield Detection (GSTAMIDS) programs. This new capability will be used by the warfighter to address a critical need to rapidly identify and locate landmines and improvised explosive devices (IEDs) along routes. The CERDEC-NVESD Change Detection Workstation (CDWS) has been demonstrated under the JAC ACTD and consists of a field-portable workstation with user-friendly interface that supports the detection of recently buried mines by means of change detection. The system can accept a wide variety of imagery from various sensors. The current configuration is dependent upon an operator to analyze, process, and identify possible landmine and IED signatures in the imagery. This effort will automate the change detection process by adding an algorithm designed to detect landmines and IEDs which will significantly increase the detection rate. TTI project accelerated a capability into current operations 12-24 months faster and accelerated a capability from the JAC ACTD into acquisition 18-24 months sooner. Based on CTTTF results and TTI progress, the USMC requested five (5) Change Detection systems for use with their UH-1N helicopters and F/A-18 fixed wing aircraft. FY 2005 Accomplishments: Acceleration into Current Operations- Transitioned automated image ingest and registration change detection products from this TTI program into the Marine Corps F/A18D Advanced Airborne Tactical Reconnaissance system which is currently at Al Asad Airbase in Iraq since February 2005. Completed automated ingest and registration products for Army Helicopter sensor POD system being developed for OIF IED detection capability. Acceleration into ASTAMIDS Program - Conducted significant data collections of IED targets to facilitate refinement of image registration and automated target cueing algorithms for ASTAMIDS program. FY 2006 Plans: Transition continuously improving TTI automated change detection products into systems that are deployed to OIF and into Marine Corps squadrons that are on deck to deploy into OIF. Possibly field Army helicopter sensor pod for IED detection capability into current operations. Continue data collection (real-world) to enhance database of target geometries, essential for refinement of registration and cueing algorithms for detection of roadside threats. Continue efforts to mature automated target cueing algorithms and complete automated ingest and registration capability for the ASTAMIDS program. Capability will transition to Project Manager for Close Combat Systems (PM-CCS) into ASTAMIDS program.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Seal Delivery Vehicle (SDV) Advanced Reconnaissance System (ARS): (USSOCOM)	0.430	0.000	0.000

The SDV ARS project is developing a stabilized low light color video camera and thermal imager configured in a MK 8 MOD 1 SDV-compatible mast-mounted device. The system will provide SDV operators the ability to clandestinely maintain situational awareness, while tracking, recording and storing target data in the SDV. The project is being executed under a US/UK Cooperative R&D agreement established in FY 2002. The reconnaissance and surveillance Modular Mast Device will be configured as a Mission Kit that will include: (1) the periscope controller, which provides required computer processing, interface and controller boards, recording media, and a monitor for viewing imagery, (2) interfaces, connectivity and cabling between the camera control unit and the camera unit, as well as ports or plugs for interface to future transmission or storage devices, and (3) a camera, which provides a mast-mounted image capture device. The SDV ARS project's advances include camera stabilization in Sea State 3 conditions and use of uncooled IR microbolometer technology. FY 2005 Accomplishments: Fabricated periscope controller with engineering enhancements. Obtained camera (EO Sensor) from contractor. Completing testing and expecting handoff to SDV Teams imminently. Obtain updated Statement of Need from NSW G-3. Achieve Milestone B Approval. Transition SDV ARS Kits under SDV Program.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Wide Field of View Goggles (WFOV): (USSOCOM)	0.655	0.000	0.000

The goal of the Night Vision Electro-Optics (NVEO) project is to improve operator night vision devices with respect to increased range, magnification, field of view (FOV), sensitivity, and resolution, during periods of both good and limited visibility. Project technologies that can be applied to existing night vision goggles (NVG) through modifications or retrofit. Initial efforts focused on increasing the FOV and anti-blooming technologies. The NVEO project will create a Wide Field of View (WFOV) goggle with a 2.5X increase in field-of-view over current 40° NVGs, utilize improved image intensifier tubes with increased sensitivity and reduced blooming and halos effects. The goggle incorporates innovative features such as a universal helmet mounting scheme, hard carrying case, and eyepiece bumpers to protect the

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lens of protective eyewear. These WFOV goggles, which have been developed in two phases, have the potential to replace all current SOF ground operator NVGs. Funding support from the TTI Program accelerated the WFOV NVG capability by three to four years.

FY 2005 Accomplishments: Redesign of the WFOV NVG goggle was completed, production tooling was developed and fabricated, and material was ordered to deliver Low Rate Initial Production units. Final design met all the user goals to include a 66 foot submersion capability, two helmet mount adapters, hard carrying case, and removable eyepiece bumpers. Efforts achieved a design that addresses human factors considerations like neck fatigue, leveraging standard image intensifier tubes, and interoperability with existing soldier systems.

The requirement for a wider field-of-view NVG, specifically the WFOV NVG, was incorporated into SOCOM's Monocular/Binocular Capability Development Document (CDD). This document serves as the basis for start of an acquisition program. The Life Cycle Cost Estimate (LCCE) for the WFOV NVG program was developed. The Single Acquisition Management Plan (SAMP) was initiated.

FY2005 Accomplishments: The delivery of the LRIP goggles to support Operational Testing and User evaluations. Evaluations to be completed within three months of receipt of the systems. Results of the tests and evaluations will be provided to SOCOM PEO-SP for their decision to purchase the new goggle system.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Accelerate Transition of Area Security Operations Command & Control (ASOCC): (DISA)	0.225	0.000	0.000

The Coalition Rear Area Security Operations Command and Control (CRASOC2)/ASOCC system integrates information technology (IT) tools critical to Anti-Terrorism/Force Protection (AT/FP) missions. The system provides assured Command and Control (C2) to forward bases around the world and ties together information and data from DoD, the Intelligence Community (IC), Federal Agencies, and Force Commanders. The ASOCC system integrates numerous COTS and GOTS components including: (a) Deployment Visualization Toolkit (DVT), (b) Java Imagery Video Exploitation (JIVE), (c) Defense Collaboration Tool Suite (DCTS), (d) Knowledge Board (KB), (e) eX-Panel, (f) eXtensible Information System (XIS) and Adaptive Battlespace Awareness Common Operational Picture (COP), (g) Baseline Microsoft Suite, and (h) Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) documentation. FY 2005 Accomplishments: Conducted ASOCC System Hardening. Distributed ASOCC system to Combatant Commanders/ Services. Conducted Joint Military Utility Assessment (JMUA). Transition system to Global Command and Control System (GCCS) and Joint Command and Control.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Semantic Web Network: (Joint w/NGA and USMC):	0.710	0.000	0.000

An XML-based content routing system technology that enhances Command and Control (C2) by delivering more relevant and complete information from across Intel Community (IC) databases in real-time matured faster than expected and is now ready for transition to the Marine Corp System Command (MARCORSYSCOM), Marine Expeditionary Force-Intelligence Analysis System (MEF-IAS). The USMC wants to deploy this technology as part of current combat operations. Extensive functional testing of the capability was accomplished during the Joint Warrior Interoperability Demonstration (JWID) in June 2003. The TTI funding will support two phases (Phase II and III) of the Semantic MEF IAS Integration, Testing and Transition to Operational Forces program by enabling combat readiness testing and support of the deployed system. Phase Two will integrate the Tactical/National Integrated Environment (CPX) with the Semantic Web capability across the SIPRNet at the Marine Corp Intelligence Activity (MCIA). In addition, it will evaluate integrated data access to MCIA and other IC databases for Rapid Response Planning Process (R2P2) requirements. Finally, Phase Two will combine tactical, operational, and national IC resources with critical command and control information results for unprecedented level of streamlined intelligence support to operations. Phase III will deliver two Equipment Suites and Software Licenses to the MEF-IAS. The resulting system will reduce search times and allow the warfighter more time for collaborative planning and course of action analysis and deployment. FY 2005 Accomplishments: Completed transition of Phase III of the Semantic MEF IAS Integration, Testing and Transition of the technology to 3rd MEF by enabling combat readiness testing in support of the deployed system to Okinawa, Japan.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Ultra Long End Power Generation for Battlefield Air Operations (BAO) Special Ops Warfighter: (Air Force)	0.710	0.000	0.000

During a typical deployment, the BAO Special Tactics Warfighter will often need to jump into a forward position carrying more than their body weight in equipment and support ancillaries. The batteries required to support these devices represent a hefty and expensive component of the BAO kit. In an example 72 hour mission, total power consumption of the BAO kit is expected to be approximately 2200 watts/hour. If this power were to be supplied conventionally via BA-5590s then 13 separate batteries would be required, translating into more than 29 lbs. The TTI project will incorporate inexpensive, injection-molded fuel cell technology into a common BA-5590 form factor which can easily be included in to the PRC-117 field radio, which is an essential part of the BAO kit. If this technology were adopted, then the power weight required to complete the example 72 hour mission would drop by more than 13 lbs. FY 2005 Accomplishments: Multiple integrated fuel cell portable power systems were delivered in February 2005 employing chemical hydride energy storage. Detailed testing is underway at AFRL, however, cursory Navy (Crain) tests indicate that energy densities of 2X BA-5590s were achieved. Some early prototypes demonstrated some refill cartridge engineering issues, but a solution was identified and will be incorporated into next generation units. Generation 2 units are under construction. Both the Army (ARL) and the USAF will evaluate Generation 2 prototypes. The objectives of this deliverable will be to demonstrate a 40% reduction in system weight, a 50% reduction in cost with an increase in operator capability. Device will be transitioned to the Battlefield Air Operations kit as part of the Battlefield Renewable Integrated Tactical Energy System (BRITES).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Advanced Lightweight Ceramic-Based Armor: (Air Force)	1.685	0.576	1.120

The availability of lightweight modern Small Arms Protective Insert (SAPI) body armor has been a critical issue in the Iraqi battle theater. The Air Force and Navy in-house R&D programs working in collaboration with Excera Materials Group of Columbus, Ohio (via Phase I and II SBIR's) have developed a novel ceramic strike face material for use in armor systems. The material has been used in conjunction with traditional polymer-based backing and has passed first article testing by the Army PM. Furthermore, the Army has issued purchase orders for ceramic strike faces that contain the first generation of these materials. Excera has developed a robust manufacturing process concurrently with the material. As a result they have a lightweight, high ballistic performance system that has several manufacturing advantages over traditional armor ceramics. Specifically, the material has a lower manufacturing cost and is easily shaped to meet complex human or vehicle contours. The work proposed in this TTI project will allow for wider availability of this material across the various Agencies and increase its range of capability (i.e., increased ballistic threats) and application (i.e., advanced personnel, vehicle, etc.). Through funding provided under this TTI project, it is estimated to accelerate transition 24 months sooner than originally planned. FY 2005 Accomplishments: Designed new Side of Body Armor (Side of Body Protective Inserts - SOBPI) plates for specific Air Force requirements of the 20th Air Support Operations Squadron (ASOS) attached to the Army's 10th Mountain Division. Delivered 10 sets of SOBPI plates to the 20th ASOS - system currently fielded in Iraq - TRANSITION. Delivered 26 sets of SOBPI to the 88th Security Forces Squadron deploying to Mosul, Iraq 10 July 2005. - TRANSITION. Designed extra damage tolerant SAPI plates - aka "Super SAPI" or sSAPI. Delivered 54 sets of sSAPI plates to AFRL Det 1 to cover all of their mobility personnel. Plates are currently fielded on AEF deployments - TRANSITION. Designed Enhanced SAPI (eSAPI) system to defeat BZ API round and M2AP 0.30 cal AP round. Designed lightweight armor plate system (lighter than SAPI) for Air Force Special Operations Command - prototypes delivered mid Aug 2005. Designed appendage armor SAPI system for a Marine Corps requirement - prototypes delivered mid Aug 2005. Developed new manufacturing processes to increase throughput to 2500 SAPI plates/month. Developed 100% inspection criteria to increase quality assurance of all delivered armor products. FY 2006 Plans: Continue the development of SAPI materials to meet new and emerging threats as outlined by the Army PM shop and the Marine Corps lead for personal protection. Continue work with SOCOM to outline Special Operations specific armor requirements. Deliver appendage armor solutions to Marine Corps. Qualify another industrial source of eSAPI plates for delivery of eSAPI to both the Army and Marine Corps. Increase production of SAPI plates (SAPI, iSAPI, eSAPI and sSAPI) to 5,000 plates per month. Develop lightweight tactical vehicle armor based on the SAPI material and design as per emerging DoD requirements. FY 2007 Plans: Increase production of SAPI plates (SAPI, iSAPI, eSAPI and sSAPI) to 10,000 plates per month. Develop capacity to deliver 20,000 sets of appendage armor per month to Army, Marine Corps and Air Force. Continue to work with lightweight vehicle manufacturers to develop platform specific packages responding to the current threat levels. The current TTI program ends May 2007.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Countermeasures Protection System (CMPS): (Army)	2.220	0.000	0.000

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The CMPS is a field-programmable Electronic Countermeasures (ECM) system designed to provide force protection against Remote Controlled Improvised Explosive Devices (RCIEDs). The CMPS utilizes a new architecture optimized to defeat both categories of threats, includes multiple upgrades, and is field-programmable. The programming feature provides the crucial capability for gaining units to tailor countermeasures as required during the mission. The CMPS is a vehicle mounted system, thus meeting all elements of the ONS requirement. The prototype system used components currently not mechanically or electronically ruggedized or in a form factor and function for the harsh environment of the intended theater of operation. Further technique development and resource expansion are required to increase the system's capability to meet full Operational Needs Statement (ONS) requirements. It is estimated that TTI Program funding will accelerate these efforts by 6 months. FY 2005 Accomplishments: The CMPS system has transitioned to Program Manager-Signal Warfare (PM-SW) and is being procured in a slightly modified form under the CREW-2 program. Completed ruggedization, the refinement of techniques, and resource expansion, while maintaining and potentially reducing size, weight, and power of the system. TTI funding, in part, supported and accelerated this transition. TTI funding supported engineering research and development in direct support of the CREW-2 program in the areas of threat analysis and device development and evaluation. System transitioned to PM Signal Warfare end of FY 2005.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Command Post of Future (CPOF) and Army Battle Command System (ABCS) Server Software Integration: (Joint w/Army/USMC)	1.665	1.200	1.345

The Command Post of the Future (CPoF) is a high priority DARPA-sponsored technology program that will provide a suite of collaboration tools used as an executive decision support system from Corps down through Battalion. CPoF successfully supported the 1st Cavalry Division in GWOT operations during OIF with a 50 user network. This network expanded to a 200 user network with the 3rd Infantry Division for OIF 3 and the 4th Infantry Division for OIF 4. CPoF is scheduled to transition directly to the Army Acquisition community in 2006 based on a formal agreement between Army G-3 and DARPA. The current CPoF system consists of both clients and servers. In the near/mid-term OIF rotations, CPoF hardware will be fielded side-by-side with ABCS hardware. CPoF is currently scheduled to transition to Project Manager Ground Combat C2 (PM GCC2) under PEO C3T in 2006. The TTI Program will bridge this three year gap in funding. TTI Program funding will accelerate the merger and integration of CPoF server software and ABCS Information Server (AIS) software by at least one year, driving an initial battle command server consolidation focused-activity that will expedite the elimination of additional hardware in the field. FY 2005 Accomplishments: Documented CPOF Server software development environment, server configuration guide, client-server interface design and APIs, and internal (CSCI) interfaces. Initiated comparative analysis of evolving CPOF and AIS server functionality, processes, and data threads in terms of overall battle command server consolidation review. FY 2006 Plans: Continue comparative analysis against final CPOF and AIS V6.4 Server software builds. Define and document target system architecture operating environment. Define and document unified battle command server target software and hardware environments. Initiate and examine software coexistence and integration approaches. Develop initial CPOF-federated and battle command server software prototype builds. Test, evaluate, and analyze CPOF-federated and battle command server prototype performance and identify critical-path technical risk areas. FY 2007 Plans: Develop courses of action and conduct ongoing analysis of technical alternatives to simplify initial CPOF-federated and battle command server software code, processes, and interfaces. Generate subsequent unified battle command server software builds and test/evaluate/analyze via the spiral software development process.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Digital Planning Tools for Joint Ground Warfare: (Army)	1.120	0.720	0.000

The Agile Commander ATD has successfully built digital planning solutions for the Army that are being used throughout the Service. The primary product, CAPES, was identified as one of the non-ABCS "good enough" systems and was selected as one of the "10 greatest AMC achievements" for 2002. The focus of this TTI project is to use proven planning and decision support solutions from Agile Commander and CAPES to transition a planning capability for Joint Forces via the Joint Common Tactical Workstation (JCTW). A number of units are using CAPES today. Units that have taken CAPES to Iraq have generated a list of desired features to support SASO and MOUT operations. USFK has generated a list of joint capabilities that would facilitate Ground Component planning in theater. These requests clearly indicate a warfighter need, and are an indication that CAPES provides value in many types of operations. CAPES is currently scheduled for integration with the Joint Common Tactical Workstation during FY 2005. TTI Program funding will allow a full and complete integration of CAPES, including Joint planning tools requested by USFK, and SASO/MOUT features requested by 18 ABC, 101st, III Corps, and 4 ID into JCTW by FY 2006. TTI Program funding will accelerate the fielding of digital planning solutions for Joint Ground Warfare by at least one year. FY 2005 Accomplishments: Conducted analysis of CAPES infrastructure and applications to complete modifications allowing for integration of CAPES into JCTW. FY 2006 Plans: Incorporate requested SASO and MOUT features into

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JCTW. Transition JCTW to the Program Manager for the Army's Maneuver Control System (PM-MCS) and the U.S. Marine Corps Command and Control Personal Computer (C2PC) Programs.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integrated Precision Underwater Mapping (I-PUMA) Sonar for Small UUVs: (Navy)	1.110	1.200	0.000

This project will provide area search, mapping, and target identification capabilities in very shallow water, harbor, port, and ship berthing environments. This will be accomplished by engineering the submarine precision underwater mapping (PUMA) and 21" UUV Littoral-PUMA (L-PUMA) sensing technologies into a miniaturized integrated-PUMA (i-PUMA) that is capable of operating in these shallow areas on a 12" UUV. The engineering effort will develop an integrated sensor/processing design that minimizes the overall power requirements and unit cost, while providing an upgrade path for additional capabilities. In addition to integrating i-PUMA with a small UUV, this project will also develop object detection processing and vehicle processing suites to enable wide area search with change detection and target identification. The i-PUMA sensor suite will provide a substantial advance over currently available candidate technologies, breaking the current narrow-width, single-target aspect, sensing paradigm and permitting wide field of view, multi-aspect bottom mapping and object detection at high resolution. The sensor will enable a small easily deployable UUV to efficiently search large areas to a specified level of confidence. FY 2005 Accomplishments: Project was a mid-year start (May 2005). Began ahead-look sonar (ALS) system design optimization. FY 2006 Plans: Begin array/processing development, object detection and discrimination processing, and mission path planner development. Complete ALS system design optimization. Add UUV integration planning task to be completed in FY 2006. Complete sonar/array processing development, integration, and testing in Lake Travis. Complete object detection and discrimination processing. Complete mission path planner development. Complete UUV hardware/software integration and in-water testing/evaluation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Swimmer Defense: (Navy)	0.666	1.440	0.000

Terrorist attacks have heightened the level of interest in enhancing maritime military force protection. An easily deployable system is needed to provide ships with the real time capability to detect and engage swimmers or divers that pose a threat to high value assets while in port or at anchor. Both the Navy and the Coast Guard have identified swimmer detection (SD) and swimmer engagement (SE) as critical, high priority capability gaps. Swimmer Defense is designed to provide an integrated capability for swimmer detection and engagement, which does not exist today. Swimmer Defense has been identified as a potential spiral development system to be integrated into the Navy Shipboard Protection System (SPS). The current SPS configuration, scheduled to be fielded in FY2005, contains only the Integrated Radar Optical Surveillance and Sighting System (IROS3) which is only intended for use as a detection system for potentially hostile small craft. The TTI initiative will transition SD and SE system technology to acquisition and support the procurement of an additional test article allowing for multiple sonar head interface development, thus reducing the time to field the end item by one to two years. Multiple sonar heads are required to protect large ships in foreign ports and anchorages. TTI funding for SE will allow for testing of two acoustic impulse systems. FY 2005 Accomplishments: Project was a late start (Fourth quarter FY 2005). Defined swimmer defense requirements and develop CONOPS. Initiated system characterization tests. FY 2006 Plans: Complete system characterization tests and conduct design update. Begin fabrication of full scale prototype. Conduct prototype testing. If successful, transition SD and SE technology to Shipboard Protection System.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Special Ops Forces (SOF) Virtual Interpreter: (USSOCOM)	0.555	0.720	0.000

The SOF Virtual Intrepreter (SVI) involves four different technologies: the Phraselator, the Foreign Language tutorial software, the voice to voice translator and the NIPRNET Connectivity. The Phraselator is a ruggedized, one-way, voice-to-voice, handheld translation device designed specifically for the US Military. Since the Phraselator's prototype launched in 2001, it has been used by American Soldiers worldwide more than any other translation device. The Phraselator is a field-proven force multiplier capable of gaining intelligence, providing life-saving direction and enabling civilian outreach efforts. A substantial new capability (not currently available in the Phraselator) is the ability for the software to record and translate a foreign language response back into English. A two-way capability allowing for the gathering of invaluable time sensitive intelligence information or in a medical emergency scenario it would assist in the assessment of a non-English speaking patient's severity of wounds or ailment. Additional capabilities such as communications and language tutorial software would enhance the user's abilities to reach back through the World-Wide-Web to obtain system upgrades and conduct language

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training from abroad. The goal of this effort is to enhance and transition twenty (20) SOF Virtual Interpreters (SVI) Systems with the following technology modifications for evaluation by USSOCOM forces and others to effect a rapid transition into acquisition. FY 2005 Accomplishments: One Way Translator -- Communications "Plug" hardware and software design completed. Completed user communications interface software design. Evaluating Onboard training and web based E-Learn tools. SOCOM PEO assessing production capability. Two Way Translator -- Successful demonstration of platform independence. Successful user interface improvement. Ongoing comparative evaluation by ARL and NAVAIR. Participating in JFCOM effort. FY 2006 Plans: Down select two-way hardware and software. Integrate selected technologies into platform. Anticipate Operational Testing in first quarter FY 2006 by USASOC. Anticipate combined Developmental Testing/Operational Testing first quarter FY 2006 by ATEC. Field test deliverables. The SOF VI will transition to the Machine Basled Language Translator Program (MBLT) Program of Record. The SOF VI is expected to be inserted into the joint service (S-FLTS) increment 1 transition plan.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Rugged ENTR Device (RED): (USSOCOM)	2.442	0.000	0.000

The Embedded National Tactical Receiver (ENTR) provides the tactical warfighter with a small, low cost, low power, near-real-time, intelligence data reception capability. It will simultaneously receive, demodulate, and decrypt four independent, Integrated Broadcast Service (IBS) broadcast channels. The IBS architecture disseminates strategic, operational, and tactical intelligence and information to the warfighter. The ENTR form factor allows it to be embedded directly into a variety of host systems (e.g., workstation, laptop, tactical radio). The objective of this TTI is to integrate the ENTR circuit card and IBS message processing software into a rugged, tactical, IBS receiver system, referred to as the Rugged ENTR Device (RED). RED will be the next generation, technological advancement to fulfill an approaching gap in capability by replacing obsolete and aging legacy IBS receiver systems throughout the Department of Defense (DOD). Unlike most legacy IBS receiver systems, RED also supports the IBS migration to the Common Interactive Broadcast (CIB) and mandated DOD Cryptographic Modernization directives. RED will support air-, ground-, and maritime-based missions in a single, rugged, lightweight package. Supporting multiple platforms and environments in a single design will significantly reduce life cycle management costs and redundant development efforts. FY 2005 Accomplishments: Performed environmental analyses to complete the non-recurring engineering (NRE) of the RED prototypes. Began the NRE development to productize the design and meet the RED performance specification.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Lightweight and Conformal Photovoltaic Solutions for the SOF Warrior: (USSOCOM)	0.555	0.745	0.000

The photovoltaic (PV) technologies, being offered through the U. S. Army's Natick Soldier Center (NSC), will provide our SOF operators with unique power generating PV textile systems that are lightweight, conformable, versatile and stealthy for renewable power and potential electronics integration into C4ISR systems and mobile/fixed site systems currently used by SOF forces. Lightweight and conformal PV systems can be integrated into SOF Warrior Systems where many surfaces could be utilized as areas for power generation. These SOF PV systems could include, but are not limited to; unattended ground sensors, tags, command and control equipment (handheld radios), weapons sights, unmanned ground and aerial vehicles, shelter overheads, portable mats, manned ground and maritime platforms, etc. As such, flexible PV technology offers the SOF operator an unsurpassed versatility for use as a direct energy source and/or battery recharging (hybrid systems) to complement legacy generator and battery systems. The FY 2005 TTI project is focusing on three prototype / initial production PV devices for lightweight and renewable power generation using two different PV technologies (developed under Phase I and II SBIR Projects with Iowa Thin Film - Amorphous Silicon and Konarka Technologies - Dye Nanocomposites). The three PV units include: a) AA battery rechargers -- mini-pocket size and rollable portable solar panels; b) PV's for remote sensing - support 5, 10, and 25 Amp/Hour power loads for sensors and remote sensor workstations, c) Determine surface area requirements and moldability/conformal nature of PV technologies to meet operational uses. FY 2005 Accomplishments: PV AA Battery Recharger: Procured and delivered one thousand (1000) PV powered AA battery recharger prototypes for testing under a tight 12 week delivery schedule. Conducted operational test and evaluation of PV powered AA battery recharger prototypes utilizing Operational Forces Interface Group (OFIG) expertise. Determined utility for continued SOF use. Camouflage-Pattern/Dye Sensitization Initiatives: Conducted research on development of new dyes and ink jet printing to fabricate camo-patterned photovoltaics for minimal visible signature and stealthy power generation using dye sensitized nanocomposite PV technology. PV Conformability: Conducted tests to determine moldability/conformability of PV to surface area requirements and shapes needed for operational use. FY 2006 Plans: PV Conformability and Camouflage-Pattern/Dye Sensitization Initiatives: Develop and refine prototype systems for use and evaluation by Program Executive Office - Intelligence and Information Systems (PEO-IIS) representatives based on FY2005 conformability findings. Conduct operational test and evaluation of prototype

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PV using operational user energy system. Analyze, test and evaluate data. Develop final report and recommend way ahead strategy on all PV items evaluated. System transition is planned for USSOCOM PEO-IIS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Tapecast Production of Thermal Battery Electrodes for Missiles: (MDA)	0.555	0.000	0.000

Thermal batteries are used for in-flight power by almost all weapon systems. Tactical applications include smart bombs, smart munitions, cruise missiles, air-to-air missiles, ground launched tactical missiles, and intercontinental ballistic missiles. All of these thermal batteries incorporate cell component pellets: anodes, cathodes, separators and heat pellets. Thermal batteries only produce electrical current when the electrolyte is in the molten state. Traditionally, thermal batteries are made by cold-pressing various powders into thin electrode disks that form electrochemical cells. This process is time consuming and the fragility of the pellets results in defects that sometimes cannot be detected by screening tests. This results in low production yields and the potential for reduced reliability in some battery designs. Tapecasting applies the powder materials in a slurry to sheets that can be easily cut into electrodes. This simplified production method has been demonstrated at the laboratory level, and is projected to achieve both cost savings and improved performance. This technique would be used to improve the performance of all thermal battery designs. Several emerging military applications are signaling the need for thermal batteries that are capable of providing high power and longer duration power than are currently available. These state-of-the-art requirements dictate the need for thin cell components that optimize high power performance and increase the duration that power will be provided. Thermal batteries are up to ten times less expensive to manufacture compared to the large size lithium liquid reserve batteries. The new thermal battery that will be produced and tested under this Technology Transition Initiative will be procured under the Capabilities Enhancement II procurement beginning in January 2006. The new thermal battery will undergo rigorous qualification testing and then be flown on Integrated Flight Tests and installed on production interceptors to be placed on operational status. Successful development of this technique of thermal battery production can be implemented on thermal batteries for other systems. FY 2005 Accomplishments: Project was a mid-year start (May 2005). Began fabrication of production quality batteries by enabling the demonstration-level process to begin transition to production. Initiated qualification testing to be performed concurrently. FY 2005 Plans: Complete qualification testing and thermal battery production. Thermal batteries produced under this TTI effort will transition to the Ground Based Interceptor (GBI) Project Management Office

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Accelerated Transition of Shelf Stable Sandwich: (Army)	0.666	0.000	0.000

Advanced development prototype shelf-stable sandwiches pioneered by Natick Soldier Center (NSC) incorporate novel processing, packaging, stabilization and preservation technologies. These prototype sandwiches will form the cornerstone of new items for the Meal-Ready-to-Eat (MRE) and future operational rations such as First Strike Ration (FSR). These sandwiches include barbecue chicken, barbecue beef, Italian pocket (pepperoni & sausage in tomato sauce), pepperoni, peanut butter & jelly, and nacho cheese flavored beef varieties. These sandwiches are developed using hurdle technologies that utilize a series of processing barriers to inhibit the growth of organisms (bacteria, yeast and mold). This concept for eat-out-of-hand items directly supports Army doctrine and implementation of the Army's Future Force designed to be strategically responsive and agile for rapid mission tailoring, crisis response, stability and support operations, and extended regional engagement. Individual soldier survivability, sustainability and combat effectiveness is the centerpiece for transforming the Army of the 21st Century to ensure a soldier centric Future Force. The insertion of TTI Program funding will accelerate transition to production by an estimated 8-12 months. FY2005 Accomplishments: Project was a mid-year start (May 2005). Performed large-scale production trials to optimize production capability of advanced prototype pocket sandwiches. This optimization and scale-up will thoroughly analyze critical hazard analyses and critical control points such as temperature, time, and water activity during various stages of mixing, baking, processing, and subsequent assembly and packaging of individual components. Expanded production base capability and investigated alternative processing methods and technologies to ensure a viable production capability exists to satisfy MRE surge requirements as was required during FY2003 in support of SWA operations. Transition technology/process to DLA supported by Military Personnel Army Subsistence in Kind program funding.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Husky Mounted IED and Anti-Tank Mine Detection System: (Army)	0.000	4.200	1.575

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This two year TTI project will insert the NIITEK GPR onto the commercial-off-the-shelf Husky vehicle to upgrade its threat detection capabilities. The transitioning technology is the NIITEK mine detection ground penetrating radar (GPR). This GPR is a breakthrough in mine detection that achieves very high detection against all types of anti-tank (AT) mines while maintaining an extremely low false alarm rate. This technology affords the opportunity to get out in front of the evolving threat by providing the capability to detect plastic low metal mines as well as large buried explosive charges, explosively formed penetrators (EFPs), or IED's that do not contain metal. FY 2006 Plans: Design overall detection architecture; Produce one set of mounting, stowage and height control hardware; Produce two 1.2-meter prototype NIITEK GPR arrays (one unit); Produce one marking sub-system; Integrate computers and operator interface; Begin integration of system components on Husky. FY 2007 Plans: Complete integration of system components on Husky; Improve mine detection algorithm suite with algorithms for detecting ordnance based IEDs; Produce manuals, training package, and selected spare parts; Conduct data collections, demonstrations, tests and evaluations; Transition to Project Manager-Close Combat Systems.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Red Blood Cell Extended Life (RBCXL) : (Army)	0.000	1.200	1.050

The objective of this project is to complete development and fielding of a new blood collection and storage system that is approved by the Food and Drug Administration (FDA) and that provides the capability to store and maintain human red blood cells (RBCs) at an FDA-defined level of functionality and safety for at least 8 weeks and potentially for up to 12 weeks. With TTI funding, transition of this blood collection and storage system can be completed in four years or less.
FY 2006 Plans: Prepare Cooperative Agreement between Hemerus Medical, LLC and Government; Finalize blood bag set design with the leukoreduction filter; Produce blood bag set for preclinical and clinical trials; Finalize trial protocols and enroll site for the studies; Initiate preclinical studies; Submit and obtain IND approval for clinical studies.
FY 2007 Plans: Initiate and complete clinical studies; Prepare final report. Submit Biological License Application to the FDA; Obtain Biological License for the extended red blood cell storage (>= 8 weeks).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Unmanned Surface Vehicles for Littoral Combat Ship Missions: (Navy)	0.000	1.200	2.100

The Unmanned Sea Surface Vehicle (USSV) is a prototype vessel. This prototype vessel was purpose-built to carry Littoral Combat Ship (LCS) mission payloads and demonstrate enhanced capabilities relative to existing USV technology. These enhanced capabilities will be a key enabler of LCS's ability to perform its three primary missions of Mine Countermeasures (MCM), Anti-Submarine Warfare (ASW) and Surface Warfare (SuW), as well as other LCS missions such as Expanded Maritime Interception Operations (EMIO) and Electronic Warfare (EW). TTI Program funding will provide the final level of maturity to transition the USSV to PMS420 and acquisition for deployment on the LCS. This TTI program will accelerate development of the USSV so that it can be incorporated into LCS Flight 0 in 2007, which represents a two-year acceleration compared to the current PMS420 plan.
FY 2006 Plans: Initiate Preliminary Integration and Test of USSV Mine Influence System; identify Payload Definition, determine USSV Design/Build or Modify to accept the ASW payload.
FY 2007 Plans Conduct USSV performance testing; perform Payload Integration; conduct Mine Influence/USSV At-Sea Test:; conduct ASW Payload/USSV At-Sea Test; Deliver to LCS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Operational Gliders for Battlespace Reconnaissance and USV Surveillance: (Navy)	0.000	2.280	1.995

The basic CONOPS for ASW is for networks of gliders to obtain data to reduce the uncertainty in the performance prediction of the acoustic sensors by providing near real-time 3-D acoustic properties of the ocean, including sonic layer depth, ducting conditions and sound channel characteristics. Networks of gliders together with distributed networked bottom sensors reduce the occurrence of false contacts. Optical sensors facilitate non-acoustic Anti-Submarine Warfare (ASW) measurements. Groups of 5-10 gliders can establish a real-time (reporting) environmental sensing network in the operational area of interest and provide the Anti-Submarine Warfare (ASW), Undersea Warfare (USW) and Naval Special Warfare (NSW) communities with the data to support their mission planning and tactical decision aids (TDAs). The evolving CONOPS for NSW is to acquire the environmental data to provide mission planning modules with the initial and evolving shallow water environment. Data on optical clarity, location of rip currents, accurate bathymetry and the 3-D temperature field are important mission constraints for special operations. The gliders together with other autonomous vehicles (such as SAHRV) can provide

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the water temperature, currents, and depth to the embedded environmental reconnaissance teams for mission planning. Operational fleet commands are the immediate beneficiaries of the data collected by gliders. The maturation of gliders will require up to six years for building platforms and performing the engineering and development to reach operational standards. TTI Program funding will allow the glider to reach a level of readiness 36 months earlier.
FY 2006 Plans: Design common command and control software system for use with all the different variants of gliders from one terminal. Integrate adaptive sampling algorithms into the control system as an option for optimizing the piloting for ASW objectives. Standardize and test battery systems (battery packs, configurations, safety systems) to obtain extended glider flight duration and approval for use on Naval vessels. Initiate redesign of glider wings and antenna to withstand the shock of retrieval and deployment. Several designs ready to be constructed and tested. Construct prototypes to facilitate NAVSEA and at-sea testing. FY 2007 Plans: Conduct lab testing of prototypes to meet NAVSEA approvals for surface and subsurface vessels. Construct and test deployment and recovery hardware on-board several candidate naval vessels such as the HSV/LCS. Initiate plan for an approved manufacturing and design process so that all resultant glider systems will meet with NAVSEA approvals. Conduct sea testing of revised wings, antennas and deployment and recovery systems during Naval exercises as part of a build-test-build cycle that will lead to the optimized design. The adaptive sampling algorithms within the common control environment will be evaluated during the at sea exercises. Remaining prototypes will be constructed; anticipate delivery of six improved and hardened gliders available for use by the Navy.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Blazed Array Sonar for Ship Hull Inspection: (Navy)	0.000	0.495	0.430

The hull inspection task poses a challenging sensor problem for Naval EOD missions and for Coast Guard and Law enforcement agencies conducting Homeland Security and Anti-Terrorism missions. Low visibility conditions commonly encountered in harbor environments can limit optical imaging sensors. Alternatively, high resolution acoustic imaging offers a more reliable hull inspection imaging modality. However, classical low-grazing-angle two-dimensional sonar imaging techniques provide inconsistent results and cannot effectively search complex undership areas such as propellers and struts. The purpose of this technology transition is to demonstrate an underwater hull inspection sensor using three-dimensional acoustic imaging techniques to enable identification of complex structures found on the bottom of a ship. The TTI effort will refine the electronics and arrays from previous and current development efforts using their 3D blazed array technology. The objective is to increase the capability of the EOD-UUV effort by fielding second-generation Hull Unmanned Undersea Vehicle Localization System (HULS) capabilities 24 months earlier than currently scheduled. This technology will also limit the EOD Divers' time in the water searching the complex undership areas that the current 2D sonars are unable to image. FY 2006 Plans: Complete hardware and user interface performance specifications to guide the development of system architecture. Evaluate the architecture with a combination of computer simulation and controlled acoustic test tank analysis. Design and fabricate the alpha system. A prototype 3D sonar display software package is already in development and being tested with the 3D side looking sonar system. This software foundation will provide a strong starting point for the real time 3D forward looking sonar user interface. FY 2007 Plans: Test and refine the alpha unit to feed the beta system design. Complete the beta system design, fabrication and bench testing by August 2007. Test and refine beta system on surface vessel and ROV platform to produce a solid hardware and software system.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Flameless Ration Heater (FRH) : (Army)	0.000	0.600	0.240

The product to be transitioned is an improved, non-hydrogen producing, Flameless Ration Heater designed to eliminate current issues in packaging, handling, transportation and disposal for all Services using the Meal, Ready-to-Eat (MRE). The current FRH, developed by the Army in the 1980s, is a water activated exothermic chemical heater made from magnesium which when activated emits flammable hydrogen gas that can build to measurable levels approaching lower explosive limits when stored in large quantities and confined spaces. Additionally, there are US Environmental Protection Agency restrictions pertaining to the disposal of unreacted heaters, categorized as hazardous, and Department of Transportation guidelines regarding transportation on commercial aircraft and ships. Recent technical advances made on two alternative non-hydrogen producing heaters show considerable promise for use within the current military system. Successful completion of this TTI initiative will overcome or greatly lessen these safety, environmental, transportation, storage and readiness issues.

FY 2006 Plans: Conduct advanced engineering of nonhydrogen producing heater prototypes to improve and eliminate deficiencies in several technical areas. Based upon successful technical testing

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conducted by personnel at Natick Soldier Center (NSC), two improved alternative heaters will be procured for a FY 2006 operational field test conducted with warfighters. Improved ration heater prototypes will simultaneously undergo a battery of rough handling evaluations simulating military transport and handling as well as environmental evaluation to include high humidity and temperature extremes in Combat Feeding Directorate environmental test storage chambers. Address ramp-up and associated producibility issues with manufacturers and the ration vendor industry.

FY 2007 Plans: Develop strategies specific to manufacturing and producibility issues associated with product design, packaging, system integration, and industrial capacity to ramp up to large volume production. Conduct and complete data analysis of FY2006 evaluations. A presentation of operational field test results will be made to the Joint Services Operational Ration Forum and a decision will be rendered to adopt the item as a replacement and/or alternative to the present FRH configuration. By fourth quarter FY 2007, all procurement documentation for the alternative technology ration heaters will be developed, coordinated and transitioned to DSCP for insertion into in-place MRE contracts.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Modular Crowd Control Munition-Vehicle Mount System (MCCM-VMS): (Army)	0.000	0.805	0.000

The MCCM VMS is a combination of electronic controls, junction boxes, igniters, and mounting brackets that allows Soldiers or Marines to mount and fire the M5, MCCM from a variety of vehicles including the HMMWV, cargo trucks or other tactical vehicles. The first generation of MCCM-VMS allowed for control of up to four MCCMs with a hard wired switch activated control box. This second generation, or Gen2, will use a digital controller and a modular design, potentially with a Personal Digital Assistant (PDA) or Toughbook interface, to allow control of up to 24 individually fired MCCMs. It will be field adaptable to specific vehicles and there is also potential application to ground emplaced units for check point, crossroads or perimeter defense of bases or installations. The TTI effort would accelerate technology/product transition by at least three years. FY 2006 Plans: Complete software development; complete junction and master control box development; complete test hardware sets fabrication; conduct safety/performance testing, and conduct urgent material release for OIF. Complete training package; conduct initial fielding and operational standup (vehicle type/qty to be determined). Transition to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Shipboard Composite Combat Identification (SCCID): (Navy)	0.000	0.600	0.970

The Navy, through the joint support and efforts of PMA-290 and the Office of Naval Research (ONR), has developed a multi-source fusion and Combat Identification (CID) engine called STORY MAKER for the EP-3E Intelligence Surveillance and Reconnaissance (ISR) aircraft. SCCID is presently a RDT&E effort being supported by ONR Knowledge Superiority and Awareness (KSA) Future Navy Capabilities (FNC) and PEO C4I and Space, PMW 180. The purpose of the SCCID TTI effort is to adapt STORY MAKER's CID capabilities to provide Ship's Signal Exploitation Space (SSES) equipped ships with a multi-source fusion capability and a CID engine that can process both GENSER and Sensitive Compartmented Information (SCI) evidence to derive CID for Link-16 and CEC-based radar tracks. SCCID will provide the warfighter with rapid recommendations based on the fusing and correlation of organic and national SIGINT data. This will improve battlespace awareness and provide a means that will help prevent fratricide, engagement on friendly or neutral tracks, and reduce the operator manual efforts in analyzing the numerous track data inputs. This proposed TTI project would accelerate technology/product transition by 18 months.

FY 2006 Plans: Integration and testing of SCCID at the Systems Integration Laboratory (SIL) located at Space and Naval Warfare Systems Center (SPAWAR SYSCEN), San Diego (SSC SD) in FY 2006. Activities to include: Radiant Mercury template development for a two way communications interface between CEC and SCCID; SCCID Open Architecture Computer Environment (OACE) and Net Centric Enterprise Solution for Interoperability (NESI) compliance; SCCID Defense Information Infrastructure (DII) Common Operating Environment (COE) compliance; SCCID Segmentation into CUB; SCCID and CEC Integration software development and test; MOA SIL Tests; Coherent scenario development.

FY 2007 Plans: SCCID software will be installed on an at sea demonstration unit for tests upon completion of the MOA SIL tests. Expectation is SCCID be a system participating in Trident Warrior 07. Crew training will occur prior to installation of the SCCID prototype either at SSC SD or onboard the at sea demonstration candidate. Post at sea demonstration report will be written and distributed to the

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appropriate commands.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Land/Littoral Battle Command Warfighter Interface: (Army)	0.000	0.960	2.200

The Command Post of the Future (CPoF) is a high priority, DARPA-sponsored technology program that provides a software suite of collaboration tools accessed through a superior intuitive human-computer interface (HCI), which is rapidly becoming the defacto executive decision support system from Corps down through Battalion. The current CPoF system consists of both clients and servers. In the near/mid-term OIF rotations, CPoF will be fielded side-by-side with the Army's Acquisition Category (ACAT) I Maneuver Control System (MCS) and Marine Corps' Command and Control PC (C2PC). Current Army and Marine Corps ACAT systems have a significant initial and follow-on training requirement burden. This TTI project will significantly reduce this burden by transitioning CPOF, which has been proven to be intuitive, easier to use, and requiring significantly less initial and follow-on training, into the Joint Tactical Common Operating Picture (COP) Workstation (JTCW). JTCW is mandated by the Joint Requirements Oversight Council (JROC) as the near/mid-term tactical level single common C2 platform for land/littoral operations. JTCW represents the merger of numerous Army battle command functional area software applications onto the Marine Corps' C2PC baseline. This TTI project would accelerate the transition and application of CPOF-based HCI technology into the unified Army-Marine Corps JTCW system by approximately 18 months.
FY 2006 Plans: Conduct comprehensive usability engineering and human computer interface assessments on the latest versions of the Command Post of the Future (CPOF) system and Joint Tactical Common Operating Picture (COP) Workstation (JTCW) client. Initiate and examine the current interface between application software and human-computer interface (HCI) for the JTCW client.
FY 2007 Plans: Develop an initial core set of application program interfaces (APIs) between JTCW's Battle Command services and a single intuitive easy-to-use CPOF-based client presentation layer. Define and document a HCI design guidance package for this CPOF-based client presentation layer. Develop a corresponding client presentation layer that will serve as a guiding common interface template for other client application HCIs.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Sense and Avoid (SAA) for Small UAVs (SUAV): (Air Force)	0.000	1.130	0.630

Sense and Avoid (SAA) for Small UAVs (SUAV) (Air Force): UAVs operating in National Air Space (NAS) or foreign civil airspace must obtain special authorization and/or use either chase planes or ground-based observers. This process is cumbersome, expensive, and limits the effectiveness of DoD UAVs. Additionally, UAVs must operate in tactical environments during war alongside other DoD/friendly aircraft (helicopters, fighters, bombers, etc.). This type of high-density environment requires a capability to avoid possible collisions, one that must meet Federal Aviation Administration (FAA) regulations. The capability must be effective against all air traffic, with or without active, transponder-based collision avoidance systems. The technology to be transitioned is called Sense and Avoid for Small UAVs (Small-SAA). Small-SAA is a system composed of low cost optical sensors, processors, and proprietary software. The system is being developed for use by DoD UAVs to visually detect other aircraft in the vicinity and identify possible collisions. The product to transition for UAVs will be the hardware and software necessary to alert the ground-based pilot and/or an on-board avoidance maneuvering subsystem of any potential collision courses. Small-SAA is based on modifying/miniaturizing existing SAA technology developed by AFRL for large and mid-sized UAVs (i.e., Global Hawk and Predator) to support much smaller tactical UAVs such as Scan Eagle and Raven UAVs. TTI funding will accelerate the transition of Small-SAA by a minimum of two years
FY 2006 Plans: Select UAS platforms to be covered by this initiative (such as Shadow) and define Small-SAA system performance requirements; Design Small-SAA system architecture; Procure long-lead hardware components and subsystems. Adapt SAA software for small UAS implementation. Begin prototype Small-SAA system fabrication.
FY 2007 Plans: Complete prototype Small-SAA system fabrication; Conduct laboratory and UAS surrogate testing; Plan and conduct Small-SAA flight demonstration on Aerostar UAS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Log Based Planning for OIF Authority Transition: (Army)	0.000	0.960	0.790

This program addresses a new requirement for logistics units resulting from OIF and the transition of authority to the Iraqi Security Forces. In order to facilitate the transition of power from US military forces

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to Iraqi forces, a number of log bases will be established. Both US and Iraq forces will receive support from these bases, creating a log base planning requirement for existing Command and Control (C2) systems. The Army's Joint Tactical COP Workstation (JTCW) is currently the joint ground C2 system for tactical and operational planning but no log base planning capability exists. In the past, the Logistics C2 Science and Technology Objective (STO) created models and reasoning capabilities to accommodate tactical and operational combat service support plans. These capabilities must be extended and transitioned to JTCW to permit the creation and maintenance of log bases in which multi-national forces will conduct transition of power training. This TTI effort will result in a log base planning capability in JTCW release 7.0. The acceleration realized in the transition plan is greater than two years.

FY 2006 Plans: Design Architecture for multi-national logistics resupply support to address the following logistics class categories: Class I (Food/Water); Class 3 (Fuel); Class 4 (Construction materials); Class 5 (Ammunition); Class 7 (End Items); Class 8 (Medical); Class 9 (Maintenance Parts). Development of consumption models for logistics class categories.

FY 2007 Plans: Development of re-supply models for Support and Service requirements; Delivery mechanism allocation; Delivery scheduler; Delivery resource loader; and Inventory manager. Final test and JTCW Integration

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Transition of Semantic Web Network to Additional Commands: (NGA)	0.000	0.720	0.630

Semantic Web Networking is an XML-based content routing system that enhances Command and Control by delivering more relevant and complete information from across Intel Community databases in real-time. Several components comprise this product, including the core content routing algorithms (available as software only, but typically deployed on COTS servers); database adaptors for new data sources; and, either a web-based or application-based user client. Developed through the National Technology Alliance (NTA), this technology matured faster than expected and has now been transitioned to the Marine Corp System Command (MARCORSYSCOM), Marine Expeditionary Force-Intelligence Analysis System (MEF-IAS), enabled by two years of support from the OSD/TTI program. Based on the success of the Marine Corps with this technology, it is now being evaluated for additional transition to US Army and Special Forces. This follow-on TTI effort will support evaluation of the "MarineLink" Semantic Web Network as part of an experimental cell at Ft. Bragg, with eventual transition paths to the SOJICC for SOCOM, and to US Army operational units in theater.

FY 2006 Plans: Leverage previous semantic routing development to provide needed capability at Predictive Analysis cell (Ft. Bragg). Specific tasks include the coordination of USASOC tactical user requirements and understanding of the relevant information model/ontology; implementation of appropriate semantic routing hardware and software at the Predictive Analysis cell; development of additional database adaptors to support USASOC operational needs; and integration with Asymmetrical Software Kit and NEXIS tools.

FY 2007 Plans: Evolve semantic routing implementation at Ft. Bragg towards insertion paths at SOCOM and US Army operational units in theater. Specific tasks include the coordination of SOCOM-wide operational user requirements and understanding of the relevant information model/ontology; implementation of appropriate semantic routing hardware and software at SOJICC (Tampa); development of additional database adaptors to support SOCOM operational needs; and integration with current and future predictive and analytic tools.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Advanced Digital Multi-Spectral Night Vision Goggles: (SOCOM)	0.000	2.090	2.835

The product to be transitioned is a new night vision goggle. This goggle will utilize digital technology to generate an image composed from multiple cameras providing a scene composed of multiple wave bands. The imagery generated from the goggle sensor modules will be digitally fused and presented to the soldier via a high-resolution display. The goggle will also allow the soldier to share this imagery via available video communication links. The goggle will also have the capability to display video from external sources to the soldier, e.g. from the soldier's thermal weapon sight. The Advanced Digital Multi-spectral Night Vision Goggle (ADM NVG) will continue to utilize the existing mounting hardware currently used by the soldier. The goggle will predominantly be worn on the soldier's helmet, but the utilization of a facemask will remain an option. The system will consist of two modules; the first module, the goggle, is composed of the sensors, the displays, the image processor, and controls, the second

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module is the battery pack, which will house two separate battery modules for operation of the device. The system will also be operational utilizing existing fielded power sources. This will be done to allow the soldier to operate the ADM NVG via vehicle power, via other larger batteries for extended periods of operation, and will allow the soldier to scavenge for power.

FY 2006 Plans: Continue development efforts to reduce overall system weight and power draw through advancements in the near infrared (NIR) and short wave infrared (SWIR) camera and custom Hardened Field Programmable Gate Array (FPGA). The Hardened FPGA will provide a refined circuit design to be implemented through the use of an Application-Specific Integrated Circuit (ASIC). The NIR camera advancements are targeting a solid state camera that will both reduce the size and weight of the camera device while providing a camera that matches the performance of the current image tube technology found in fielded night vision goggles. The SWIR camera development will target a high resolution, high sensitivity SWIR camera able to maintain performance through the full range of environmental conditions. The development of a custom ASIC will replace the current power hungry frame gate array technology. The design and development of an ASIC usually takes 18 to 36 months but will provide significant improvements in power draw and size.

FY 2007 Plans: Complete the NIR & SWIR camera development effort and continue development efforts of an ASIC.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
High Capacity Information Connectivity for Aerospace Platforms: (HICAP): (Air Force)	0.000	3.600	2.200

The Services are migrating to airborne network centric operations and are adding new high data output sensors and multi-sensor operations into the airborne DoD inventory. This new airborne architecture presents a unique challenge for airborne communications and requires a significant increase in throughput of airborne (air-to-air and air-to-surface) communications. The DoD Common Data Link (CDL) Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) program is the planned communications backbone supporting future network centric operations and requires new technology to provide an increase in data rates and bandwidth. HICAP provides the technology and designs required to meet this communications challenge. The products to transition are HICAP hardware and software/designs to the ongoing DoD CDL program. This transition is unique as it focuses on developing high data rate technologies for transition into the ongoing CDL program vice developing a new stand-alone system. HICAP provides technology capable of doubling and quadrupling current airborne CDL return data rates from 274 Mbps (1X) to 548 Mbps (2X) and 1.1 Gbps (4X). HICAP has developed and demonstrated the 2X and 4X rates in a lab environment. The 2X capability is expected to require only card-level changes to CDL equipment while the 4X option will leverage the 2X card change and add a card-level change plus airborne antenna upgrade kit. HICAP, therefore, transitions two technologies: (1) 2X A-CDL waveform; and (2) 4X capability by transmitting two parallel 548 waveforms with orthogonal polarizations.

The higher data rates will be used to support new high-output and multi-output Intelligence, Surveillance, and Reconnaissance (ISR) sensors and the all-weather interface to the future laser-communications architecture.

FY 2006 Plans: Complete Design and Integrate 2X waveform into Hardware, Design of Adaptive Cross Polarization Canceller and Dual Polarization Antenna for 4X CDL. FY 2007 Plans: Build and Integrate 4X CDL capability into hardware and antenna; Demonstrate 2X Capability; Demonstrate 4X capability.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2007 Program Plans:	0.000	0.000	8.618

The TTI Program Proposal process begins in January 2006 with the release of the data call for FY 2007 new start nominations. The remaining FY 2007 program funds in the amount of $8.618 million will support the initiation of the new start projects selected. These selections will be made in the third quarter FY 2006.

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C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603828D8Z - Joint Experimentation**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	0.000	115.684	115.437	118.396	120.909	123.027
P808	Joint Experimentation	0.000	0.000	115.684	115.437	118.396	120.909	123.027

A. Mission Description and Budget Item Justification: The FY 2005 National Defense Authorization Act (NDAA) directs the transfer of funding for the United States Joint Forces Command (USJFCOM) joint warfare experimentation programs from Navy, RDT&E accounts to RDT&E, Defense-wide accounts beginning in FY 2007. It also requires the Department to clearly identify funding for joint training activities in Defense-wide and Navy Executive Agent (EA) accounts in order to enhance congressional visibility of funding dedicated to joint training. Combatant Commander (COCOM), U.S. Joint Forces Command (USJFCOM) was chartered "as the Executive Agent for conducting Joint Concept Development and Experimentation (JCD&E), within the Department of Defense." The Secretary of Defense signed the USJFCOM's Joint Warfighting Experimentation Charter on 15 May 1998. H8150, 22 September 1998, Sec 922, directed the establishment of Joint Warfighting Experimentation.

The globalization of technology and commerce, driven in part by the information revolution, is changing the nature and conduct of conflict by offering new means and capabilities to our adversaries. The continuing proliferation of ballistic missiles, cruise missiles, weapons of mass destruction (WMD) and other technologies is providing every relatively small nations and organizations the ability to challenge the U.S. directly and to threaten their neighbors and then attempt to deny access to U.S. forces. Requirements associated with defense of the U.S. are now different and there is a premium on the ability of U.S. forces to respond rapidly and decisively to emerging crises and conflicts. In an era of uncertainty, U.S. forces must be capabilities-based rather than threat based.

The terrorist attacks on the U.S. homeland in September 2001, and the U.S. and allied response in Afghanistan and Iraq have underscored the new challenges that U.S. forces will face in the coming decades in coping with the threat of terrorism and consequence of failed states. Coordinated JCD&E effort is an indispensable supporter of transformational objectives and to improved U.S. capabilities and the nation's ability to conduct a war on terrorism through the use of all instruments of power. This war cannot be won solely with legacy means. Development of advanced techniques, tools, and organizations to defeat terrorism and meet other new challenges of the 21st century requires new thinking and aggressive experimentation with alternatives to ensure the effectiveness of the future joint force.

The work of JCD&E is imperative because emerging changes in the rapidly adaptive threat will not await the wholesale recapitalization of today's force structure and because new equipment alone will not provide all the capabilities needed for future forces.

All COCOMs have input to the priorities for experimentation through the USJFCOM Combatant Commander Engagement program. The future of joint warfighting is the USJFCOM area of responsibility. Joint Experimentation's purpose is to lay the foundation for national security transformation. Development of a coherent joint force starts with aggressive concept development and robust joint experimentation. USJFCOM establishes a common joint context for the DoD, which has already proven to be a powerful tool that fosters coherence, improved stewardship and early interoperability materiel solutions "born joint."

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B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	115.684
Total Adjustments	0.000	0.000	115.684
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			115.684

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: Performance of Joint Experimentation systems is measured by successful delivery of system solutions to Combatant Commands by required delivery dates.

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Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P808	Joint Experimentation	0.000	0.000	115.684	115.437	118.396	120.909	123.027

A. Mission Description and Project Justification: The FY 2005 National Defense Authorization Act (NDAA) directs the transfer of funding for the United States Joint Forces Command (USJFCOM) joint warfare experimentation programs from Navy, RDT&E accounts to RDT&E, Defense-wide accounts beginning in FY 2007. It also requires the Department to clearly identify funding for joint training activities in Defense-wide and Navy Executive Agent (EA) accounts in order to enhance congressional visibility of funding dedicated to joint training. The Joint Experimentation Campaign Plan focuses on high priority tasks assigned to U.S. Joint Forces Command (USJFCOM) through the Strategic Planning Guidance (DPG) and the Chairman of the Joint Chiefs of Staff (CJCS) Instructions on Joint Concept Development and Experimentation. Additionally, the top priorities are designed to enable joint support to unified action by experimenting with concepts and prototypes that assist the department in:

1. Asymmetric warfare on a global scale
2. Unified Action (coherently integrated interagency and coalition operations)
3. Information Superiority (ISR, IO, Influence operations)
4. Improvised Explosive Devices (defeat the IED system)
5. Multi-national Experiment Series (concepts for coalition operations)
6. Military Support for Stability, Security, Transition and Reconstruction (SSTR) Operations
7. Joint Urban Operations
8. Joint Deployment Process Owner / Joint Deployment, Employment, Sustainment (JDPO/JDES)
9. Joint Command and Control (JC2)
10. Homeland Defense (HLD)

USJFCOM synchronized Joint and Service efforts in a "battle rhythm" that balances concept development with experimentation and smaller events that are more agile and adaptable. Unified Command Plan 2004 (UCP 2004)strengthened the JCDE role by directing USJFCOM TO "lead and coordinate the department's experimentation activities." Additionally, USJFCOM continues to strengthen these tools for conducting joint concept development and experimentation, including scalable parallel processing for modeling and simulation, providing highly capable and thinking adversaries through more effective red teaming initiatives, and building stronger links with other U.S. agencies and potential coalition partners.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Concept Development Pathway:	0.000	0.000	58.099

FY 2007 Plans:
-Concept development emphasis on key areas identified as capabilities gaps and operational shortfalls. USJFCOM will add focus on the ten priority areas designated by Combatant Commanders including

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SSTRO, MNIAG, JUO, Joint Command and Control, Unified Action, Asymmetric Warfare and military support to Homeland Defense.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Executable Concept Refinement:	0.000	0.000	32.350

FY 2007 Plans:
-Insert Joint Mission Modeling Tool (JMMT) into operations Iraqi Force to provide in theater mission planning and rehearsal capability with actual urban terrain.
-Multinational Interagency Group refinement
-Multi-national Information Sharing to create a standards-based, non-proprietary, open source, secure, scalable, cross-domain, collaborative information environment that enables cost-effective multi-national information sharing.
-Joint Urban Fire Prototype (JUFP): Improve the Joint Force Commander's ability to plan for and apply responsive precision fires in the urban environment.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Deployment, Employment and Sustainment (JDES):	0.000	0.000	8.735

FY 2007 Plans:
-Continue design work on a "blank sheet of paper" next generation logistics system. The proposed construct is to work a new process, procedure and system that is not bogged down by the non integrated multiple logistics systems currently in place.
-Joint Experimental Deployment and Sustainment: Develop a construct for joint force asset visibility allowing adaptive planning and application of the joint force as well as ensure sustainment operations occur logically and timely.
-Continue efforts to meet Basing Alternatives and Force Projections and Sustainment.
-Provide focused logistics concept development for operating in an adaptive, elastic and ubiquitous
distribution-based sustainment system along with the required information architecture to provide and receive time-definite support measured in hours, not days and weeks. Establish a joint sustainment force that is rapidly deployable, fully capable, immediately employable, and responsive to supported forces.
-Joint Deployment Systems Business Process Reengineered Prototype Implementation: Process workflow portal to manage the deployment and sustainment of forces for 1) increased effectiveness to deploy and sustain forces in execution of joint operations; 2) enterprise application integration platform to share data and tools and 3) established functional and technical development "battle rhythm" to delivery rapid operational spirals providing enhanced transformation change solution sets to the warfighter every 9-12 months.
-Joint Deployment Data Transparency: Develop the start point for joint deployment common data model/data standards, and extensible machine language (XML) data schema for shared data and increased system to system interoperability, and provide the strategic framework to plan, influence acquisition, and sustain Joint Deployment Capability for the development and management execution of an Integrated Master Plan and Integrated Master Schedule.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integration with Other Regional Combatant Commanders, Military Services and Agencies:	0.000	0.000	8.000

FY 2007 Plans:
- Ensure all joint warfighting capability needs of combatant commanders are addressed in experimentation efforts. Identify emerging capability gaps identified by ongoing operations.
- Conduct joint context efforts.
- Co-host and manage major events that test hypothesis and utility of joint warfighting concepts in events such as Joint Urban Warrior, Unified Quest, Unified Engagement, Urban Resolve, Unified View,

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Thor's Hammer and Unified Action.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Multi-National and Coalition Concept Development:	0.000	0.000	8.500

FY 2007 Plans:
-Build upon lessons learned from real world and experimental coalition experimentation. Work on the Content-Bases Information Security and other options to fully engage our partners in the ways and means of joint/coalition warfighting. MN experimentation efforts will include work with other nations to identify and support coalition operations with leading technology or innovations from their national capabilities to export across the coalition collaborative needs.
-FY 2007 Multi-national experiment 5 will be a comprehensive strategy where representative participates from non-military organizations will explore how to integrate full international capabilities across the spectrum of international security issues.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

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Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603832D8Z - Joint Wargaming Simulation Management Office**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		40.915	34.372	36.179	38.992	39.345	40.378	41.505
P476	Joint Wargaming Simulation Management Office	40.915	34.372	36.179	38.992	39.345	40.378	41.505

A. Mission Description and Budget Item Justification: (U) Modeling and Simulation (M&S) underpins and supports DoD analysis, acquisition, training, test and evaluation, experimentation, and operations activities across the Services as well as most of the other major DoD components. The development of M&S within DoD is generally double stovepiped - first, within each of the above functional areas and, second, within each of the DoD components. This double stovepipe tendency causes non-interoperability and cost inefficiencies. The purpose of this program is to break down these stovepipes to enable interoperable and cost efficient M&S capabilities. This Joint Wargaming Simulation Management Office Program Element is executed by the Defense Modeling and Simulation Office (DMSO) 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.

(U) DMSO has four assigned responsibility areas:
(U) (1) M&S Coordination: DoDD 5000.59: "Staff and distribute DoD M&S plans, programs, policies, procedures, and DoD publications."; DoD M&S Focal Point; EXCIMS Secretary; MSWG Chair.
(U) (2) Joint and Cooperative M&S: DoDD 5000.59: "Promote joint and cooperative research, development, acquisition, and operation of M&S systems, technologies, and capabilities among the DoD Components."
(U) (3) M&S Standards: DoD 4120.24-M: "manage and coordinate standardization efforts"; SAC, SR101-521: "establish interoperability standards and protocols"; and HASC/SASC CR 1991: "studies and technical efforts to develop...standards".
(U) (4) M&S Services: DoDI 3200.14: "Acquire, digest, analyze, evaluate, synthesize, store, publish and disseminate.." S&T information and engineering data; DoDI 3200.14: "...provide advisory and other user services to their authorized user community."

(U) DMSO has two strategic objectives: (1) M&S Interoperability and (2) M&S Cost Efficiency.

(U) The DMSO M&S Interoperability strategic objective will create interoperability among the real operations environment, the simulated operations environment, and the range operations environment. These three environments dominate the state space of all M&S functional areas across all DoD components. The DMSO Interoperability Strategic Objective is comprised of projects to create standards for simulation interface interoperability, component interface interoperability, scenario representation interoperability, operations management representation interoperability, and entity representation interoperability.

(U) The DMSO M&S Cost Efficiency Strategic Objective implements the M&S management provisions in DoDD 5000.59 via projects and activities to organize DoD M&S activities to cost efficiently satisfy DoD M&S requirements. This includes, but is not limited to, a DoD M&S Capabilities Based Assessment, M&S Support to the Joint Capabilities Integration and Development System (JCIDS), a DoD M&S Master Plan; a DoD M&S Investment Plan; Validation, Verification and Accreditation standards; DoD M&S Executive Agents; a DoD M&S Information Analysis Center, M&S Professional Development, and a DoD M&S Resource Registry.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603832D8Z - Joint Wargaming Simulation Management Office**

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	44.942	34.928	35.606
Current BES/President's Budget (FY 2007)	40.915	34.372	36.179
Total Adjustments	-4.027	-0.556	0.573
Congressional Program Reductions		-0.556	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-2.885		
SBIR/STTR Transfer	-1.081		
Other	-0.061		0.573

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: Performance in this program is monitored in the following ways:
(U) 1. Number & Effectiveness of DoD Policy Issuances
(U) 2. Number of M&S Standards Adopted
(U) 3. Number of Studies and Technical Efforts for Standards
(U) 4. Number of M&S Course Graduates / Certified Professionals
(U) 5. Number of M&S Information & Services Delivered

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603832D8Z - Joint Wargaming Simulation Management Office**

(U) 6. Number of Joint, Common, & General M&S Capabilities
(U) 7. Number of Executive Council for M&S (EXCIMS) Level Issues/Actions Resolved
(U) 8. Number of EXCIMS M&S Working Group (MSWG) Level Issues/Actions Resolved

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603832D8Z - Joint Wargaming Simulation Management Office**	**P476**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P476	Joint Wargaming Simulation Management Office	40.915	34.372	36.179	38.992	39.345	40.378	41.505

A. Mission Description and Project Justification: (U) DoD Modeling and Simulation (M&S) related spending during FY 2005 amounted to over $9.000 billion. M&S underpins and supports DoD analysis, acquisition, training, test and evaluation, experimentation, and operations activities across the Services as well as most of the other major DoD components. The development of M&S within DoD is generally double stovepiped - first, within each of the above functional areas and, second, within each of the DoD components. This double stovepipe tendency causes non-interoperability and cost inefficiencies. The purpose of this program is to break down these stovepipes to enable interoperable and cost efficient M&S capabilities. This Joint Wargaming Simulation Management Office Program Element is executed by the Defense Modeling and Simulation Office (DMSO) 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. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Wargaming Simulation Management Office	40.915	34.372	36.179

FY 2005 Accomplishments: (U) Provided M&S mission planning tools and analysis capabilities that became part of the Department's operations in Iraq.
(U) Provided investments and oversight to Transformation Initiatives focused on providing the Department of Defense with the next generation of M&S tools and representation of military operations.
(U) Demonstrated Live-Virtual-Constructive capability in Urban Terrain using cost-effective technology in support of training transformation.
(U) Delivered "designed to order" weather and ocean scenarios in support of the Analytic Community.
(U) Delivered server capability to the experimentation community to deliver common data and environmental effects for experimentation and training.
(U) Enhanced training for coalition operations without having to provide certification for all non-US simulation components by making HLA RTI Certification and Federation Compliance Test Suites ready for export to our NATO allies through the Research and Technology Board.
(U) Continued providing standards, policies and product support for improving Joint community and Service tools to allow their separate models, simulations and command and control systems to effectively operate in a common M&S environment
(U) Continued providing multi-year technology development programs targeted at improving the agility and cost-effectiveness of M&S in support of consistent, interoperable mission spaces that can be used for the full spectrum of military transformational initiatives.
(U) Continued acting as the USD(AT&L) action agent in developing M&S policies, plans and programs that support the effective and efficient management of the Department's M&S resources.
(U) Initiated the development of a DoD Modeling and Simulation Master Plan and a DoD Modeling and Simulation Investment Plan.

FY 2006/FY 2007 Plans: (U) Standards for simulation interface interoperability, component interface interoperability, scenario representation interoperability, operations management representation interoperability, and entity representation interoperability.
(U) Implementation of the M&S management provisions in DoDD 5000.59: M&S Capabilities Based Assessment, M&S Support to the Joint Capabilities Integration and Development System (JCIDS), DoD M&S Master Plan; a DoD M&S Investment Plan; Validation, Verification and Accreditation standards; DoD M&S Executive Agents; a DoD M&S Information Analysis Center, M&S Professional

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603832D8Z - Joint Wargaming Simulation Management Office**
	PROJECT **P476**

Development, and a DoD M&S Resource Registry.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)						February 2006	
RDT&E, DEFENSE-WIDE (0400) BUDGET ACTIVITY THREE	TEST AND EVALUATION/SCIENCE AND TECHNOLOGY (T&E/S&T) PROGRAM ELEMENT (PE) 0603941D8Z						
$ in Millions	FY 2005*	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
PE 0603941D8Z	0.000	27.371	39.939	64.988	97.456	99.293	101.533
Hypersonic Test	0.000	4.613	9.676	16.540	26.602	25.024	23.539
Spectrum Efficient Technology	0.000	3.522	4.453	5.189	5.438	5.783	5.908
Multi-Spectral Test	0.000	4.212	5.518	8.549	12.209	12.256	12.518
Embedded Instrumentation	0.000	3.881	5.233	8.289	11.171	11.211	11.433
Directed Energy Test	0.000	5.131	9.068	14.998	23.608	24.124	23.492
Netcentric Systems Test	0.000	1.812	3.986	6.274	6.351	7.165	8.367
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000	0.000	0.000	0.000	0.000
Software Test	0.000	0.000	2.005	5.149	6.018	6.722	8.035
Modeling and Simulation	0.000	0.000	0.000	0.000	3.363	3.780	4.452
Test Range/Facility Technology Improvements	0.000	0.000	0.000	0.000	2.668	3.228	3.789

*Language in the National Defense Authorization Act of 2003 directed the establishment of the Test Resource Management Center (TRMC). The Act also requires the TRMC to administer the Test and Evaluation/Science and Technology (T&E/S&T) program effective Fiscal Year 2006.

Beginning with FY 2006, program element 0603941D8Z (T&E/S&T) transferred from the Operational Test and Evaluation, Defense (OT&E, D) appropriation (0460) to the Defense-wide RDT&E (0400) appropriation. FY 2005 Accomplishments are noted in the OT&E appropriation.

A. **(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The T&E/S&T program seeks out and develops test technologies to pace evolving weapons technology. This program is critical to ensuring that the Department of Defense (DoD) has the capability to adequately test the advanced systems that will be fielded in the future. To meet this objective, the T&E/S&T program:

- Exploits new technologies and processes to meet important T&E requirements.
- Expedites the transition of new technologies from the laboratory environment to the T&E community.
- Leverages commercial equipment and networking innovations to support T&E.

Additionally, the program examines emerging test requirements derived from transformation initiatives to identify needed technology areas and develop a long-range roadmap for technology insertion. This program leverages and employs applicable 6.2 applied research from the highly-developed technology base in the DoD laboratories and test centers, industry, and academia to accelerate the development of new test capabilities. This PE also provides funds to perform travel to carry out oversight of the T&E/S&T program.

This Research Category 6.3, Advanced Technology Development PE, develops and demonstrates high payoff technologies for current and future DoD test capabilities.

B. (U) PROGRAM CHANGE SUMMARY

	FY 2005	FY 2006	FY 2007
Previous President's Budget:	0.000	28.614	44.240
Current President's Budget:	0.000	27.371	39.939
Total Adjustments:		(1.243)	(4.301)
Congressional Program Adjustments:		(0.966)	
Congressional Rescissions:		(0.277)	
Congressional Increases:			
Other Program Adjustments:			(4.301)

C. (U) OTHER PROGRAM FUNDING SUMMARY NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of T&E/S&T projects progressing satisfactorily toward technical, financial, schedule, and risk mitigation goals.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			HYPERSONIC TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Hypersonic Test	0.000	4.613	9.676	16.540	26.602	25.024	23.539

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The National Aerospace Initiative (NAI) will develop air-breathing weapons, advanced aircraft, and access to space platforms to operate in the hypersonic speed regimes Mach 5 and higher. Hypersonic systems to be developed under the NAI require T&E capabilities in numerous areas ranging from ground testing (wind tunnels, sled tracks, installed-system test facilities, and modeling and simulation (including computational fluid dynamics)) through flight testing. At hypersonic speeds, flight testing will challenge existing ground instrumentation systems (e.g., tracking system slew rate limitations, telemetry dropouts due to ionization) and range safety decision making. Hypersonic weapon systems will depend on several new technological thrusts in areas such as propulsion and engines, structures and materials, guidance and control, seekers and sensors, warheads and payloads, and weapons delivery techniques and end-game dynamics - each requiring supporting T&E capabilities to determine performance, effectiveness, suitability, survivability, and responsiveness to Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems. Service improvement and modernization programs are addressing some basic test facility upgrades using off-the-shelf technologies. However, T&E of hypersonic systems will require technologies not yet developed or available for T&E purposes. The Department must have adequate T&E capabilities in place in time to meet current development, and ultimately, acquisition program schedules. The purpose of this T&E/S&T focus area is to address these T&E technology issues.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Hypersonic Test	0.000	4.613	9.676

FY 2005 Accomplishments: **See OT&E, D (0460) appropriation.**

FY 2006 Plans:

Continue efforts initiated in prior fiscal years. Highlights of the efforts include:

- Complete In-Situ Pressure Measurements for Hypersonic Vehicles efforts to develop an advanced prototype pressure sensor. This embedded sensor will complete long duration testing in a flight representative hypersonic combustor. These sensors will allow for improved accuracy pressure measurements during long-duration flight and ground testing.
- Complete Pulsed Electron Beam Spectroscopy efforts to develop and demonstrate a non-intrusive sensor technology for temperature and gas concentration measurements in the flow field of hypersonic ground test facilities. This will provide the ability to determine temperature, gas species and concentration of combustion products in the flow field.
- Continue Test Media Effects development and demonstration of diagnostic tools to simultaneously measure chemical species, temperature and velocities in hypersonic flows. Efforts will continue in the development of improved Computational Fluid Dynamics (CFD) algorithms to model the effects of vitiates in hypersonic vehicle propulsion systems. These tools will enable the measurement and prediction of vitiate effects to support hypersonic engine test and evaluation.

Initiate efforts selected as a result of the FY 2006 Broad Agency Announcement (BAA). Efforts include:

- Advanced heater technologies to provide realistic clean-air ground test environments to adequately simulate flight conditions for hypersonic weapon systems and target interaction.
- Enhanced CFD models for performance characterization of Mach 7 + hypersonic combustion systems and weapon systems concepts.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue efforts initiated in prior years. These efforts include:

- Complete In-Flight Combustion Gas Analysis efforts to fabricate and ground test a non-intrusive laser spectroscopy diagnostic sensor that is suitable for in-flight test and evaluation of hypersonic propulsion systems. This diagnostic will provide an improved capability to evaluate the performance of hypersonic combustors in true flight conditions, and support the validation of CFD codes.
- Complete Microelectromechanical System (MEMS) Shear Stress Sensors efforts to develop and demonstrate a Silicon Carbide based MEMS sensor that is capable of measuring two-dimensional shear stress environment on the surface of hypersonic vehicles.
- Complete Hypersonic Clean Air Heater Test Technology efforts to fabricate and test of a sub-scale clean air heater

system. This will provide the basis for the development of a full-scale heater system for use in a hypersonic aeropropulsion testing.

- Complete High Heat Flux Sensor efforts to develop and demonstrate high heat flux sensors that can provide accurate heat flux measurements in the extreme temperature environment of hypersonic aeropropulsion test facilities. The High Heat Flux Sensor project extends the developments of the Heat Flux Sensor project to make these sensors survive at higher temperatures (1500 degrees Fahrenheit vs. 700 degrees Fahrenheit). These high heat flux sensors will allow sensor measurements in hypersonic propulsion systems and in vitiated test environments.
- Continue Test Media Effects efforts to model the effects of vitiates on hypersonic combustion engines to allow prediction of engine performance in clean air flight conditions.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Survivable command destruct package to allow safe and reliable termination of hypersonic flight tests.
- Technology to transmit effects and dynamics of Mach 7 + engagements to support weapon system performance evaluation.
- High speed stores separation measurement technology for accurate store/vehicle separation data in hypersonic flight conditions.
- Advanced distributed simulation capabilities for Mach 7 + engagements to allow analysis of hypersonic system performance between test centers and system developers
- Continuous and survivable instrumentation and communications to provide system performance (including time-space position and attitude information) and allow test system command and control throughout the hypersonic test regime.

Initiate a BAA to select efforts for FY 2008 award.

C. **(U) <u>OTHER PROGRAM FUNDING SUMMARY</u>** NA

D. **(U) <u>ACQUISITION STRATEGY</u>** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			SPECTRUM EFFICIENT TECHNOLOGY				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Spectrum Efficient Technology	0.000	3.522	4.453	5.189	5.438	5.783	5.908

A. **(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

Increased commercial use of the radio frequency (RF) spectrum and DoD's higher demands for bandwidth and test data are impacting the capability to test current weapon systems. Realistic testing of modern military systems, and follow-on training at the completion of a defense system's development phase, rely heavily on the use of the RF spectrum, especially in the "L" and "S" microwave bands. Signal propagation, supportable data rates, and other related characteristics make these bands ideally suited for test telemetry and training applications. However, these are the same characteristics that make these bands highly coveted by the wireless communications industry. The growth in the demand for consumer communication services has resulted in reallocation of RF spectrum from government to non-government use. The reallocation of this spectrum, coupled with the increase in activities that use it, has raised concerns regarding the availability of adequate spectrum to support test and training. Each new generation of military system typically generates ten times more data and information than the system it is replacing, resulting in a 20-year trend of exceptional growth in the demand for test and training related spectrum. The next generation of systems will generate proportionately greater data rates that will exceed the capability of our current test infrastructure. Technological advances in the spectrum efficiency focus area are required to ensure that programs will not have to compromise T&E by reducing the number or quality of tests.

B. **(U) ACCOMPLISHMENTS/PLANNED PROGRAM**

	FY 2005	FY 2006	FY 2007
Spectrum Efficient Technology	0.000	3.522	4.453

FY 2005 Accomplishments: **See OT&E, D (0460) appropriation.**

FY 2006 Plans:

Continue efforts initiated in prior fiscal years. Highlights for the projects include:

- Complete Super High Frequency (SHF) Channel Modeling and Implementation efforts to incorporate effects of sea interference in the SHF bands into the channel model. This channel model supports development of advanced robust modulation techniques required for telemetry in the SHF band.
- Complete Steerable Beam, Directional Antenna Concepts ground and flight demonstration of a prototype steerable beam system. This will provide a closed loop capability to steer telemetry signals to reduce data dropouts and minimize the effects of antenna to antenna interference.
- Complete X-band Tracking demonstration of X-band telemetry tracking of a rocket in flight. This effort will demonstrate the technology necessary to modify existing telemetry assets to support operation in the SHF band.

Initiate projects identified by the FY 2006 BAA process:

- Novel networked telemetry technologies that support remotely tunable datalink transceivers to provide increased data security, improve range safety, and allow for inter-range operation coordination and other future range applications.
- Optical communications brassboard to demonstrate optical telemetry to augment the existing and planned RF telemetry spectrum for systems-of-systems testing.
- Development of adaptive antenna arrays for unobtrusive and non-interfering operations for system under test, and variable beamwidth directional antennas for frequency sharing during system-of-systems tests.
- Algorithms that support ultra-high data rate pre-processing, compression, storage, and bandwidth- efficient modulation schemes for transmission of T&E data in dynamic test environments.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue efforts initiated in prior fiscal years. The efforts include:

- Complete Spectrally Efficient High Data Rate Telemetry System for SHF fabrication and flight demonstration of a real-time data encoder integrated into an Advanced Orthogonal Frequency Division Multiplexing (AOFDM) transmitter and receiver.
- Complete RF Microelectromechanical System (MEMS) Antenna fabrication and flight testing of a MEMS software-defined antenna system that will allow dynamic reconfiguration of the antenna transmit frequency and polarity to support adaptive use of the telemetry spectrum during test events.
- Complete Phased Array Antenna demonstrations of an autonomous neural network and antenna algorithms that will

provide improved tracking accuracy for ground-based receive antennas. This will allow improved tracking accuracy during dynamic testing and reduce signal fading during high dynamic maneuvers.

- Complete Beamformer Antenna ground demonstration of a wrap around phased array antenna system that can support over-the-horizon test capabilities. This system will support the evaluation of space-based telemetry applications.

Initiate additional investigations as a result of the BAA process to address critical T&E technology issues such as:

- Techniques for overcoming transmission losses during ionization periods of hypersonic systems testing.
- Methods to increase efficiency and reliability of future telemetry, command and control, and datalink communications for T&E.
- Methods to improve transmission efficiency by compensating for Doppler shift in coherent telemetry receivers.

Initiate a BAA in FY 2007 to select efforts for FY 2008 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			MULTI-SPECTRAL TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Multi-Spectral Test	0.000	4.212	5.518	8.549	12.209	12.256	12.518

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

DoD S&T programs are developing new technologies for use in multi-spectral and hyperspectral sensors, seekers, and detectors for weapon systems and intelligence, surveillance, and reconnaissance systems. T&E of new multi-spectral and hyperspectral sensors to be used in these future weapon systems will require new T&E technologies. Current methods for testing multi-spectral and hyperspectral sensors rely heavily on expensive field test programs. While these field tests provide realistic data for sensor testing, they leave several critical gaps. For example, test conditions are not repeatable because environments observed one day will be different the next day. Imagery can be collected and stored to partially mitigate this deficiency, but this process is expensive and cannot cover the full spectrum of environments required for complete test article evaluation and performance analysis. The T&E community needs the ability to test these advanced seekers and sensors in a repeatable, objective fashion before and after integrating them into warfighting systems. This T&E/S&T focus area is addressing these needs through research efforts in scene generation, injection and projection to create test technologies that can be combined into integrated multi-spectral and hyperspectral test capabilities. Without these new T&E technologies, DoD will not be able to adequately test and evaluate the multi-spectral and hyperspectral weapon systems of the future.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Multi-Spectral Test	0.000	4.212	5.518

FY 2005 Accomplishments: **See OT&E, D (0460) appropriation.**

FY 2006 Plans:

Continue efforts initiated in prior fiscal years. Highlights for the projects include:

- Complete UV LEDs for T&E characterization of the LEDs and conducted tests to determine the feasibility of using these LEDs to evaluate the performance of MWSs. This technology will support the development of advanced stimulators for MWS T&E.
- Complete Hyperspectral Testbed Design efforts to design the testbed and fabricate the subsystem of the prototype LWIR hyperspectral testbed.
- Complete Multi-Spectral Stimulator Injection Test Method fabrication of the prototype hardware system and initiated preliminary closed loop testing. The prototype system incorporates real-time Radio Frequency (RF) output with clutter, correlated with the Infrared (IR) output to support hardware-in-the-loop testing of multi-spectral weapon systems in the Mid-Wave IR (MWIR), LWIR and millimeter wave (MMW) frequencies.
- Complete Hyperspectral Sensor Evaluation – Minimum Resolvable Temperature (MRT) efforts to identify a test methodology for evaluation of undersampled imagers. The test methodology measures optical parameters from the sensor and uses these measurements in an MRT simulation to determine predicted field performance

Initiate projects identified by the FY 2006 Broad Agency Announcement (BAA) process:

- Stand-alone UV through LWIR Scene Projector technologies well advanced beyond current emissive array projectors. These technologies were being developed for use in DOD T&E facilities and by DOD sensor and system developers.
- Innovative multi-spectral & hyperspectral data mining techniques to support evaluation of multi-spectral and hyperspectral imaging systems.
- Modeling & Simulation to generate multi-spectral sensor scenes to stimulate multi-spectral and hyper-spectral UV to LWIR, as well as MMW, acoustical, seismic & magnetic sensor systems.
- Spectrally structured MWIR-LWIR emitter arrays to produce very high radiometric apparent temperature

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue efforts initiated in prior fiscal years. The efforts include:

- Complete Dynamic Hyperspectral Thermal Signature Model final development of the signature model. The final release open-source software package will be capable of generating multi-spectral and hyperspectral imagery for use in testing of advanced weapon systems, such as Future Combat Systems.

- Complete Hyperspectral Testbed Design integration and demonstration of the prototype hyperspectral image projection system. This testbed will allow repeatable closed loop testing of advanced hyperspectral imagers under controlled, user defined test conditions that can not be efficiently achieved in field testing.
- Complete Multi-Spectral Stimulator Injection Test Method closed-loop demonstration of the prototype hardware system. This demonstration will include stimulation of a RF/IR sensor fusion algorithm. This system will provide realistic direct injection testing of multi-spectral sensor systems.

Initiate projects identified by the FY 2007 BAA process. Efforts are planned in the following areas:

- Technologies to support the generation and projection of polarized visible and near-IR imagery for T&E of advanced weapon systems.
- T&E field tools for data collection related to radiance, spectral precision, dynamic range, frame rate, ground system signatures, and missile signatures.

Initiate a BAA to select efforts for FY 2008 award.

C. **(U) OTHER PROGRAM FUNDING SUMMARY** NA

D. **(U) ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			EMBEDDED INSTRUMENTATION				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Embedded Instrumentation	0.000	3.881	5.233	8.289	11.171	11.211	11.433

A. **(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

Instrumentation requirements for systems-under-test, hardware-in-the-loop testing, and training are increasing exponentially for new weapon systems. Onboard or personnel-borne instrumentation and equipment are required for sensing and collecting critical performance data; determining accurate time, space, position, and attitude information; interfacing with command and control data links; monitoring and reporting system-wide communications; reporting human operator performance; and storing and transmitting data. These requirements drive the need for enabling technologies for miniaturized, non-intrusive instrumentation suites with increased survivability in harsh environments.

There is minimal space available for adding instrumentation to new weapon systems subsequent to their development. Additional weight and power draw can adversely affect the weapon system's signature and performance. Instrumentation for humans-in-the-loop, such as a dismounted soldier, should not detrimentally affect the soldier's performance or operational burden. New technologies can be exploited to integrate small non-intrusive embedded instrumentation (EI) into new platforms during design and development, and, in some cases, into existing platforms. This EI can provide the required data for T&E, training, and logistics throughout the system's lifecycle, and provide the ability to collect critical system performance data during combat missions.

The use of embedded instrumentation for T&E, training, and logistics has the potential for significantly reducing the total ownership costs of new weapon systems while enhancing force readiness. Accordingly, the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01D states that acquisition programs should include embedded instrumentation as part of system trade-off studies and design analyses. The EI focus area will advance T&E technologies needed to facilitate compliance with CJCSI 3170.01D.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Embedded Instrumentation	0.000	3.881	5.233

FY 2005 Accomplishments: **See OT&E, D (0460) appropriation.**

FY 2006 Plans:

Continue efforts initiated in prior fiscal years. Highlights for the projects include:

- Complete Compact Holographic Data Storage fabrication and test of a brassboard high density storage device. The storage device will be suitable for embedding in Systems Under Test (SUTs) for storage of test data. The holographic storage device has no moving parts and is capable of storing a minimum of 750 gigabytes (0.75 terabytes) of data.
- Complete Advanced Munitions Flight Test Instrumentation development, fabrication and flight test of a MEMS-based instrumentation module on a munition. This embedded instrumentation package will provide time, space, and position information (TSPI) to improve munition evaluation without adversely impacting the munition design or function.
- Complete Gas Turbine Engine Probe design and fabrication of a gas extraction probe capable of being embedded within a combustor and housing the CO Emissions Sensor for Gas Turbine Engines.
- Complete Software Architecture for EI design and demonstration of an extensible, platform-independent reusable software architecture. This architecture will support integration of embedded instrumentation onto multiple weapon systems.

Initiate projects identified by the FY 2006 Broad Agency Announcement (BAA):

- Synthetic instrumentation that combines sensor technology with integrated processing techniques to create multi-functional instruments.
- Techniques to achieve miniaturized, reduced-weight instrumentation packaging.
- Methods to improve instrument survivability in harsh environments, such as at hypersonic speeds.
- Low power instrumentation to reduce on-board power demands.
- Smaller, higher capacity recorders to support passive operation of embedded instrumentation.
- Passive devices for improving ground truth measurements, such as for attitude and miss-distance measurements.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue efforts initiated in prior fiscal years.

- Complete Digital Communications Test Data Bus development and demonstration of a prototype miniaturized, self-calibrating embedded instrumentation system that consists of smart sensors, a subsystem controller and a processor. This instrumentation system will be capable of operating on missile system power in the operational environment and will be able to support continuous life cycle T&E.
- Complete High Speed and Temperature Diagnostics development of a series of probes that can withstand continuous exposure to hypersonic test environments. The effort is developing an optical species probe, total pressure probe, total temperature probe and a Mach/flow angularity probe. These probes will support both ground and flight testing of hypersonic vehicles.
- Complete MEMS Fiber Optic Sensors design, fabrication, and demonstration of optical pressure, temperature, and shear stress sensors integrated into a single sensor head. These sensors will be embedded into a test article to demonstrate practical application in an operationally relevant environment.
- Continue Open Embedded Modular Architecture efforts to design and develop of an open, modular, and scalable embedded system architecture. This architecture will be demonstrated on the Multi-Megawatt Electric Power System being developed for directed energy weapons applications.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Advanced wireless data and communications techniques, including the use of vehicle power lines as a data bus for data transfer and distribution
- Human performance instrumentation to support T&E in Joint Urban Operations environments.
- Non-intrusive network interfaces with critical operational components including the MIL-STD-1553 data bus to support gathering operational data without affecting operational performance.
- Instrumentation command and control techniques to provide remote operation of instrumentation during T&E events.
- High anti-jam signal processing techniques for T&E operations in an electronic warfare and jamming environment.

Initiate a BAA to select efforts for FY 2008 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			DIRECTED ENERGY TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Directed Energy Test	0.000	5.131	9.068	14.998	23.608	24.124	23.492

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Directed Energy (DE) technologies are rapidly transitioning into acquisition programs and Advanced Concept Technology Demonstrations (ACTDs). These weapons technologies, which primarily consist of High Energy Laser (HEL) and High Power Microwaves (HPM), are outpacing their supporting test technologies. Advancements in HEL and HPM have created a new class of weapon systems in which energy is placed on a target instantaneously, making traditional test techniques for evaluating conventional munitions (with flight times ranging from seconds to minutes) not applicable to DE systems' T&E. As a result, new technology solutions are needed to ensure adequate developmental, live fire, and operational test capabilities are available when the DE acquisition programs are ready to test.

DE system and component testing requires two principal assessments: how well the weapon is performing and the specific interaction of energy and target. The current ability to assess DE systems performance and interactions is based on effects testing, i.e. determining if and when the target was destroyed. This does not provide the detailed test data required to understand DE system performance. Military utility of these weapons will be dependent on the knowledge acquired through T&E to know how much to trust the technologies under development and how best to use them. This T&E/S&T focus area is developing the needed technologies to quantitatively assess both HEL and HPM performance and target interaction to support thorough testing of DE systems.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Directed Energy Test	0.000	5.131	9.068

FY 2005 Accomplishments: See OT&E, D (0460) appropriation.

FY 2006 Plans:

Continue efforts initiated in prior fiscal years. Highlights for the projects include:

- Complete Directed Energy Data Acquisition Transformation (DEDAT) development, fabrication, and test of a three axis field probe and simultaneous trigger capability. The three axis field probe and simultaneous trigger will be used with the previously developed Compact Remote Data Acquisition (CRDAQ) system for conducting T&E of HPM systems.
- Complete Modulated Retro Target Sensors (MRTS) development and demonatration of a breadboard retroreflector sensor system that is capable of providing on-target measurements of HEL performance during T&E events of dynamic targets. This system uses retroreflectors to transmit the sensor data from the target to an off-board data acquisition system.
- Complete Quantum Well Infrared Photodetector (QWIP) integration of the Hybrid QWIP and Near Infrared (NIR) Indium-Gallium-Arsenide (InGaAs) focal plane array (FPA) with the Computed Tomographic Imaging Spectrometer (CTIS). The prototype QWIP/NIR/CTIS camera system was demonstrated in both lab and field environments. The QWIP/NIR/CTIS camera will allow remote analysis of HEL interaction with targets to characterize laser performance.
- Complete Range Profiles of Turbulence integration and demonstration of a brassboard DIM LIDAR system. The DIM LIDAR data was compared with truth data to verify system performance.
- Complete Microwave Test Diagnostics fabrication and test of a prototype compact self-contained HPM field diagnostic system. This survivable diagnostic sensor will support T&E of HPM systems using mobile targets.

Initiate projects identified by the FY 2006 Broad Agency Announcement (BAA) process:

- Survivable target board technologies to measure and evaluate the total instantaneous output power of continuous wave HEL systems to support static beam/target interaction testing.
- Off-board HEL sensor concepts for airborne and ground targets to measure surface temperatures and thermal effects without interfering with system operation or perturbing test environment.
- Survivable HPM field probes that do not perturb the RF environment and provide a reliable measurement of field strength in an HPM engagement.
- Modeling and Simulation techniques to accurately predict and understand the total beam distribution for HEL weapon systems to address critical safety issues such as ensuring that T&E events do not affect civilian or military infrastructure.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue projects initiated in prior years. Highlights of the projects include:

- Complete Electro-optical Sensor Technology efforts to fabricate and test a HPM field probe based on a novel electro-optical material that changes its optical characteristics when subjected to an HPM environment. This field probe will allow non-intrusive measurement of HPM environments with minimal impact on the fields measured.
- Complete Dielectric Electromagnetic Field Probes efforts to develop and demonstrate dielectric-based field probes that can measure electric and magnetic fields during HPM T&E events. These dielectric field probes will cause little or no perturbation of the electromagnetic environment during the event.
- Complete HEL Off-Target Temperature Sensor efforts to fabricate and demonstrate of an off target imaging system that can measure the surface temperature of HEL beams. The sensor will provide a method to remotely characterize the HEL beam/target interaction during T&E events.
- Complete T&E Adaptive Optics System efforts to integrate and test an adaptive optics system to remotely measure HEL temperature with high spatial and temporal accuracy. The adaptive optics system will be integrated into the Advanced Pointer Tracker at HELSTF.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Wide-spectrum, single substrate imagers to enhance imaging and detection of HEL beams from a variety of systems/sources.
- DE (HEL or HPM) hardened flight termination system/range destruct package to safely and reliably provide for termination of the target, even when high concentrations of DE are present on the target.
- Methods to measure optical transmissivity with a 100 times increase in sampling rates over current measurement techniques at different wavelengths along laser beam paths to support HEL T&E.
- Use of physics-based models incorporated into virtual geographical representations of T&E ranges to provide 3-dimensional, geodetically accurate models of beam propagation, beam spread, lethal range, fluence on target, and atmospheric effects.

Initiate a BAA to select efforts for FY 2008 award.

C. **(U) OTHER PROGRAM FUNDING SUMMARY** NA

D. **(U) ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			NETCENTRIC SYSTEMS TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Netcentric Systems Test	0.000	1.812	3.986	6.274	6.351	7.165	8.367

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The S&T community is developing advanced Netcentric Systems to support DoD's Critical Transformational Capabilities—Conduct Information Operations, Deny Enemy Sanctuary, and Leverage Information Technologies. Advancements in Netcentric Systems will provide commanders and staff with an adaptive, network-centric, configurable operational information visualization environment, which will improve the speed and quality of command decisions. Information assurance and survivability are central to achieving these advancements. These advances will enable a spectrum of operational capabilities ranging from enhanced management and exploitation of intelligence, surveillance, and reconnaissance assets to next-generation tactical radio systems. Successful implementation of these transformational capabilities will necessitate a corresponding transformation in DoD's ability to test and evaluate Netcentric Systems. The Netcentric Systems Test (NST) focus area will address the T&E scenarios, technologies, and analysis tools required to ensure that operational networked systems delivered to the warfighter provide an assured capability to acquire, verify, protect, and assimilate information necessary for battlefield dominance within a complex netcentric environment.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Netcentric Systems Test	0.000	1.812	3.986

FY 2005 Accomplishments: **See OT&E, D (0460) appropriation.**

FY 2006 Plans:

Continue projects initiated in FY 2005. Highlights for the projects include:

- Complete The Tactical-Report Generation Test Bed for C4ISR Systems efforts to develop and demonstrate the Tactical-Report Generation Test-bed (TGT). The TGT generates realistic sensor data and formatted message data streams from user-supplied scenarios to support Joint system tests, evaluations, experiments and programs of C4ISR systems.
- Complete Network Simulation and Analysis Tools (NSAT) for C4ISR development, integration and test of a suite of interoperable software tools, components, and enhancements to the Repeatable Performance Evaluation & Analysis Tool (REPEAT). These tools allow REPEAT to provide a framework to test next generation C4ISR systems based on a service oriented architecture in a Network Centric environment.

Initiate projects identified by the FY 2006 Broad Agency Announcement (BAA) process:

- Development of T&E metrics to determine the effectiveness of Information Operations.
- Tools that employ artificial intelligence to support the instrumentation and visualization of netcentric T&E environments.
- Development of non-intrusive instrumentation and T&E communication networks (including networks-of-networks) that do not affect the performance of networked systems under evaluation, especially for humans-in-the-loop network-centric environments.
- Methods to support T&E of decision aids used in network-centric operations.
- Ability to assess information assurance within complex systems-of-systems.
- Methods to evaluate the performance of network-centric operations in a multi-node dynamic environment.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue projects initiated in prior years. The projects include:

- Complete A Test Agent for Testing Command and Control, Decision Support and Intelligent Agents efforts to develop an intelligent agent based test systems that allows the T&E of network systems that use single or multiple embedded intelligent agents. This test tool will provide the ability to automatically evaluate command and control systems used in a Network Centric environment.

Initiate future investigations to address T&E technology challenges in the focus area for:

- Techniques for capturing spatial and temporal registration across large numbers of sensors, multimedia communications, and human-system interface devices.
- Techniques for capturing and evaluating multiple simultaneous collaborative user data links.
- Techniques for capturing and evaluating human physical and cognitive performance.
- Capability to evaluate advances from a "human-out" perspective; i.e., determine what information actually enhances a warfighter's performance.
- Technologies to non-intrusively assess low probability of detection/low probability of intercept communications and data links.
- Methods to assess the contribution of netcentricity to decision superiority in operational scenarios.
- Additional netcentric systems T&E technology issues will be identified, incorporated into the NST roadmap, and addressed in future research plans.

Initiate a BAA to select efforts for FY 2008 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			ADVANCED UNMANNED VEHICLE SYSTEM DEVELOPMENT				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000	0.000	0.000	0.000	0.000

A. (U) **MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The DoD is developing a new class of complex autonomous unmanned systems to handle specialized, hazardous operations when appropriate. Early systems, such as soldier-in-the-loop unmanned aerial vehicles, already serve in critical roles in the operational environment. This new class of autonomous vehicle will require innovative methods to test and evaluate the system's performance and its ability to adapt to changes in the operational environment.

This Congressional add project is focused on the development, test, and evaluation of an integrated unmanned protection system in support of transport security missions. This research and development effort will provide the T&E/S&T program with insights into the T&E challenges associated with testing of autonomous systems and will act as a roadmap to guide T&E technology developments in this area.

B. (U) **ACCOMPLISHMENTS/PLANNED PROGRAM**

	FY 2005	FY 2006	FY 2007
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000

FY 2005 Accomplishments: NA

FY 2006 Plans:

Continue projects initiated in FY 2005. Highlights for the projects include:

- Complete The Tactical-Report Generation Test Bed for C4ISR Systems efforts to develop and demonstrate the Tactical-Report Generation Test-bed (TGT). The TGT generates realistic sensor data and formatted message data streams from user-supplied scenarios to support Joint system tests, evaluations, experiments and programs of C4ISR systems.
- Complete Network Simulation and Analysis Tools (NSAT) for C4ISR development, integration and test of a suite of interoperable software tools, components, and enhancements to the Repeatable Performance Evaluation & Analysis Tool (REPEAT). These tools allow REPEAT to provide a framework to test next generation C4ISR systems based on a service oriented architecture in a Network Centric environment.

Initiate projects identified by the FY 2006 Broad Agency Announcement (BAA) process:

- Development of T&E metrics to determine the effectiveness of Information Operations.
- Tools that employ artificial intelligence to support the instrumentation and visualization of netcentric T&E environments.
- Development of non-intrusive instrumentation and T&E communication networks (including networks-of-networks) that do not affect the performance of networked systems under evaluation, especially for humans-in-the-loop network-centric environments.
- Methods to support T&E of decision aids used in network-centric operations.
- Ability to assess information assurance within complex systems-of-systems.
- Methods to evaluate the performance of network-centric operations in a multi-node dynamic environment.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue projects initiated in prior years. The projects include:

- Complete A Test Agent for Testing Command and Control, Decision Support and Intelligent Agents efforts to develop an intelligent agent based test systems that allows the T&E of network systems that use single or multiple embedded intelligent agents. This test tool will provide the ability to automatically evaluate command and control systems used in a Network Centric environment.

Initiate future investigations to address T&E technology challenges in the focus area for:

- Techniques for capturing spatial and temporal registration across large numbers of sensors, multimedia communications, and human-system interface devices.
- Techniques for capturing and evaluating multiple simultaneous collaborative user data links.
- Techniques for capturing and evaluating human physical and cognitive performance.
- Capability to evaluate advances from a "human-out" perspective; i.e., determine what information actually enhances a warfighter's performance.
- Technologies to non-intrusively assess low probability of detection/low probability of intercept communications and data links.
- Methods to assess the contribution of netcentricity to decision superiority in operational scenarios.
- Additional netcentric systems T&E technology issues will be identified, incorporated into the NST roadmap, and addressed in future research plans.

Initiate a BAA to select efforts for FY 2008 award.

C. **(U) OTHER PROGRAM FUNDING SUMMARY** NA

D. **(U) ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			ADVANCED UNMANNED VEHICLE SYSTEM DEVELOPMENT				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000	0.000	0.000	0.000	0.000

A. (U) **MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The DoD is developing a new class of complex autonomous unmanned systems to handle specialized, hazardous operations when appropriate. Early systems, such as soldier-in-the-loop unmanned aerial vehicles, already serve in critical roles in the operational environment. This new class of autonomous vehicle will require innovative methods to test and evaluate the system's performance and its ability to adapt to changes in the operational environment.

This Congressional add project is focused on the development, test, and evaluation of an integrated unmanned protection system in support of transport security missions. This research and development effort will provide the T&E/S&T program with insights into the T&E challenges associated with testing of autonomous systems and will act as a roadmap to guide T&E technology developments in this area.

B. (U) **ACCOMPLISHMENTS/PLANNED PROGRAM**

	FY 2005	FY 2006	FY 2007
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000

FY 2005 Accomplishments: NA

FY 2006 Plans:

Initiate effort to investigate development of technologies associated with advanced unmanned vehicle systems in response to congressional add. This effort will conduct research to identify technology challenges associated with the development and test and evaluation of unmanned and autonomous systems. Included in this effort are tasks to evaluate and develop perception, behaviors, and interface methods to support use of intelligent unmanned systems in an operational environment. This involves:

- Conducting evaluations on relevant unmanned platforms instead of research systems.
- Performing field experiments to evaluate collaborative unmanned system behaviors and system responses.
- Extending primitive robot behaviors to complex, tactical behaviors for force protection, countermine operations, and remote characterization applications.

This effort also will provide data that will be incorporated into a roadmap to support the T&E/S&T program's evaluation of the technology shortfalls in unmanned vehicle testing that require S&T development.

FY 2007 Plans: NA

C. (U) OTHER PROGRAM FUNDING SUMMARY NA

D. (U) ACQUISITION STRATEGY NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)							February 2006
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			SOFTWARE TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Software Test	0.000	0.000	2.005	5.149	6.018	6.722	8.035

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Use of complex, high-speed, software-intensive systems is increasing within weapons; Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems; and other automated information processing systems. Most software-intensive systems are developed, tested, and fielded in significantly shorter periods than hardware systems. Software components are generally upgraded more frequently than hardware in systems. Testing systems with software components requires rigorous software configuration control to ensure that reported test results apply to the actual fielded software.

Most current software tests are manpower intensive and require expert knowledge of the system under test. An automated, objective test capability is required to assess the effectiveness and performance of future software systems as well as to determine the appropriate amount of regression testing required when that software is modified. As the use of "learning" software proliferates, testing will be required to identify unacceptable behavior, detect defects in behaviors that have yet to be learned, and to predict the future performance of the learning software. Significant integration and interoperability issues among software systems and large databases must be overcome to enable testing of software-intensive systems. Artificial stimulation will be needed for both load and security testing. Methods to verify software integrity must also be identified. The Software Test focus area will develop the T&E technologies necessary to adequately test software intensive systems as the complexity of these systems increases in the future.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Software Test	0.000	0.000	2.005

FY 2005 Accomplishments: NA

FY 2006 Plans: NA

FY 2007 Plans:

Initiate efforts in the Software Test focus area, including:

- Exploring the capabilities of software centers of excellence to support advanced development efforts.
- Identifying an Executing Agent.
- Forming a working group of qualified T&E and S&T subject matter experts.

Initiate a Broad Agency Announcement to identify initial research projects in this area. The initial emphasis of this focus area will be developing and demonstrating technologies to objectively test software-intensive systems. Potential areas of investigation include:

- Development of metrics to objectively quantify the performance of software-intensive systems and adaptive software systems.
- Automated techniques to assess software system effectiveness and suitability.
- Development of metrics to quantify standards for regression testing of modified software.
- Methods to perform automated regression testing after accepted software has been modified.

Initiate a BAA to identify additional efforts for FY 2008 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	7.749	16.321	6.822	7.070	7.320	7.556	7.698
P343	Homeland Defense First Responders Technology Transfer	0.000	1.237	4.522	4.627	4.947	5.137	5.227
P942	Technology Link	7.749	15.084	2.300	2.443	2.373	2.419	2.471

A. Mission Description and Budget Item Justification: Defense TechLink is an element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into DoD systems, particularly from nontraditional defense contractors; (2) spin-off of DoD-developed technologies to the commercial sector to make these technologies more affordable for military acquisition; and (3) establishment of collaborative R&D projects with the private sector for cost-sharing of new dual-use technology development.

Defense TechLink has been highly successful at helping the Department transfer its technologies to U.S. companies, making these technologies available for both military and commercial applications.

TechLink is highly cost-effective and has provided a return on the investment to DoD of 4:1 on funds expended to date. This efficiently run organization currently accounts for 30 percent of all DoD patent license agreements (PLAs) and has brokered over 270 Cooperative Research and Development Agreements (CRADAs) and other R&D partnerships involving innovative companies new to DoD. The Congressional Record for November 18, 2003, page S15056, has a statement from Senator Burns (R-MT) commending TechLink for its outstanding achievements.

Beginning in FY 2006, the Defense Techlink Program is assisting DOD's Homeland Defense Office on first responder initiatives. The Homeland Defense First Responder Technology Transfer Project will enhance efficiency and continue cost effectiveness by leveraging off existing TechLink efforts to manage equipment and technology transfers to civilian communities and eliminate duplication of effort between Department of Defense parties involved in technology and equipment transfers to first responders. Funding to support this initiative was reprogrammed from a DOD's Homeland Defense program line into the Defense Techlink Program line during the FY 2006 POM process.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	7.985	3.435	3.433
Current BES/President's Budget (FY 2007)	7.749	16.321	6.822
Total Adjustments	-0.236	12.886	3.389
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		13.150	

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**

Reprogrammings			3.335
SBIR/STTR Transfer	-0.226		
Other	-0.010	-0.264	0.054

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: For FY 2005, established patent license agreements (PLAs) totalling 30% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)
For FY 2006, establish patent license agreements (PLAs) totalling 31% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)
For FY 2007, establish patent license agreements (PLAs) totalling 33% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P343**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P343	Homeland Defense First Responders Technology Transfer	0.000	1.237	4.522	4.627	4.947	5.137	5.227

A. Mission Description and Project Justification: Leverages off existing technology transfer programs to meet the requirements of the FY 2003 National Defense Authorization Act, Section 1401. Meets the requirement to identify DoD technology items and equipment developed or being developed with the potential to enhance public safety and improve homeland defense. Evaluates technology items and procured equipment useful to first responders and facilitates technology items and equipment to Federal, State, and local first responders. Identifies and eliminates redundant and unnecessary research efforts while advancing high priority projects. Through participation in outreach programs, communicates with first responders and facilitates awareness of available technology items and equipment to support crisis responses. Monitors all DoD research and development activities to identify potential first responder applications; coordinates with other Federal Departments and Agencies to facilitate the transfer of technology from DoD to first responders; and assists in the transfer of technology and equipment for first responders.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Homeland Defense First RespondersTechnology Transfer:	0.000	1.237	4.522

Actively work with Federal, State, and local officials to identify and participate in outreach events and activities to communicate with first responders and facilitate awareness of available technology items and equipment to support homeland security and enhance public safety.

In conjunction with outreach program, ensures a successful and balanced transfer of equipment and technology without impeding military readiness. Manages what first responders receive, achieves a balance between first responders and military equipment, and transfers technology through a transitional effort that has dual utility to enhance military readiness. Identifies military equipment and technology that is currently being transferred or that has the potential for being transferred to first responders. Leverages off existing programs to transfer equipment from military to first responders and share information throughout DoD and Federal Agencies.

Eliminates duplication of effort between DoD organizations involved in the transfer of equipment and technology to first responders. Meets the Congressional intent of the FY 2003 National Defense Authorization Act, Section 1401. Identifies equipment with the potential to enhance public safety. Establishes an overarching government program to assure the efficient and effective transfer of technology equipment useful to first responders. Eliminates redundant and unnecessary efforts concerning equipment and technology transfer to first responders. Facilitates the transitions of high priority DoD projects from research through implementation of initial manufacturing. Communicates to first responders the availability of equipment and technology items to support homeland security.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603942D8Z - Defense Technology Link (TechLink)**	PROJECT **P343**

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P942	Technology Link	7.749	15.084	2.300	2.443	2.373	2.419	2.471

A. Mission Description and Project Justification: Defense TechLink is a critical element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into DoD systems, particularly from nontraditional defense contractors; (2) spin-off of DoD-developed technologies to the commercial sector to make these technologies more affordable for military acquisition; and (3) establishment of collaborative R&D projects with the private sector for cost-sharing of new dual-use technology development.

Defense TechLink has been highly successful at helping the Department transfer its technologies to U.S. companies, making these technologies available for both military and commercial applications.

TechLink is highly cost-effective and has provided a return on the investment to DoD of 4:1 on funds expended to date. This efficiently run organization currently accounts for 30 percent of all DoD patent license agreements (PLAs) and has brokered over 150 Cooperative Research and Development Agreements (CRADAs) and other R&D partnerships involving innovative companies new to DoD. The Congressional Record for November 18, 2003, page S15056, has a statement from Senator Burns (R-MT) commending TechLink for its outstanding achievements.

Beginning in FY 2006, the Defense Techlink Program will assist DOD's Homeland Defense Office on first responder initiatives. The Homeland Defense First Responder Technology Transfer Project will enhance efficiency and continue cost effectiveness by leveraging off existing TechLink efforts to manage equipment and technology transfers to civilian communities and eliminate duplication of effort between Department of Defense parties involved in technology and equipment transfers to first responders.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Marketing of DoD Technologies:	0.739	1.074	1.440

FY 2005 Accomplishments: Undertook active marketing of DoD-developed technologies to United States companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are: (1) to accelerate the transition of DoD-developed technologies to the warfighter; (2) to lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) to provide a return of revenue to DoD labs from commercial spin-off of DoD-developed technologies; and (4) to fulfill DoD's Congressionally mandated technology transfer directives.

FY 2006/2007 Plans: Continue active marketing of DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

Congressionally mandated technology transfer directives.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Dual Use Technology Deployment::	0.560	0.560	0.560

FY 2005 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 focused on nontraditional defense contractors and is intended (1) to help lower the expense of new defense-related technology development through cost-sharing with industry, and (2) to help DoD benefit from private-sector technology investments and innovations.

FY 2006/2007 Plans: Actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on nontraditional defense contractors and is intended (1) to help lower the expense of new defense-related technology development through cost-sharing with industry, and (2) to help DoD benefit from private-sector technology investments and innovations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Spin-On of Advanced Commercial-Sector Technologies:	0.300	0.300	0.300

FY 2005 Accomplishments: Promoted the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies in the Northwestern United States in order to help DoD identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems.

FY 2006/2007 Plans: Actively promote the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies in the Northwestern United States in order to help DoD identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Technology Transfer IEE:	1.500	1.700	0.000

These funds are used to support the Technology Transfer Commercialization National Center of Excellence for First Responders (NCEFR), called First Link. The NCEFR will assess user needs and priorities, collect and evaluate potential DoD technologies for first responder use, identify non-DoD technologies that address DoD and first responder needs, and create and execute a marketing plan for these technologies. Measures of success will include technologies made available for first responder use. FY 2005 Accomplishments: Coordinated activities with DHS to establish First Responder needs list to query against DoD laboratories for technologies to transfer. Established two (2) partnerships.

FY 2006 Plans: Continue assessing DoD technologies against First Responder needs, support transfer to First Responder community through demonstrations, assisting establish production capability, and coordinating with DHS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Remote Presence:	1.700	1.700	0.000

These funds are used for the Remote Presence Program to extend the Marine Corps Warfighting Laboratory (MCWL) Dragon Eye and Dragon Runner and other emerging low cost remote presence technologies and enhances their capabilities to support multiple mission scenarios across all Services, joint operations and homeland security activities. Additionally, a model for transferring DoD-developed

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

technologies will be developed and tested as an integral part of this effort. FY 2005 Accomplishments: Scoped work efforts, negotiated with Joint Robotics Program to ensure effort could fit into Dragon Runner program plans, and began contract negotiation.

FY 2006 Plans: Host seminar for Virginia's universities and companies, begin joint R&D leading to testing.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Technology Mapping:	1.950	2.000	0.000

These funds are used to broaden DoD technology transfer management by providing seamless intellectual property (IP) workflow processes based on established benchmarks. This effort will fully integrate IP docketing, management, and advertising. Measures of success will be facilitation of 15 Cooperative Research and Development Agreements/Patent License Agreements and a direct connection to facilitating 10 other partnerships between DoD and the private sector. FY 2005 Accomplishments: Completed "mirror" websites for Army, Air Force, and DoD. Provided initial application for patent and lab capability searches and for technology needs "push" to private industry.

FY 2006 Plans: Continue with application development, link with DTIC for database, finalize application for patent management (using IPMIS data), and establish 5 partnerships.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Environmental Bioterrorism Detection:	1.000	0.000	0.000

These funds are to develop an Environmental Bioterrorism Detection Program which establishes a wildlife disease-monitoring network to collect and analyze near real-time clinical data from wildlife hospitals, wildlife rehabilitation organizations, veterinarians and individuals. The network will be coupled to the DoD/DHS network currently being developed for humans to provide a biosurveillance tripwire system at extremely low additional cost. This effort will design a way to transfer DoD-developed medical technology to the commercial market as a way to jointly pursue common objectives. FY 2005 Accomplishments: Scoped work efforts, negotiated with AFRL Information Directorate to ensure effort could fit into information technology program plans, and began contract negotiation.

FY 2006 Plans: Host seminar for Virginia's universities and companies, begin joint R&D leading to testing.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD - Springboard:	0.000	7.750	0.000

The Springboard resources are being evaluated for consideration in supporting potential Techlink activity for the Alaskan technology venture efforts initiated in FY 2004. If it is determined this funding can not be justified in part or whole for the explicit intent of Congress, DoD will request that the congressional committees approve the redirection of the funds to an appropriate program element under the "prior approval" process established for congressional interest line-items.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Air Force Research Laboratory	WPAFB, OH	Support continueing and new efforts in the TechLink program.	03 MAR 2005

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0605160D8Z - Counterproliferation Support**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	11.651	0.000	0.000	0.000	0.000	0.000	0.000
0605160D8Z Counter Proliferation Support	11.651	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: (U) Effective October 1, 2005, funding for this program will move from PE 0605160D8Z (Counterproliferation Support) Budget Activity 3, to PE 0605161D8Z (Nuclear Matters-Physical Security) in Budget Activity 6. The purpose of the Counterproliferation Support program, commonly called Nuclear Matters, is to sustain the U.S. nuclear deterrent posture. 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. 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 manage international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security. In fiscal year 2004, this program incorporated additional responsibility for policy development and implementation, and operations and oversight of nuclear weapons physical security and Personnel Reliability Programs for the protection of tactical, fixed and nuclear weapons systems, DoD personnel and DoD facilities.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	11.813	0.000	0.000
Current BES/President's Budget (FY 2007)	11.651	0.000	0.000
Total Adjustments	-0.162	0.000	0.000
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	0.162		
Other			

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0605160D8Z - Counterproliferation Support**

E. Performance Metrics: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603161D8Z - Nuclear & Conventional Phys Sec Equip**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	0.000	33.890	39.012	39.578	40.825	41.895
P162	Nuclear & Conventional Phys Sec Equip	0.000	0.000	33.890	39.012	39.578	40.825	41.895

A. Mission Description and Budget Item Justification: The purpose of this program is to develop physical security equipment (PSE) systems, to include Force Protection, for all DoD components. This program supports the protection of tactical, fixed, and nuclear weapons systems, DoD personnel and DoD facilities. The funds are used to provide PSE RDT&E for individual Service and joint PSE requirements. The PSE program is organized so that members of the physical security equipment action group (PSEAG), which consist of the Army, Navy, Air Force, and Defense Threat Reduction Agency (DTRA) representatives monitors, directs and prioritizes potential and existing PSE programs. With few exceptions, each Service sponsors RDT&E efforts for technologies and programs that have multi-service application. This program element supports the Army's advanced engineering development of Interior and Exterior Detection, Security Lighting, Security Barriers and Security Display Units. In a like manner, the program element also supports the Air Force's PSE RDT&E effort in the areas of Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion. Finally, the program supports Navy RDT&E efforts in the areas of Waterside Security, Explosive Detection, and improved technology for Locks, Safes and Vaults. Beginning with FY 1997, this PE includes funding for Force Protection Commercial-Off-The-Shelf (FP COTS) evaluation and testing, which has received focus since the 1996 Khobar Towers terrorist bombing incident. The FP COTS testing applies to all available technologies, which are considered effective for DoD physical security use.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	33.890
Total Adjustments	0.000	0.000	33.890
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			33.890

Recognizing the synergy between nuclear weapons and conventional physical security, funds were realiged from PE 603287F and 605161D8Z of oversight responsibilities regarding non-nuclear (conventional) physical security equipment from the Air Force to DATSD(Nuclear Matters). This will allow DATSD(Nuclear Matters) to leverage nuclear weapons and conventional physical security equipment programs to develop common solutions to common capability gaps.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603161D8Z - Nuclear & Conventional Phys Sec Equip**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: 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.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603161D8Z - Nuclear & Conventional Phys Sec Equip**	**P162**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P162	Nuclear & Conventional Phys Sec Equip	0.000	0.000	33.890	39.012	39.578	40.825	41.895

A. Mission Description and Project Justification: The purpose of this program is to develop physical security equipment (PSE) systems, to include Force Protection, for all DoD components. This program supports the protection of tactical, fixed, and nuclear weapons systems, DoD personnel and DoD facilities. The funds are used to provide PSE RDT&E for individual Service and joint PSE requirements. The PSE program is organized so that members of the physical security equipment action group (PSEAG), which consist of the Army, Navy, Air Force, and Defense Threat Reduction Agency (DTRA) representatives monitors, directs and prioritizes potential and existing PSE programs. With few exceptions, each Service sponsors RDT&E efforts for technologies and programs that have multi-service application. This program element supports the Army's advanced engineering development of Interior and Exterior Detection, Security Lighting, Security Barriers and Security Display Units. In a like manner, the program element also supports the Air Force's PSE RDT&E effort in the areas of Exterior Detection/Surveillance, Entry Control, Delay/Denial, Tactical Systems and Airborne Intrusion. Finally, the program supports Navy RDT&E efforts in the areas of Waterside Security, Explosive Detection, and improved technology for Locks, Safes and Vaults. Beginning with FY 1997, this PE includes funding for Force Protection Commercial -Off-The-Shelf (FP COTS) evaluation and testing, which has received focus since the 1996 Khobar Towers terrorist bombing incident. The FP COTS testing applies to all available technologies, which are considered effective for DoD physical security use.
Prior efforts were transitioned from Air Force PE 603287F.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Force Protection/Tactical Security Equipment:	0.000	0.000	12.108

- Begin Light Kit, Motion Detection (LKMD) Prototype Design, Fabrication, and Integration of 40 prototype systems.
- Conduct a Leap Ahead assessment of current PSE capability.
- Develop an enhanced Command and Control Display Element (CCDE) for Physical Security Systems.
- Develop the software to support the Common Operational Picture.
- Conduct Combined Test Force Evaluation of Phase IV development of the the Remote Detection and Tracking System (RDTS).
- Evaluate COTS Wireless Sensor System Network technology.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Robotic Security Systems Integration:	0.000	0.000	0.923

- Integrate data feeds obtained from unmanned air and ground vehicles to improve surveillance capability and the common operation picture.
- Begin to integrate remote weapon systems with robotic platforms.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603161D8Z - Nuclear & Conventional Phys Sec Equip**	**P162**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Waterside Security System:	0.000	0.000	2.928

- Continue efforts to develop the next generation WQX-2 Sonar with Allies.
- Leverage WSS efforts in support of SSBNs. Continue to explore opportunities to develop a viable non-lethal means to neutralize swimmer threats.
- Further develop brassboard WSS prototypes transitioned from concept development.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Explosive Detection Equipment:	0.000	0.000	5.763

- Acquire emergining explosive detection technology for comparative testing and realignment of a Baseline Explosive Detection Architecture.
- Conduct System Design Review for the Video/Radar Concealed Bomb Detection.
- Develop a hybrid image/trace explosive detection capability.
- Continue to invest in the development of a viable technology to provide a stand off explosive detection capability against Improvised Explosive Devices (IEDs).
- Reduce Remote/Standoff Explosive Detection System (R/SEDS) detection time yet increase detection capability.
- Refine the capability of R/SEDS to specifically identify the type of explosive.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Locks, Safes, Vaults:	0.000	0.000	1.560

- Develop an Integrated Locking Device (ILD) universal mount prototype.
- Incorporate ILD design improvements that will increase operation. capability and improve resistance against forced entry.
- Integrate biometric technology with high security lock technology.
- Integrate and automate locking systems into other support systems.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Commercial-Off-The-Shelf Testing:	0.000	0.000	2.008

- Refine Force Protection Equipment Demonstration (FPED) VI on-lince registration and informational website.
- Execute FPED VI.
- Continue to seek near-term (commercial) solutions for immediate force protection needs.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Nuclear Weapon Physical Security:	0.000	0.000	8.600

- Survey storage structures to define optimal adaptattion of WADS technology to applicable structures/facilities.
- Apply lessons learned from Secure Brow test and evaluation.
- Conduct Weapon Maintenance Trailer user testing.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603161D8Z - Nuclear & Conventional Phys Sec Equip**	**P162**

- Develop a fully function, interactive, 3D view client workstation for the Joint Conflict and Tactical Simulation (JCATS).
- Conduct modeling and simulation review of the Area Security and Asset Protection (ASAP).
- Design, fabricate, and install prototype delay upgrade hardward in a (Payload Transporter (PT) III Van.
- Continue developing the Virtual Perimeter Security System (VPS).
- Improve capability to apply immediate sufficient duress at the Protective Aircraft Shelter.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603161D8Z - Nuclear & Conventional Phys Sec Equip

PROJECT
P162

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Nuclear & Conventional Physical Security			0	0		0		33890	2-4Q	0	0	0
Subtotal:			0	0		0		33890		0	0	0

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**	**0**		**0**		**33890**		**0**	**0**	**0**

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603228D8Z - Physical Security Equipment**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	26.676	9.851	0.000	0.000	0.000	0.000	0.000
P228 Physical Security Equipment	26.676	9.851	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: The purpose of this program is to develop physical security equipment (PSE) systems for near term Physical Security and Force Protection capabilities. Changing operational missions and evolving threats to warfighting assets and personnel dictate that the advanced development of physical security equipment remains a continuing process. As the political, social and economic landscape of the world undergoes change, so do operational security requirements pursuant to the protection of the forces and assets deployed around the world to meet emergent DoD challenges. To support these security requirements, the PSE program adapts, evaluates and tests equipment to meet the needs of the security force. In addition to the cost/benefit analysis that each R&D effort undergoes, each project is further evaluated relative to size, weight, deployability, operational environment, and logistical life cycle. Activities include systems engineering, system architecture design, interoperability, logistics planning, and test and evaluation of Unmanned Systems. Mission applications for these Unmanned Systems include networking of sensors, enhancing mobile applications of security devices, and protecting/securing captured ordnance stockpiles in the Middle East. The programs being funded by this PE are key to providing robotics capabilities to currently deployed forces and will enhance our troops' mission success and survivability.

Follow-on development will be accomplished through PE 0603161D8Z and PE 0604161D8Z.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	17.482	0.000	0.000
Current BES/President's Budget (FY 2007)	26.676	9.851	0.000
Total Adjustments	9.194	9.851	0.000
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases	9.612	9.851	
Reprogrammings			
SBIR/STTR Transfer	-0.418		
Other			

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603228D8Z - Physical Security Equipment**

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
06						

Comment: The program performance metrics are established/approved through the DoD Physical Security Equipment Action Group (PSEAG). The cost, schedule and technical progress of each project is reviewed at quarterly PSEAG meetings. Performance variances are addressed and corrective action is implemented as necessary.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603228D8Z - Physical Security Equipment**	**P228**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P228	Physical Security Equipment	26.676	9.851	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: Not Applicable.

B. Accomplishments/Planned Program: Not Applicable.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603228D8Z - Physical Security Equipment

PROJECT
P228

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**									

BUDGET JUSTIFICATION
FOR PROGRAM ELEMENTS OF THE
OSD RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE-WIDE PROGRAM
FISCAL YEAR (FY) 2007 BUDGET ESTIMATES SUBMISSION

PE 0603527D8Z, Retracked Larch, program is submitted separately as a Special Access Program.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603709D8Z - Joint Robotics Program

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	20.826	27.264	12.210	12.219	12.300	12.547	12.820
P709	Joint Services Explosive Ordnance Disposal (EOD)	7.412	12.072	3.340	3.352	3.365	3.366	3.357
P715	Tech Transfer	0.500	1.000	1.000	1.000	1.000	1.000	1.000
P716	JAUS	1.810	1.000	0.400	0.400	0.400	0.400	0.400
P717	Gladiator	0.900	1.700	0.000	0.000	0.000	0.000	0.000
P718	Robot Combat Support System (RCSS)	0.000	2.000	1.500	1.250	0.000	0.000	0.000
P719	National Unmanned Systems Experimentation Environment (NUSE 2)	3.064	1.065	0.000	0.000	0.000	0.000	0.000
P720	Intelligent Mobility Program	4.516	2.120	1.500	1.500	1.500	1.500	1.500
P721	Robotics for Agile Combat Support (RACS)	1.800	5.861	1.200	1.200	1.200	1.200	1.200
P722	Robotic Technology Enhancement	0.000	0.000	3.270	3.517	4.835	5.081	5.363
P723	Commercial Off The Shelf (COTS)	0.500	0.200	0.000	0.000	0.000	0.000	0.000
P724	ADCR	0.324	0.246	0.000	0.000	0.000	0.000	0.000

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. The program ensures coordination between the Services and provides for interoperability and commonality among unmanned ground systems. The Joint Robotics Program (JRP) will develop and field a family 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. Unmanned Ground Systems are now realizing the often foreseen potential to provide our service men and women with the leap-ahead warfighting capability they need to reduce risk levels to our personnel. The war on terrorism has created urgent and compelling requirements for UGVs. The JRP has responded by deploying unmanned countermine and reconnaissance systems to Bosnia and Kosovo and in support of Operation Enduring Freedom and Operation Iraqi Freedom. The JRP continues to support UGV deployments around the globe providing the Services with unmanned force protection and countermine capabilities. Increasing Service UGV demand and positive feedback from users in the field have validated the JRP mission.

Automatically Deployable Communications Relays (ADCR) (0.282 million)

The purpose of the Automatically Deployable Communications Relays (ADCR) project is to develop a practical method of extending range of high-bandwidth wireless digital communications and to overcome line-of-sight (LOS) problems for unmanned ground vehicles (UGV). The proposed method provides a universal relay-deploying module that connects to a UGV through a standard Ethernet. The deployer contains several radio "bricks" that are dropped off automatically (transparent to the operator) in order to form a chain of communication relay nodes, thereby extending the effective range between the base station and the UGV. This project is a follow-on to a DARPA-funded research project into autonomous wireless ad

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
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hoc network maintenance, and heavily leverages the prior effort. Four systems will be developed in response to requests from other military users, including NAVEODTECHDIV and TARDEC.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	21.314	11.755	12.020
Current BES/President's Budget (FY 2007)	20.826	27.264	12.210
Total Adjustments	-0.488	15.509	0.190
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		15.950	
Reprogrammings	-0.488		
SBIR/STTR Transfer			
Other		-0.441	0.190

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy This program's acquisition strategy continues to maintain two tracks: (1) to develop and field first generation UGVs with current technologies, and (2) pursue advanced technologies critical to semi-autonomous mobility that can be inserted into first generation systems in an evolutionary manner.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
06						

Comment: The Joint Robotics Program (JRP) prepares and publishes its JRP Master Plan annually. The Plan contains detailed descriptions of the approximately 10 individual projects

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

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under this funding line. Each project description includes a task schedule with associated milestones, whereby progress against end goals can be measured. The cost, schedule and technical progress against these milestones is reviewed by DoD participants at semi-annual JRP Working Group meetings.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P709**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P709	Joint Services Explosive Ordnance Disposal (EOD)	7.412	12.072	3.340	3.352	3.365	3.366	3.357

A. Mission Description and Project Justification: (U) This project supports the lifecycle management of Explosive Ordnance Disposal (EOD) equipment for all four military Services. This project will conduct Concept and Technology Development efforts to determine maturity of existing technology and exploration of new concepts to meet EOD requirements. The Joint Service EOD community needs increased autonomy in its robotic platforms, and cooperative control of the different classes of robots, and these technology needs are addressed in this project.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	7.412	0.000	0.000

- Next Generation EOD RCV (NGEODRCV) Neo-Mover Pre-Production Development continued.
- EOD Operational Analysis initiated.
- Extension of the Technical Support Working Group (TSWG) Common Architecture accomplished.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 - fy2007 Plans	0.000	12.072	3.340

- NGEODRCV System Level Development
- Transition Technologies from the NGEODRCV Project
- Final Demonstrations and Approvals of Remote Ordnance Neutralization System (RONS) Continuous Improvement Program (CIP) Projects.
- Initiate EOD Cooperative Robotics Project

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P709**

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603709D8Z - Joint Robotics Program

PROJECT
P709

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development			1000	6612		11500		2890		0	0	0
Systems Engineering			200	800		572		450		0	0	0
Subtotal:			1200	7412		12072		3340		0	0	0

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
DT			500	0		0		0		0	0	0
IOT&E			0	0		0		0		0	0	0
Subtotal:			500	0		0		0		0	0	0

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P709**

Project Total Cost:	**1700**	**7412**		**12072**		**3340**		**0**	**0**	**0**

Schedule Profile (R4 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P709**

Event Name	FY 05				FY 06				FY 07				FY 08				FY 09				FY 10				FY 11			
	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
MTRS PSVM T&E	[redacted]																											
MTRS PRM T&E																												
(1) MTRS AAP PROD DEC																												
RONS CIP																												
EOD Cooperative Robotics																												

Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P709**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
MTRS PSVM T&E							
MTRS PRM T&E	1Q						
MTRS AAP PROD DEC	1Q						
RONS CIP	1-4Q	1-4Q	1-3Q				
Next Gen EOD RCV		1-4Q	1-4Q	1-4Q	1-4Q		
EOD Cooperative Robotics		1-4Q	1-4Q	1-4Q	1-4Q		

Comment:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P715**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P715	Tech Transfer	0.500	1.000	1.000	1.000	1.000	1.000	1.000

A. Mission Description and Project Justification: (U) Technology Transfer (TechTXFR) employs a spiral development process to enhance the functionality and autonomy of mobile robot systems, such as those currently being used in theatre to address Improvised Explosive Device (IED) threats, by assessing the maturity level of robotic technologies developed in the research environment and advance their Technology Readiness Level (TRL) for prototype testing and demonstration in an operational environment. The technical approach is to harvest prior and on-going technology developments from disparate players that address the technology needs identified by emergent in-theatre requirements and the users of the JRP Robotic Systems Pool. The component technologies are tested and evaluated on transition platforms to identify the best features of the different approaches, which are then integrated and optimized to work in harmony in a complete solution. TechTXFR has already produced phenomenal results with tremendous savings to the government. TechTXFR does not develop new technologies from scratch; it instead brings in pre-developed proven technologies from the research environment and offers them a transition opportunity as opposed to the technologies stagnating as unutilized laboratory prototypes. techtxfr has leveraged resources from a wide variety of disparate players, including other government agencies and academia, and equally important has also been leveraged by other government programs. techtxfr has also teamed with a number of organizations with similar ambitions to synergistically pursue robotic technologies in a spiral development process, such as the Idaho National Laboratory (INL) Department of Energy (DoE). INL has a direct interest to transition autonomous technologies for use in a variety of DoE missions, including homeland defense and critical infrastructure protection. The collaborative work maximizes efficiency by bringing in additional resources (money and personnel) that result in leveraging of even more technologies.

(U) The end result is a centralized JRP mechanism that continuously capitalizes on state-of-the-art technologies from the research environment to create a standardized solution that can be easily transitioned to ongoing development programs service-wide.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	0.500	0.000	0.000

- Further enhanced SRI's SLAM algorithm to use particle-filters to maximize computation efficiency.
- Developed gradient-based path planning algorithm based on SRI's SLAM occupancy maps to allow generation of motion trajectories from a specified starting position to a goal position while avoiding obstacles in the environment.
- Further developed SRI's SLAM algorithm for ladar-based intruder detection-on-the-move.
- Integrated manipulation technologies from University of Texas, Austin (UTA) and NASA onto a mobile robot, focusing on articulated robotics arms and hands.
- Integrated GPS Waypoint Navigation.
- Fused global and local coordinate system for seamless transition between outdoor and indoor navigation.
- Integrated University Southern California's (USC) Player/Stage Device Server with INL's ARCA to evaluate capability to allow multiple control algorithms to access robot devices (i.e., sensors, actuators) in a standard way in order to adapt and standardize on a reconfigurable software framework that can be easily ported from one robotic system to another.
- Integrated JAUS messaging with INL's ARCA.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P715**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 - FY 2007 Plans	0.000	1.000	1.000

- Integrate/evaluate University of Michigan's gyro-enhanced dead reckoning system with SRI's SLAM algorithms for precise (error<1.0%) identification of current location and mapping of surrounding area.
- Further optimize SLAM capabilities for outdoor applications in GPS-denied areas.
- Integrate/evaluate thermal vision tracking with ladar-based intruder detection algorithm for enhanced human presence detection.
- Integrate UCSD's object detection/recognition research for license plate/car recognition and evaluate for generalized classes of objects (i.e., weapons).
- Fuse object detection/recognition techniques to augment the SLAM map for an augmented virtuality interface.
- Apply object detection/recognition techniques for automated manipulation control and complex sign interpretation.
- Investigate/evaluate University of Washington's ladar-based motion detection-on-the-move.
- Investigate/evaluate University of Washington's exploration algorithm with SRI's SLAM algorithm.
- Investigate/evaluate SRI's multi-robot mapping technology.

Investigate/evluate voice recognition and natural language understanding for advanced operator control.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy (U) Results of our technology harvesting and optimization will be transitioned to other government programs or to industry as they become available or are requested. Example programs of past transition are DoE Remote Sensing Laboratory and US Army Maneuver Support Center (MANSCEN). Example programs for future transition are Army"s Future Combat Systems (FCS) and the Mobile Detection Assessment and Response System (MDARS). Candidates for transition to industry include iRobot, Foster-Miller Inc. and Mesa Robotics.

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	SPAWARSYSCEN	San Diego, CA	Program Management	

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P716**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P716	JAUS	1.810	1.000	0.400	0.400	0.400	0.400	0.400

A. Mission Description and Project Justification: (U) The intent of this program is to develop common open software architecture to ensure unmanned systems' interoperability and evolution with resultant cost savings. JAUS will specify the logical interfaces between computing modules to allow for rapid technology transfer. Continue to develop JAUS such that it attains clear objectives and maintains a consistent philosophy while promoting jaus as the domain architecture for Unmanned Systems. The Unmanned Systems community will be educated on jaus to support acquiring, developing, testing, and manufacturing organizations' incorporation of jaus into their products and services. jaus has started the transition to a commercial standards body through the petitioning of the Society of Automotive Engineers (SAE), Aerospace Council Avionics Standards Development group. jaus will migrate to the Committee AS-4, Unmanned Systems. jaus is stated as a requirement within the Army's Future Combat Systems (FCS) and the Navy's unmanned systems, presently minus unmanned aerial vehicles (PEO-Littoral and Mine Warfare).

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	1.810	0.000	0.000

- Conducted two JAUS Working Group meetings.
- Validated JAUS for Unmanned Ground Systems control.
- Continued the validation of JAUS support for mission packages/payloads.
- Developed support mechanism for Ad-Hoc networking of Unmanned Systems.
- Conduct two SAE AS-4 (Unmanned System) committee meetings

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006-FY 2007 Plans	0.000	1.000	0.400

- Demonstrate and validate support for network-based systems.
- Demonstrate and validate support for all unmanned system types.
- Integrate JAUS into Simulation Systems for experimentation/validation.
- Develop interface for Net-Centric systems for mission level data.
- Complete first version of the compliance tool suite.
- Maintain JAUS Documents.
- Maintain JAUS Compliance Tools Suite.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P716**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy JAUS will transition to industry stadards in SAE. JAUS is currently a requirement in a number of unmanned systems acquisitions including Future Combat Systems and supported as arequirement for the Navy (Littoral and Mine Warfare).

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Air Force Research Laboratory (AFRL)	Panama City, FL	Program Management	

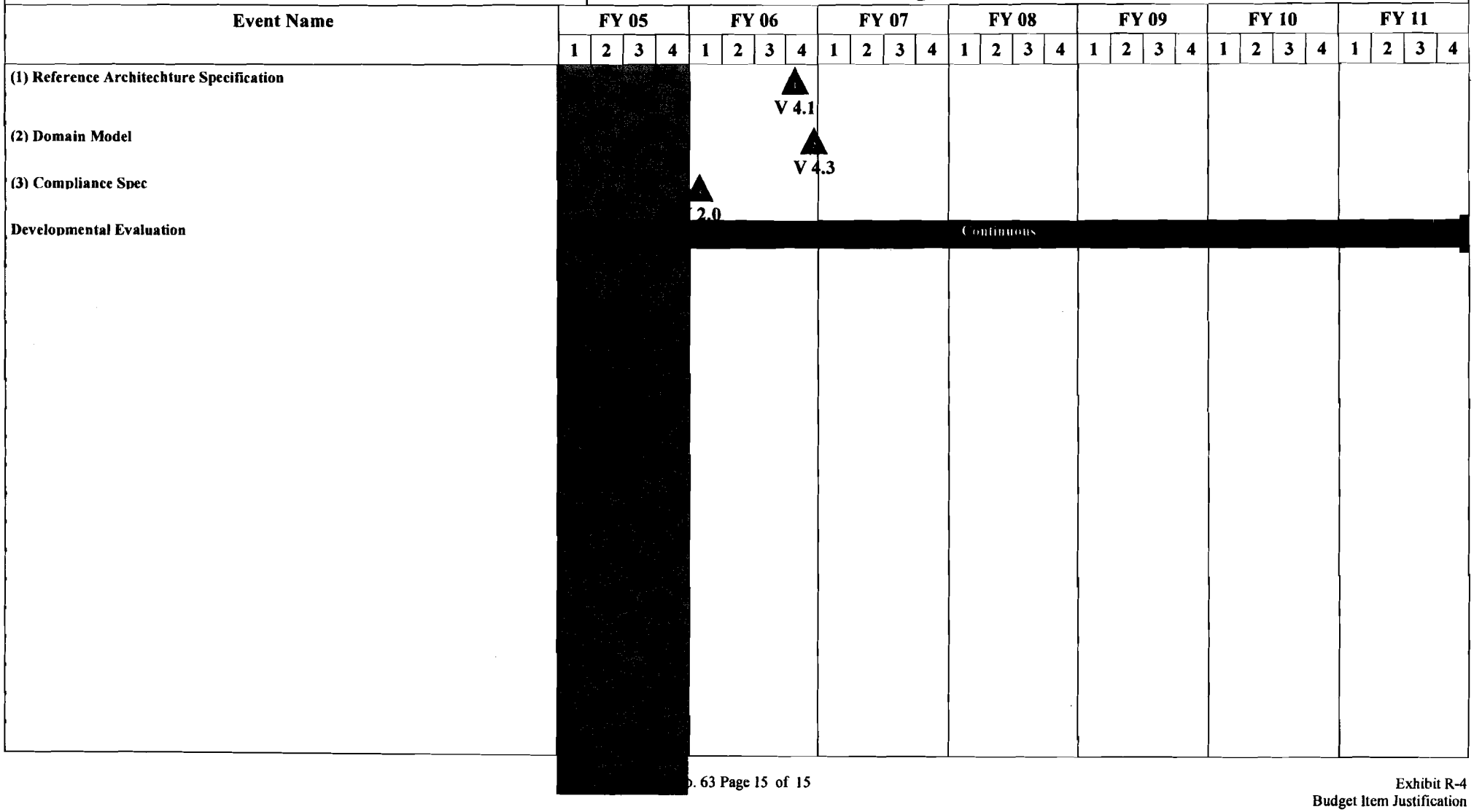
Schedule Profile (R4 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603709D8Z - Joint Robotics Program

PROJECT
P716



Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P716**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Reference Architecture Specification Versions 3.1; 3.2; 4.0; 4.1	1-4Q	1-3Q					
Domain Model Versions 3.0; 3.1; 3.2; 3.3; 4.0; 4.1; 4.2; 4.3	1-4Q	1-4Q					
Compliance Spec Versions 1.0; 2.0	2-3Q	1Q					
Developmental Evaluation	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

Comment:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P717**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P717	Gladiator	0.900	1.700	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) The Gladiator Program is a USMC initiative based on the Gladiator Tactical Unmanned Ground Vehicle (TUGV) Operational Requirements Document (ORD). Mission Need Statement (MNS) INT 12.1.1 (dated 17 Apr 2004) validated the need for a tactical unmanned ground vehicle system, and the ORD was approved in July 2004. The Gladiator will support the dismounted infantry of the Marine Ground Combat Element (GCE) with the organic unmanned capability to remote combat tasks including scout/surveillance. The system will reduce risk and neutralize threats to Marines across the full spectrum of conflict and military operations. The Gladiator is a teleoperated/semi-autonomous, small-to-medium sized, highly mobile UGV with, initially, the basic capability to conduct armed scout/surveillance missions and to carry various mission payloads for specific tasks. It will be inherently simple, durable, multi-functional, and easily transported. In the conduct of Operational Maneuver From The Sea (OMFTS), Ship To Objective Maneuver (STOM), Sustained Operations Ashore (SOA), and Operations Other Than War (OOTW), the Gladiator will enhance the ability to accomplish assigned missions. Operating just forward of the GCE units, Gladiator will perform basic scouting/surveillance, obstacle breaching, direct fire (both lethal and non-lethal), anti-armor, and NBC reconnaissance tasks while permitting the operator to remain covered or concealed. The basic Marine Corps system will consist of a mobile base unit (MBU), an OCU, and specific mission payload modules (MPMs). Initial MPMs will include Shoulder-launched Multi-purpose Assault Weapon (SMAW), Anti-Personnel Obstacle Breaching System (APOBS), Light Vehicle Obscurrant Smoke System (LVOSS), M240 and M249 Machine Guns, and current NBC detectors.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	0.900	0.000	0.000

- Program moved into System Design and Development (SDD). Obtained MS B approval. Awarded SDD contract.
- Completed PDR
- Completed detailed design of Gladiator.
- Completed Future Naval Capability demonstrations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 Plans	0.000	1.700	0.000

- Program moved into SDD with funding from PE 06047098DZ.

C. Other Program Funding Summary: Not Applicable.

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D. Acquisition Strategy Down select competition for Gladiator SDD. Two contractors selected: Lockheed Martin, Dallas, TX and Carnegie Mellon, Pittsburgh, PA. The Carnegie Mellon team was selected for SDD.

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

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PE NUMBER AND TITLE
0603709D8Z - Joint Robotics Program

PROJECT
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development			2335	805		1400		0		0	0	0
Systems Engineering			148	95		300		0		0	0	0
Subtotal:			2483	900		1700		0		0	0	0

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**2483**	**900**		**1700**		**0**		**0**	**0**	**0**

Schedule Profile (R4 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603709D8Z - Joint Robotics Program

PROJECT
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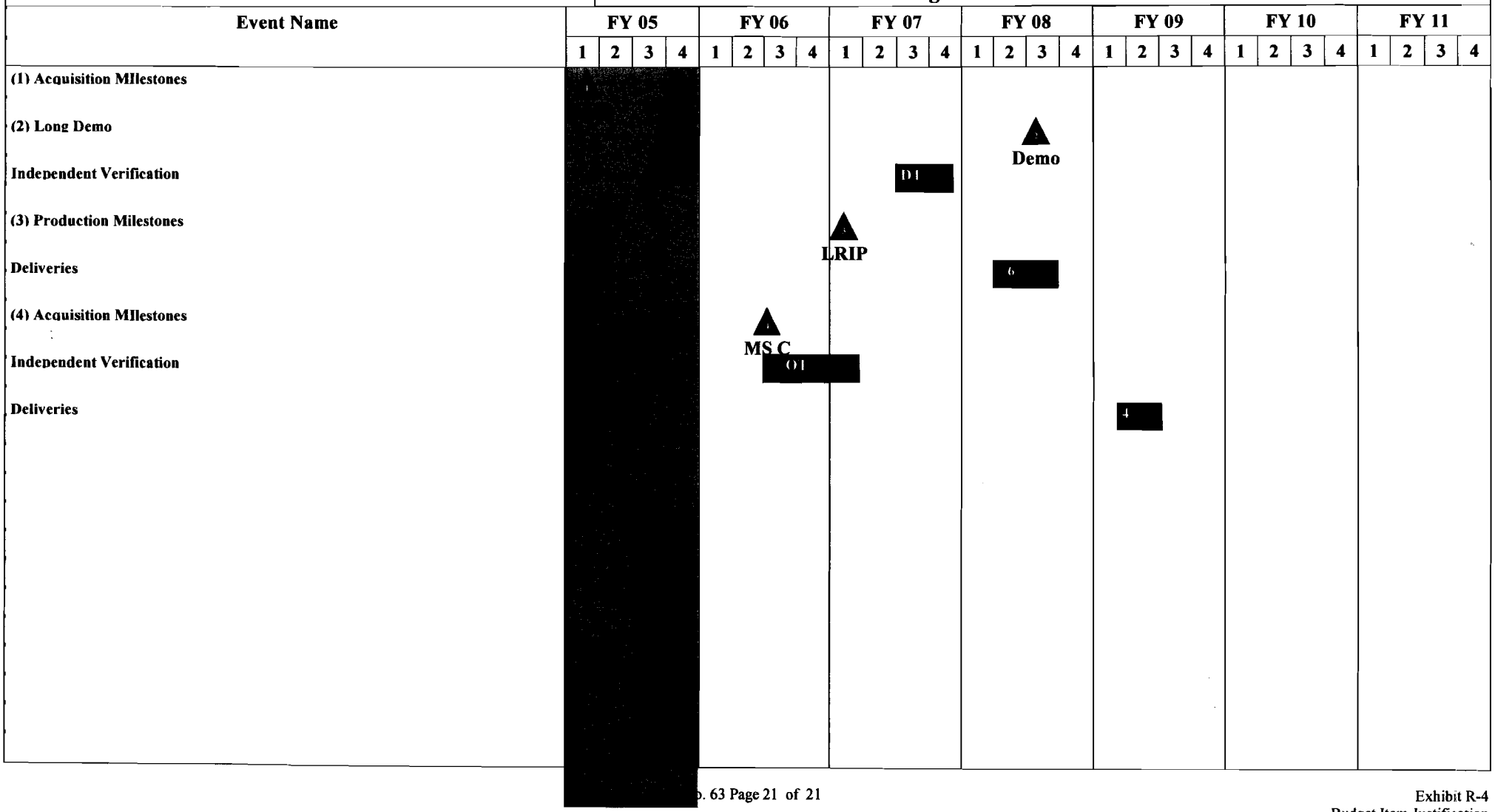

Exhibit R-4
Budget Item Justification

Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P717**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Milestone B							
Contract Preparation							
SDD Contract Award	1Q						
SDD	1-4Q	1-4Q	1-4Q				
Developmental Test		3-4Q					
Log Demo				3Q			
Operational Test				2-4Q			
Milestone C			2Q				
Low Rate Initial Production			3-4Q	1-4Q			
IOT&E				2-4Q			
Full Rate Production					2Q		
First Unit Equipped					3Q		

Comment:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P718**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P718	Robot Combat Support System (RCSS)	0.000	2.000	1.500	1.250	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) The Robotic Combat Support System (RCSS) Program is an upgrade approach from the Product Improved Mini-Flail (PIMF). The PIMF has proven effective in Bosnia and Kosovo, as well as in current operation in Afghanistan, as a contingency asset. RCSS threshold requirements include anti-personnel mine clearing and neutralization, improved reliability and human-machine interface, Anti-Personnel wire obstacle breaching, remotely deployed smoke and obscurants, and the capability to carry soldier loads. Initial RCSS deployment to Afghanistan occurred during FY 2004 and continues through FY 2006 to deployed forces. P3I requirements include advanced controls, remotely delivered special munitions to support dismounted operations, hands-free control using dismounted soldier leader-follower technology, and mechanical devices that will be used to emplace demolitions and special breeching systems. A Mission Need Statement (MNS) and Operational Requirements Document (ORD) have been approved by Army Training and Doctrine Command (TRADOC). Procurement continues through FY 2006, while system engineering to develop full ORD required capability will be developed and integrated into the operational fleet.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	0.000	0.000	0.000

- Obtain Type Classification.
- Determine and identify Mission Essential Modules to improve COTS system multi-mission capability.
- Initiate Mission Essential Modules Integration program.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006/2007 Plans	0.000	2.000	1.500

- Accomplish Type Classification testing.
- Continue fielding and support of RCSS COTS systems to War on Terrorism forces.
- Complete system engineering modifications to fielded systems.
- Obtain Type Classification.
- Determine and identify Mission Essential Modules to improve COTS system multi-mission capability.
- Initiate Mission Essential Modules Integration program

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0603709D8Z - Joint Robotics Program**	PROJECT **P718**

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

Schedule Profile (R4 Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
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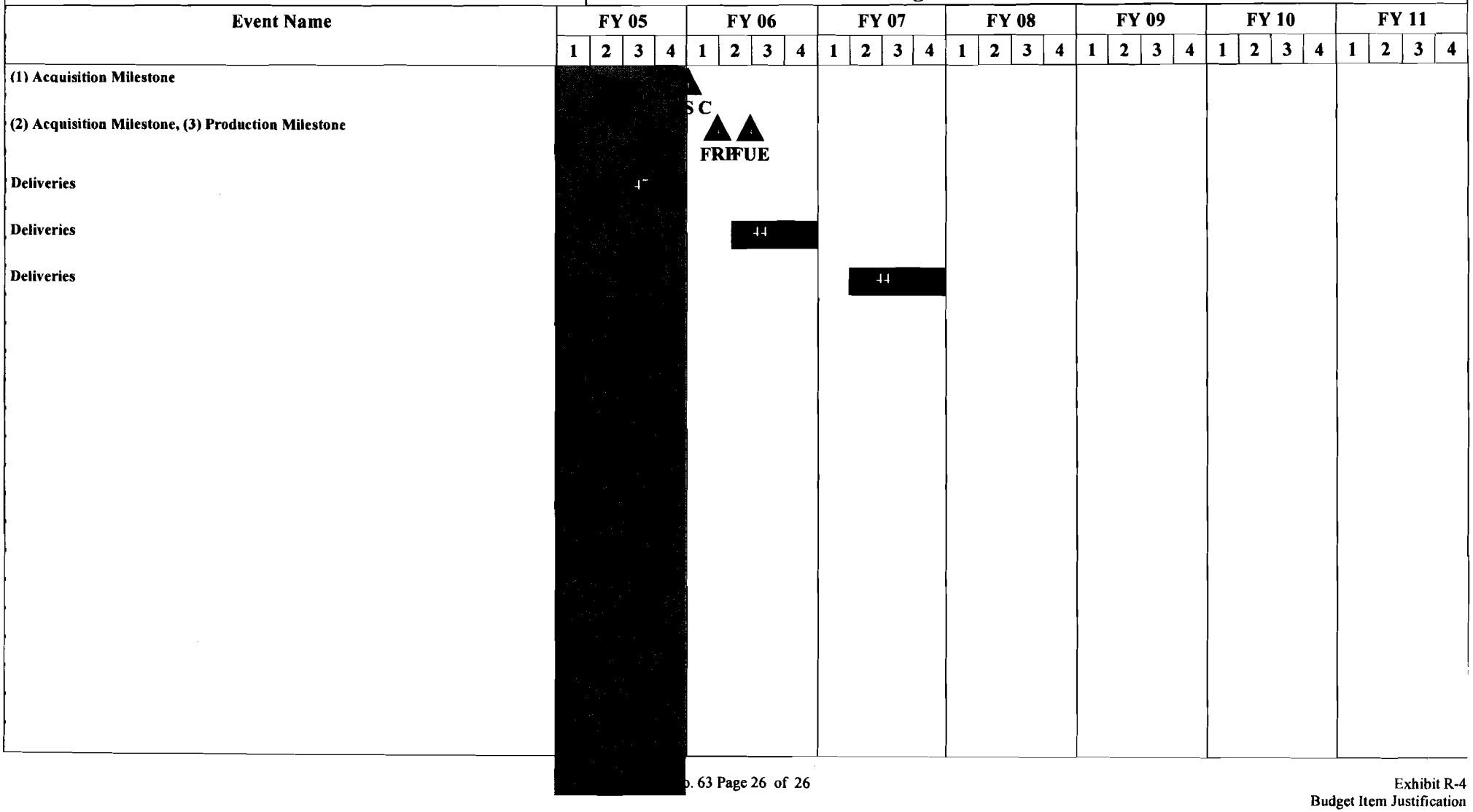
PROJECT
P718



Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P718**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Milestone B							
COTS Contract Preparation							
COTS Contract Award							
Safety Testing							
Safety Certification	1-4Q	1-4Q	1-4Q				
Spiral Fielding initiated	1-4Q	1-2Q					
Type Classification Testing	3-4Q	1-4Q					

Comment:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P719**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P719	National Unmanned Systems Experimentation Environment (NUSE 2)	3.064	1.065	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: The National Unmanned Systems Experimentation Environment (NUSE2) is a new Department of Defense/Private sector teaming initiative. This will be a collaborative effort to provide infrastructure and assets for experimenting with all types of Unmanned Systems - air, ground, surface and underwater - that is national in scope. NUSE2 will provide developers/acquirers of Unmanned Systems with dedicated experimentation facilities, ranges, and airspace that would otherwise be hard to schedule and are often expensive. The initiative will begin in FY 2004, starting with some limited objective experiments using Unmanned Ground Vehicles.
NUSE2 will be a consortium of organizations agreeing to form and provide the experimentation capability. The Nation is the true beneficiary of this effort and conveys the coast-to-coast and Alaska and Hawaii, scope of NUSE2. NUSE2 is intended to provide an experimentation base for Unmanned System acquirers over the life cycle. This will include live as well as virtual experiments. NUSE2 will be a valuable asset in the coming years, providing accessible, affordable, RDTE capabilities.
The objectives of NUSE2 are:

- Assist users in refining capabilities (formerly operational requirements)
- Support acquirers in conducting experiments to reduce technical risk.
- Participate in the evaluation of evolutionary upgrades to Unmanned Systems
- Support experiments associated with Advanced Concept Technology Demonstrations
- Facilitate the evaluation of new technologies and aid the tech transfer process of new capabilities for Unmanned Systems
- Support the developmental, operational, and live fire testing requirements of acquirers
- Aid in the development of advanced integrated architectures as they apply to Unmanned Systems
- Be dual capable, i.e., able to support experimentation and testing in both live and virtual venues

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	3.064	0.000	0.000

Experimentation: The following are experiments designed to further the national robotics program:
* OPC#3 - further the standization of JAUS/AS4, Virginia
* Collaborative Engagement - exercise the REDCAR platform at F.E Warren, Wyoming
* Under-vehicle inspection system, Alaska

Technology: The following Technology requirements are being filled by the applicable institution
* Lightweight, Low Power, Robust means of removing image jitter, University of Wyoming

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P719**

* Biometric Vision Sensor, University of Wyoming
* Ultra Wideband Communication and Positioning Systems, University of Alaska
* Autonomous data exchange in Multi-Robot Collectives, University of Wyoming
* JAUS Compatible Mission Planning, University of Florida
* Integrated Mobile Manipulation Systems, University of Texas - Austin

Infrastructure: NUSE2 has awarded infrastructure improvements to all sites.
* High Speed test track, Florida
* JUTTC improvements, Wyoming
* Test track upgrade, Alaska
* Wireless Wide Area Network, Mississippi

* Site Upgrades , Texas
* Improved Integration facility, California

• Formalize NUSE2 strategy, campaign plan, and organize team.
• Formalize technology requirement and fulfillment process.
• Develop statements of work for NUSE2 site infrastructure improvements
• Operate the IPT's (M-IPT, E-IPT, T-IPT).
• Identify and refine standards and metrics for experiments.
• Let contracts to fulfill requirements.
• Verification of technology fulfillment
• Identify and begin planning for follow-on experimentation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 Plans	0.000	1.065	0.000

• Continue to identify and acquire infrastructure requirements.
• Continue IPT oversight.
• Continue to identify and refine standards and metrics for experiments.
• Execute FY05 multi-year contracts.
• Expand NUSE2 as required.
• Expand NUSE2 capabilities to include unmanned air, surface, and subsurface systems.

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P719**

D. Acquisition Strategy: Not Applicable.

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Air Force Research Laboratory	Panama City, Fl	Program Management	
Universities				
	University of Florida	Gainsville, Fl	Research	
Contractors				
	Applied Research Associates	Scientific & Engineering Services	Panama City, FL	
	Wintec Inc.	Scientific & Engineering Services	Panama City, FL	
	Titan	Scientific & Engineering Services	Panama City, FL	
Others				
	Kachemak Research Development Inc (KRD)	Engineering Services	Homer, Alaska	

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P720**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P720	Intelligent Mobility Program	4.516	2.120	1.500	1.500	1.500	1.500	1.500

A. Mission Description and Project Justification: (U) The Intelligent Mobility program is an effort under the U.S. Army Research and Development Command Engineering Center (RDECOM-TARDEC) Intelligent Mobility (IM) Program. Mobility Enhancement through the utilization of novel running gear such as reconfigurable shape, Omni-directional drive systems, and improved mobility sensor integration will improve the mobility of small unmanned ground vehicles (UGVs) to operate on both improved surfaces and off-road terrain in support of urban warfare, physical security and force protection missions for military police and engineering operations. Of particular and immediate interest is the Omni-Directional Inspection System, which is a man packable size robot capable of omni-directional locomotion on structured surfaces and in the next spiral development on off road areas as well for the purpose of inspecting vehicles and other hard to access areas in a force protection role and in an EOD role as an IED disruptor delivery device. There is a current validated urgent need generated by CENTCOM to utilize UGVs for EOD and force protection missions. Twenty seven prototype ODIS UGVs are currently deployed to Iraq and Afghanistan in order to collect data, prove out the current prototype system, and simultaneously provide needed UGV functionality to the user in hostile environments. Other government agencies are also evaluating the systems within CONUS for use in areas requiring higher security or security screening. TRML is also working to develop a draft Mission Needs Statement for the ODIS robot with Military Police/Force Protection agencies. We are working with soldiers in Iraq to fulfill requirements delivered in an official needs statement. The next spiral development iteration will produce approximately 40 upgraded ODIS units for deployment. These units will have enhanced mobility, allowing them to operate in rough terrain such as, rutted roads, over curbs, rocks, puddles up to 5 inches deep, etc. They will also have the capability to easily accept manipulator arms, masts, chemical detectors, and other sensors as needed by the user.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	4.516	0.000	0.000

- Completed acquisition of over 30 ODIS-T2 production prototype units currently deployed in SWA and CONUS for experimentation and deployment.
- Deployed 4 units to Iraq (Baghdad area) for use by Force Protection Units.
- Deployed 3 units to Afghanistan for use by Force Protection units.
- Completed first revision and product improvement of ODIS for functional prototype testing.
- Began next spiral of ODIS development which will yield upgraded systems in 2nd quarter FY 2006.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006/2007 Plans	0.000	2.120	1.500

- Revise the ODIS platform design to include changes suggested from testing and user input in theater.
- Further testing of ODIS at the Port of Los Angeles and Long Beach for data realtive to force protection in a Homeand defense application
- Continue to deploy ODIS robots and support personnel for ODIS in SWA theater
- Track data from deployment and integrate lessons learned for ODIS and other small robots.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P720**

- Continue to develop prototype ODIS platform variants based on user requests and inputs.
- Investigate utility and need for ODIS platform variants.
- Further improve robot control based on Iraq deployment data
- Improve methods for integrating mission packages
- Investigate other intelligent mobility mechanical concepts for improved functionality

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P721**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P721	Robotics for Agile Combat Support (RACS)	1.800	5.861	1.200	1.200	1.200	1.200	1.200

A. Mission Description and Project Justification: (U) The Robotics for Agile Combat Support (RACS) is a USAF effort to advance the robotic state-of-the-art capability for counter-terrorism and force protection technologies. RACS programs include the following: Mine Area Clearance Vehicle, Robotics for forensic A/C recovery functions, Autonomous Range Clearance, Joint Architecture for Unmanned Systems (JAUS), Automated Perimeter Security (APS), Joint Laser Ordnance Neutralization System (JLONS), Advanced Robotic Technologies Development, and UxV Cooperation. This project specifically meets the requirement to safely remove warfighters from multiple or specific hazards associated with their particular mission. For example, EOD operators are removed from the hazards associated with UXO & IED using the JLONS and Engineers are removed from the UXO hazard associated with clearing areas for beddown of forces. Requirements documents that support this work include the RONS ORD, ARTS ORD (CAF (USN) 014-93-I_II-A), MNS for Explosive Ordnance Disposal (EOD) (#M043-85-93) and draft version of CDD for J-LONS.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	1.800	0.000	0.000

- Mine Area Clearance Vehicle (MACV)
  - Completed design and development of initial prototype with basic low-level control systems.
  - Conducted familiarization with end-users.
  - Initiated technology transition effort.
- Robotics for forensic A/C recovery functions
  - Conducted initial requirements assessment and program management activities.
- Enhanced Standoff Munitions Disruption System (E-SMUD)
  - Developed a low-cost laboratory demonstrator version of an AR-10, 7.62mm rifle.
  - Conducted limited user evaluation testing against live and inert ordnance.
  - Transitioned technology to Air Force System Program Office (SPO) for EMD acquisition phase.
  - Completed development of a radio controlled Tele Remote Aiming Platform (TRAP) system.
  - Transition TRAP technology to NAVEODTECHDIV.
- Robo-Trencher
  - Completed enhanced second generation Robo-Trencher.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P721**

- Automated Ordnance Excavator (AOE)
  - Adapted initial algorithms for auto dig mission module to the AOE.

- J-LONS - (Joint Laser Ordnance Neutralization System)
  - Conducted multi-national assessment of foreign partner developed systems.
  - Established baseline plan for characterization of ordnance/laser interactions.
  - Continued support to the NAVEODTECHDIV JLONS IPT.

- Advanced Robotics System
  - Conducted initial experiment using visual techniques for UXO detection.
  - Researched high speed obstacle avoidance using microwave radar technologies.

- Joint Architecture for Unmanned Systems (JAUS)
  - Supported the JAUS working group and multiple committees.
  - Generated obstacle detection and avoidance simulation, sensor fusion for obstacle detection, and high speed assisted tele-operation algorithm.

- REDCAR (Remote Detection Challenge and Response system)
  - Integrated JAUS compliant surveillance mission payload.
  - Conducted a limited user experiment of the REDCAR system at FE Warren.

- UAV-UGV
  - Demonstrated transfer of aerial video through JAUS networked system on rotary-wing UAV.
  - Delivered Remotely Controlled Aerial Vehicle for Application of Pesticide (RCAVAP) to 757 Aerial Spraying Squadron.

- Active Range Clearance
  - Redesigned system and a completed prototype magnetic UXO scrap collection system.
  - Conducted initial testing and characterization of the system.

- BomBot
  - Delivered prototype units to the Marines in Camp Lejeune, USMC in Haiti, and USAF EOD units in support of Iraqi Freedom.
  - Formed working group to prioritize requirements for a small low cost robotic system for EOD.
  - Completed transition package and delivered to NAVEODTECHDIV and EOD/LIC.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006-FY 2007Plans	0.000	5.861	1.200

- Mine Area Clearance Vehicle (MACV)
  - Develop second prototype that will include high level controls and semi-autonomous technologies.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0603709D8Z - Joint Robotics Program**
	PROJECT **P721**

- Robotics for forensic A/C recovery functions
  - Conduct literature search.
  - Develop baseline plan.
  - Investigate enabling technologies to meet program requirements.

- Automated Ordnance Excavator (AOE)
  - Tune and refine the auto-dig algorithms for different soil conditions.
  - Expand control to include volumetric and 3-D awareness.

- J-LONS - (Joint Laser Ordnance Neutralization System)
  - Maintain oversight of the international program.
  - Perform characterization of ordnance/laser interactions.

- Advanced Robotics System
  - Develop transport control algorithms; planning and execution algorithms; cooperation algorithms; and visual understanding algorithms.

- Joint Architecture for Unmanned Systems (JAUS)
  - Continue message set development and formalization of transition methodology to SAE AS/4.

- Automated Perimeter Security (APS)
  - Development of additional scout capabilities and perform a 30 day experiment at AF base.
  - Integrate additional JAUS-compatible sensor modules to scout platforms.

- UAV-UGV
  - Incorporation of UAV aerial video ordnance discrimination capabilities integrated into standoff munitions disruption (SMUD) capabilities.

- Active Range Clearance
  - Conduct integrated experiment of ground and aerial platforms.
  - Continue development of automated ground targeting system.
  - Continue development of image feature extraction algorithms for UXO detection.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P721**

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Air Force Research Laboratory	Panama City	Research and Development	
Contractors				
	Applied Research Associates	Scientific & Engineering Services	Panama City, FL	
	Wintec Inc	Scientific & Engineering Services	Panama City, FL	
	Radiance	Technical Support	Panama City, FL	
Others				
	Titan	Technical Support	Panama City, FL & Huntsville, AL	

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P722**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P722	Robotic Technology Enhancement	0.000	0.000	3.270	3.517	4.835	5.081	5.363

A. Mission Description and Project Justification: Not Applicable.

B. Accomplishments/Planned Program: Not Applicable.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P723**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P723	Commercial Off The Shelf (COTS)	0.500	0.200	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) The purpose of the Commercial-off-the-Shelf (COTS) program is to create and maintain a consolidated pool of small, mobile robots that are made available for loan to government agencies, laboratories and universities to assist in defining requirements, improving tactics, techniques, and procedures, and enabling more economical acquisitions of unmanned systems throughout DoD and the government. This program is also identified by organizational members as the Robotic Systems Pool (RSP). The robots that populate the pool are COTS systems available from several manufacturers. Evaluation reports from experiments conducted with the robots provide valuable feedback for future small robot developments. Loan priority goes to DoD organizations, homeland security and emergency response users, and research and academia. Where appropriate, assets are supplemented with unique developmental technologies to address emerging operational and programmatic requirements, for example, extensions to COTS systems in support of Operation Iraqi Freedom and Operation Enduring Freedom (OIF/OEF) or other urgent in-theater requirements, as well as payload development or platform modifications. The program is also a source of contingency assets for operational (war time) needs - nearly 30 small robots were supplied to Explosive Ordnance Disposal (EOD) teams deployed to Iraq and Afghanistan for the inspection and subsequent removal of Improvised Explosive Devices (IEDs) and support continues today for EOD technicians through loans, training, and technical assistance.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	0.500	0.000	0.000

- Provided training for U.S. Navy Reserve forces in support of the Robotic Systems Joint Project Office Joint Robotics Repair Facility in Baghdad, Iraq for OIF.
- Provided operator training to over 75 joint robotics users in the use of man-portable robots for IED inspection and disposal.
- Collected, organized, and posted user feedback to on-line website.
- Over 35 man-portable robot loans made to over 20 DoD, government, and local/federal agencies.
- Over 40 pool systems repaired in-house by Navy Reservists. Robotic technical support and repairs performed for multiple local EOD units.
- Supported many facets of man-portable unmanned systems research, providing countless recommendations to vendors and R&D organizations to improve current and future military robotic systems.
- Documented in-theater and stateside pre-deployment support and development in technical paper presented at SPIE conference, March 2005, "Supporting the Joint Warfighter by Development, Training, and Fielding of Man-Portable UGVs".
- Integrated 40 Vanguard platforms returned from in-theater use into the RSP. Performed initial operational assessment of these platforms.
- Fielded prototype toolbar and liftkit for in-theater use and evaluation by EOD technicians.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 Plans	0.000	0.200	0.000

- Procure off-the-shelf small robots for loan to government agencies, laboratories, and universities for the purpose of accelerating the spiral development process, more quickly improving future robotic platforms for the joint warfighter. Several configurations will be procured. Payloads that offer additional capabilities to address emerging threats/needs will be pursued.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0603709D8Z - Joint Robotics Program**	PROJECT **P723**

- Support limited objective experiments, feasibility demonstrations, and concept exploration projects.
- Support requests for contingency assets where feasible.
- Support training and maintenance of assets in the field, to include joint EOD teams both stateside and deployed in-theater.
- Collection of performance data to provide feedback to developers for the improvement of RSP systems and technologies.
- Provide technical advice, maintenance, and training to requesting agencies, priority to DoD.
- Maintain and upgrade pool assets, as required.
- Continued robotic payload development.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P724**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P724 ADCR	0.324	0.246	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) The purpose of the Automatically Deployable Communications Relays (ADCR) project is to develop a practical method of extending range of high-bandwidth wireless digital communications and to overcome line-of-sight (LOS) problems for unmanned ground vehicles (UGV). The proposed method provides a universal relay-deploying module that connects to a UGV through a standard Ethernet. The deployer contains several radio relay "bricks" that are dropped off automatically (transparent to the operator) in order to form a chain of communication relay nodes, thereby extending the effective range between the base station and the UGV. This project is a follow-on to a DARPA funded research project into autonomous wireless ad hoc network maintenance, and heavily leverages the prior effort. Four systems will be developed in response to requests from other military users, including NAVEODTECHDIV and TARDEC.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	0.324	0.000	0.000

- Developed system architecture. Deployer module will have its own radio and will connect to the unmanned platform via an Ethernet connection.
- Deployer and relay brick architectures have been developed and documented.
- Performed antenna signal strength pattern test on several commercial 2.4GHz antennas. Selected the best performer to be the basis for our antenna system.
- Conducted antenna height vs. useable distance tests using simulation tools. Identified ideal height for our application.
- Prototyped a mechanism for extending the antenna to desired height.
- Prototyped a mechanism for "self-righting" the brick upon being dropped.
- Developed and tested a new DC-DC power regulator board that extended the operating time of the relay bricks by 40%.
- Completed battery and charger testing and selection.
- Developed Deployer software Application Programming Interface.
- Deployer software and relay brick software are under development (to be completed by end of CY05).
- Brick mechanical design is in progress. First prototype will be available before the end of the September 2005.
- Completed initial shock testing.
- Confirmed design interoperability with all targeted robots.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 Plans	0.000	0.246	0.000

- Redesign the Compact Ad Hoc Networking Radio (CANR) card for dual military/commercial frequencies.
- Implement rigorous network security protocols.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603709D8Z - Joint Robotics Program**	**P724**

- Produce second-generation ADCR systems based on new radios.
- Completed Brick prototype by the end of December. Perform electrical and mechanical testing and verification. Finalize software. Test dropp off and shock resistance.
- Complete one Deployer system by the end of February 2006. Finalize design and perform electrical and mechanical testing.
- Perform final testing on complete system (deployer and six relay bricks), targeted for a Man-Portable Robotic System (MPRS) URBOT.
- Produce three more systems to be delivered to NAVEODTECHDIV and TARDEC, for operation on the MTRS, TAGS-DM, and Remotec Wolverine unmanned vehicles.
- Generate final report.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy D. Acquisition Strategy:
Prototype systems are being built for NAVEODTECHDIV and TARDEC. Possible transitional targets include:
Navy - MTRS
Army - FCS
Marines - Gladiator
Air Force - ReDCAR
SOCOM
Intelligence community

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603709D8Z - Joint Robotics Program

PROJECT
P724

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**									

Exhibit R-2, RDT&E Budget Item Justification						Date: February 2006	
Appropriation/Budget Activity RDT&E Defense-Wide, BA 4	R-1 Item Nomenclature: Advanced Sensor Applications Program PE 0603714D8Z						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	26.075	24.675	18.820	18.781	18.885	19.389	20.038

A. Mission Description and Budget Item Justification:

The program focuses on continued development of domestic technologies and assessment of foreign technologies that have demonstrated potential for improvements in U.S. capabilities. Unique and innovative approaches are used to expand the performance envelopes of existing systems. This program supports military requirements identified in Joint Vision 2010, the Defense Science and Technology Strategy, Full Spectrum Dominance and the Joint Warfighting Capability Objectives. This program is funded under Budget Activity 4, Demonstration and Validation because it supports advanced technology demonstrations that evaluate technology transition to operational use.

Effective with FY07, this program transfers out of OUSD(Intelligence) and will be managed by OUSD(AT&L).

Program Accomplishments and Plans:

FY 2005 Accomplishments:

- Mission Support $26.075

FY 2006 Accomplishments:

- Mission Support $24.675

FY 2007 Plans:

- Mission Support $18.820

B. **Program Change Summary:** (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President' s Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	26.110	18.275	18.527
Current President's Budget	26.075	24.675	18.820
Total Adjustments	-.035	+6.400	+.293
Congressional program reductions		-.150	
Congressional rescissions		-.250	
Congressional increases		+6.800	
Other adjustments	-.035		+.293

Change Summary Explanation:

FY 2005: $.035 Department adjustments (Previous President's Budget included $9.150 in Congressional adds and $.621 Undistributed congressional reduction)
FY 2006: $3.000 Congressional add for secure airborne freespace optical comm.; $2.800 Congressional add for biometric signatures research; $1.000 Congressional add for advanced tactical geolocation; $.150 Congressional program reductions; $.250 Congressional rescissions
FY 2007: Department increase.

C. Other Program Funding Summary: Not Applicable

D. Acquisition Strategy: Not Applicable

E. Performance Metrics: Numbers of operational field demonstrations; actual/in-kind resource sharing differential among participating entities; numbers of studies produced; numbers of successful anomaly detections; numbers of false-positive results. Numbers of technology transfers.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603851D8Z - Environmental Security Technology Certification Program (ESTCP)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	41.325	36.442	28.841	34.239	33.774	34.246	34.895
P514	Environmental Security Technology Certification Program (ESTCP)	41.325	36.442	28.841	34.239	33.774	34.246	34.895

A. Mission Description and Budget Item Justification: (U) This program demonstrates and validates the most promising innovative environmental technologies that target DoD's most urgent environmental needs. Technologies selected are projected to provide pay back of the investment within five years 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 and waste management. Preference for demonstrations are given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD environmental requirements.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	42.046	30.632	28.392
Current BES/President's Budget (FY 2007)	41.325	36.442	28.841
Total Adjustments	-0.721	5.810	0.449
Congressional Program Reductions		0.244	
Congressional Rescissions		0.369	
Congressional Increases	-1.000	6.400	
Reprogrammings	5.500		
SBIR/STTR Transfer	5.000	0.456	
Other	-10.221	-1.659	0.449

(U) This program demonstrates and validates the most promising innovative environmental technologies that target DoD"s most urgent environmental needs. Technologies selected are projected to provide pay back of the investment within five years 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 and waste management. Preference for demonstrations are given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD environmental requirements.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603851D8Z - Environmental Security Technology Certification Program (ESTCP)**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy ESTCP solicits proposals from all DoD organizations, other Federal Agencies, and the commercial sector as well. Projects are selected based on an annual competitive process through reviews conducted by multi-agency review panels.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
	DoD Environmental Requirements					

Comment: 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 quaterly 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.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0603851D8Z - Environmental Security Technology Certification Program (ESTCP)

PROJECT
0603851D8Z

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Demonstration and Validation			32365	38225		33642		26641		0	0	0
Overhead			2100	3100		2800		2200		0	0	0
Subtotal:			34465	41325		36442		28841		0	0	0

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

OSD RDT&E COST ANALYSIS (R3)										Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0603851D8Z - Environmental Security Technology Certification Program (ESTCP)**									PROJECT **0603851D8Z**
Project Total Cost:	**34465**	**41325**		**36442**		**28841**		**0**	**0**	**0**

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603851D8Z - Environmental Security Technology Certification Program (ESTCP)**	**P514**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P514	Environmental Security Technology Certification Program (ESTCP)	41.325	36.442	28.841	34.239	33.774	34.246	34.895

A. Mission Description and Project Justification: (U) This program demonstrates and validates the most promising innovative environmental technologies that target DoD's most urgent environmental needs. Technologies selected are projected to provide pay back of the investment within five years 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 and waste management. Preference for demonstrations are given to technologies that have successfully completed all necessary research and development objectives, and address the highest priority DoD environmental requirements.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
ESTCP:	41.325	0.000	0.000

(U) FY 2005 Accomplishments
- Reviewed and selected 40 technologies for demonstration.
- Reviewed and selected sites for demonstration of technologies.
- Prepared site-specific implementation plans.
- Prepared sites and secured regulatory permitting.
- Continued to demonstrate and evaluate 77 selected technologies. Of these, 27 were completed.

By Thrust:
- Environmental Restoration: Successfully demonstrated and validated technologies in multiple high priority areas related to cleanup of contaminated DoD sites. ESTCP has completed the successful demonstration of new cost-effective bioremediation technologies for chlorinated solvents and perchlorate, including seven projects that directly responded to congressional direction. Evaluations continued on site characterization technologies, dense nonaqueous phase liquid (DNAPL) source treatments technologies, additional perchlorate treatment approaches, and in-situ treatment for RDX and TNT. These technologies are projected to reduce future DoD liability by $100s of millions. ($14.905 million)
- Munitions Management: ESTCP researchers continued to demonstrate improved UXO detection hardware and software technologies at the DoD UXO standardized test sites and to provide standardized statistical analyses of demonstrations at these sites. Continued demonstration of a UXO detection and characterization system in a marine environment, an approach to characterize areas with UXO based on statistical methods, and a multi-sensor cart based system to detect and characterize UXO. Initiated a variety of enhanced discrimination technology demonstrations and electromagnetic induction technology demonstrations. Executed Congressionally directed wide area assessment pilot program. ($13.510 million)

- Weapons Systems and Platforms: ESTCP continued to validate and transition environmentally benign technologies that directly impact military weapons systems and platforms. Demonstrations continued on

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0603851D8Z - Environmental Security Technology Certification Program (ESTCP)**	**P514**

environmentally friendly alternatives for hard chrome plating and cadmium replacements for a wide variety of weapon systems and components, new coatings removal systems, shipboard wastewater and emissions systems, and the effects of biofuels on reducing particulate emissions from diesel engines. ($9.800 million)

- Sustainable Infrastructure: Significant progress was made in the development of environmental monitoring technologies required by DoD to ensure DoD facilities and ranges are in compliance. Demonstrations continued to reduce soil erosion, dust generation, and storm water runoff on testing and training ranges. Demonstrations on reducing impacts of military operation around the runway environment were completed. ($3.110 million)

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
ESTCP:	0.000	36.442	0.000

FY 2006 Plans: FY 2006 funds will be invested in projects that address priority DoD environmental requirements. The focus of the program is on UXO detection, discrimination, data standardization, and cleanup; range and installation sustainment; and eliminating/reducing waste streams associated with DoD weapon systems. Funds are primarily required to continue ongoing investments.
- Continue 69 demonstration projects
- Reviewed and selected 30 new technologies for demonstration.
- Review and select sites for demonstration of technologies.
- Prepare site-specific implementation plans
- Prepare sites and secure regulatory permitting
- Award demonstration testing and evaluation for selected technologies.

By Thrust:
- Environmental Restoration: ($10.663 million)
- Munitions Management: ($14.053 million)
- Weapons Systems and Platforms: ($8.463 million)
- Sustainable Infrastructure: ($3.263 million)

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
ESTCP:	0.000	0.000	28.841

FY 2007 Plans: The FY 2007 funds are planned for investment in projects that address priority DoD environmental requirements. The focus of the program is on UXO detection and cleanup, range and installation sustainment and eliminating/reducing waste streams associated DoD weapon systems. Funds are primarily required to continue ongoing investments.
- Review and select technologies for demonstration.
- Review and select sites for demonstration of technologies.
- Prepare site-specific implementation plans
- Prepare sites and secure regulatory permitting
- Award demonstration testing and evaluation for selected technologies.

By Pillar:
- Environmental Restoration: ($9.961 million)
- Munitions Management: ($7.590 million)

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0603851D8Z - Environmental Security Technology Certification Program (ESTCP)**	PROJECT **P514**

- Weapons Systems and Platforms: ($7.850 million)
- Sustainable Infrastructure: ($3.440 million)

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy Acquisition Strategy: ESTCP solicits proposals from all DoD organizations and competes them with a multi-agency review panel. ESTCP solicits proposals from other Federal Agencies and the commercial sector as well. These are also competed using review panels.

E. Major Performers Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification							February 2006
Appropriation/Budget Activity RDT&E BA 4				R-1 Item Nomenclature: Humanitarian Demining 0603920D8Z			
Cost ($ in millions)	FY 2005	FY 2006	FY2007	FY 2008	FY 2009	FY 2010	FY2011
Total PE Cost	13.154	14.078	14.489	14.480	14.790	15.228	15.312
Humanitarian Demining/P920	13.154	14.078	14.489	14.480	14.790	15.228	15.312

A. Mission Description and Budget Item Justification:

The Humanitarian Demining (HD) R&D program element demonstrates and evaluates prototype demining systems for US forces and for indigenous DoDsupported, host nation conducted demining operations. The Humanitarian Demining R&D Program focuses on technologies to improve the efficiency and safety of the process of eliminating post-conflict landmines, which are a significant danger to US forces performing peace and stability operations as well as to civilians. This is accomplished through adaptation of commercial-off-the-shelf equipment, the integration of mature technologies, and leveraging R&D activity within DoD, particularly in the Army's Night Vision Electronic Sensors Directorate (NVESD) Tactical Countermine mission area. One goal is to assess equipment capabilities in actual demining conditions. Under the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (OASD (SO/LIC)), the HD R&D Program is a strong participant in the International Test and Evaluation Program (ITEP). The program aims to improve existing technologies for: individual mine and minefield detection; wide area survey; mechanical/mine and vegetation clearance; mine neutralization; individual soldier/deminer protection; detection of explosives in buried mines; verification of the presence of mines; marking and mapping of mines/minefields; post clearance quality assurance; mine awareness training; and individual deminer tools. Areas of emphasis are determined/validated at annual Program Reviews conducted by OASD (SO/LIC). The Program Reviews involve representatives from the Combatant Commands and from mine-affected nations.

B. Program Change Summary:

	FY2005	FY2006	FY2007
Previous President's Budget	13.426	14.305	14.489
Current President's Budget	13.154	14.078	14.489
Total Adjustments	-.272	-.227	
Congressional program reductions			
Congressional rescissions			
Congressional increases			
Reprogrammings			
SBIR/STTR Transfer	-.255		
Other program adjustments	-.017	-.227	

C. Other Program Funding Summary: NA

D. 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 US 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 maximum extent possible, by leveraging ongoing countermine R&D efforts in both US and foreign R&D activities, and by taking advantage of extensive in-house fabrication capabilities at the Army's NVESD.

E. Performance Metrics:

Humanitarian Demining - 0603920D8Z	
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 2005 Target	• 70% of currently funded research projects completed on time and within budget • 5% increase in the number of research projects accepted • Conduct annual Humanitarian Demining R&D Program International Program Review
FY 2005 Rating	ON TARGET
FY 2006 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted • Complete scheduled R&D project tasks • Conduct annual Humanitarian R&D Program International Program Review
FY 2007 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted • Conduct annual Humanitarian R&D Program International Program Review • Transition scheduled projects to user communities
Basis of FY 2005 to Date Performance Rating	Currently the number of funded research projects are on track to be completed per the target
Verification	The Humanitarian Demining Program performs program reviews and has oversight from OSD.
Validation	Completed R&D products increase the capabilities of the DoD to effectively perform demining missions.

Exhibit R-2a, RDT&E Project Justification							February 2006
Appropriation/Budget Activity RDT&E BA 4				Project Name and Number Humanitarian Demining 0603920D8Z			
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY2008	FY 2009	FY 2010	FY 2011
Humanitarian Demining/P920	13.154	14.078	14.489	14.480	14.790	15.228	15.312

A. Mission Description and Budget Item Justification: The Humanitarian Demining (HD) R&D Program demonstrates and evaluates prototype demining systems for US forces and for indigenous DoD-supported, host nation conducted demining operations. The HD R&D Program focuses on technologies to improve the efficiency and safety of the process of eliminating post-conflict landmines, which are a significant danger to US forces performing peace and stability operations as well as to civilians. This is accomplished through the adaptation of commercial-off-the-shelf equipment, the integration of mature technologies, and leveraging R&D activity within DoD, particularly in the Army Night Vision Electronic Sensors Directorate (NVESD) Tactical Countermine mission area. One goal is to assess equipment capabilities in actual demining conditions. Under the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (OASD (SO/LIC)), the HD R&D Program is a strong participant in the International Test and Evaluation Program (ITEP). The program aims to improve existing technologies for: individual mine and minefield detection; wide area survey; mechanical/mine and vegetation clearance; mine neutralization; individual soldier/deminer protection; detection of explosives in buried mines; verification of the presence of mines; marking and mapping of mines/minefields; post clearance quality assurance; mine awareness training; and individual deminer tools. Areas of emphasis are determined/validated at annual Program Reviews conducted by OASD (SO/LIC). The Program Reviews involve representatives from the Combatant Commands and from mine-affected nations.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	13.154	14.078	14.489

FY2005 Accomplishments: In FY2005, the HD R&D Program completed, initiated or continued Operational Field Evaluations of 18 HD systems in 8 countries that included the Tempest in Thailand and Cambodia, the HSTAMIDS in Thailand and Namibia (with ITEP participation), the Rhino Earth Tiller in Azerbaijan, the Mantis in Nicaragua, the Survivable Demining Tractor and Uni-Disk in Thailand, Explosive Harvesting System in Cambodia, and the Maxx Plus in Sri Lanka. In addition, the program performed field assessments in countries including Angola, Azerbaijan, Cambodia, Guinea Bissau, Namibia, Nicaragua, Sri Lanka, and Thailand to determine if HD equipment could be effectively utilized in those countries. In support of US forces in Afghanistan, HD R&D Program engineers modified an additional PM-CCS front loader to supplement the original two loaders completed in FY2004. To date, 7 systems are in use by US forces in Afghanistan. To further assist humanitarian deminers worldwide, engineers completed several in-house prototype developments such as the Beaver mine clearing system, the Standardized Remote Control, Rotary Mine Comb integration into tractor/dozer platforms, and Rhino grill. The HD R&D program awarded 18 new contracts for mine detection,

neutralization, mechanical clearance technologies in FY2005. Furthermore, the program tested and demonstrated 17 mine detection and clearance system at various sites including Fort AP Hill, Yuma Proving Grounds, and Aberdeen Proving Grounds. Lastly, the HD R&D Program conducted its annual Requirements Workshop in which participants from 13 government mine action organizations, 11 non-governmental organizations (NGOs), 6 international agencies, and 9 US government entities discussed demining equipment needs. Countries represented included Azerbaijan, Cambodia, Chile, Croatia, Guinea-Bissau, Iraq, Jordan, Lebanon, Republic of Yemen, Rwanda, Sri Lanka, Thailand, and Vietnam. Representatives from the Department of State, the Joint Staff, and the Combatant Commands (EUCOM, SOUTHCOM, and CENTCOM) also participated. Several international organizations active in mine action also attended, including representatives from the United Nations Mine Action Service (UNMAS), the Inter-American Defense Board (IADB), and the Organization of American States (OAS).

FY 2006 Plans: As a result of requests made during the annual Requirements Workshop, OCONUS field assessments, and in-house developments in FY2005, the HD R&D program plans to deploy many of its systems to humanitarian demining organizations overseas as well as US forces in Afghanistan. Planned deployments include the NIITEK Mine Stalker to Angola and Namibia, the HSTAMIDS to Afghanistan and Cambodia, the Maxx to Guinea Bissau, the Beaver to Thailand, and the Rotary Mine Comb to Angola. In addition, the HD R&D Program will continue its deployments of the Tempest, Uni-Disk, Mantis, Survivable Demining Tractor, the Explosive Harvesting System, and the Rhino Earth Tiller in various countries in Africa and Southeast Asia. Program engineers will also make field assessments to Ecuador, Chile, and Uzbekistan. The HD R&D program will continue final development, test and evaluation of prototype technologies in the following areas: detection technologies for discrimination and confirmation from the tactical countermine area; improved handheld detection technologies; mechanical mine and vegetation clearance systems for removing dense vegetation from mined areas and excavating and clearing mines; non-explosive based mine neutralization technologies able to replace the practice of using explosives in humanitarian demining situations; and development of equipment suitable for area reduction and quality assurance operations. In support of the Combatant Commands and Embassy staffs, HD R&D personnel will conduct site survey(s), country assessment(s), and initiate operational field evaluations of prototypes developed under the program in the areas of detection, mine/vegetation clearance, neutralization and personal deminer protection systems in mine-infested regions of the world. Lastly, the HD R&D program will update its website and HD R&D Program Video for distribution during the 2006 Requirements Workshop.

FY 2007 Plans: The HD R&D program will complete ongoing equipment developments/modifications, site surveys and operational evaluations from FY2006. It will also continue to demonstrate detection technologies for discrimination and confirmation to include leveraging technology with the tactical countermine area; develop technologies to improve detection capability and reduce false alarms; conduct site survey(s), country assessment(s) and operational field evaluations of detection, mine/vegetation clearance and neutralization systems in mine infested regions of the world; and demonstrate individual deminer tools and equipment; and equipment suitable for area reduction and quality assurance operations. In support of the Combatant Commands and Embassy staffs, the HD R&D program will conduct site survey(s), country assessment(s), and initiate operational field evaluations of prototypes developed under the program in the areas of detection, mine/vegetation clearance, neutralization, and personal deminer protection systems in mine-infested regions of the world. In addition, the program will conduct the OASD (SO/LIC) International Program Review as well as update and distribute the HD R&D Program Video for the 2007 Requirements Workshop.

C. Other Program Funding Summary: NA

D. 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 US 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 maximum extent possible, by leveraging ongoing countermine R&D efforts in other US and foreign R&D activities, and by taking advantage of extensive in-house fabrication capabilities at the Army's NVESD.

									Date: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E / BA 4				PROGRAM ELEMENT 0603920D8Z					PROJECT NAME AND NUMBER Humanitarian Demining / P920			
Cost Categories ($ in millions) (Tailor to WBS, or System Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	CY Cost	CY Award Date	BY1 Cost	BY1 Award Date	BY2 Cost	BY2 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Various[1]	Various[2]	97.748	8.146	NA[3]	8.384	NA[3]	8.378	NA[3]	26.229	148.885	NA[4]
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Award Fees												

Subtotal Product Development			97.748	8.146		8.384		8.378		26.229	148.885	

Remarks:
1: The Humanitarian Demining R&D Program manages many individual contracts for the development of mine and minefield detection, mine and vegetation clearance, individual deminer tools and personal protection equipment, and mine neutralization technologies optimized for humanitarian demining. As such, one entry cannot be made for any category in this document. Competitive contracting is used to the maximum extent possible. Due to the nature of this program, which acquires very limited quantities (normally 1 or 2 each) of hand built or modified prototype items; most contract types are cost based.
2. Since so many performing organizations, both U.S. and foreign, are involved, one entry cannot be made for any cost category in this document (but can be provided upon request).
3. The HD Program goal is to award all individual efforts to ensure DoD performance goals are met or exceeded.
4. Because individual contracts / task efforts seldom exceed a 12 month period of performance resulting in delivery of one or two prototypes, the total value of each individual contract is usually the same as the award amount for all cost categories in this document.

Development Support												
Software Development	Various[1]	Various[2]	4.170	.798	NA[3]	.822	NA[3]	.821	NA[3]	2.571	9.128	NA[4]
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			4.170	.798		.822		.821		2.571	9.128	
Remarks: See remarks for notes 1, 2, 3 and 4 in the Product Development Section.												

Exhibit R-3 Cost Analysis (page 2)									Date: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E / BA 4			PROGRAM ELEMENT 0603920D8Z						PROJECT NAME AND NUMBER Humanitarian Demining / P920			
Cost Categories ($ in millions) (Tailor to WBS, or System Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	CY Cost	CY Award Date	BY1 Cost	BY1 Award Date	BY2 Cost	BY2 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation	NA	RDECOM NVESD Fort Belvoir, VA	4.176	.794	NA[3]	.817	NA[3]	.817	NA[3]	2.557	9.160	NA[5]
Tooling												
GFE												
Subtotal T&E			4.176	.794		.817		.817		2.557	9.160	

Remarks:

3. See remarks for note 3 in the Product Development Section.

5. For the HD R&D Program, Operational Test and Evaluation is the limited operational field evaluations of prototype equipment. These evaluations are performed by a governmental mine action organization, or a supporting non-governmental demining organization in the host nation under actual conditions. Funds for this category support the preparation and shipment of the equipment, and logistics support packages (training, manuals, spare parts, etc.) to support the field evaluation. Although foreign governments are responsible for performing their own evaluation, the performing organization for the purpose of this document is CECOM NVESD.

Contractor Engineering Support	Various[1]	Various[2]	6.659	.757	NA[3]	.780	NA[3]	.780	NA[3]	2.440	11.415	NA[4]
Government Engineering Support	NA	RDECOM NVESD Fort Belvoir, VA	6.593	.983	NA[3]	1.012	NA[3]	1.011	NA[3]	3.164	12.762	NA
Program Management Support	Various[1]	Various[2]	9.283	.898	NA[3]	.924	NA[3]	.925	NA[3]	2.892	14.923	NA[4]
Program Management Personnel	NA	RDECOM NVESD Fort Belvoir, VA	1.045	.148	NA[3]	.152	NA[3]	.152	NA[3]	.476	1.973	NA
Travel	NA	NA	2.189	.308	NA[3]	.316	NA[3]	.316	NA[3]	.990	4.118	NA
Labor (Research Personnel)	NA	RDECOM NVESD Fort Belvoir, VA	10.830	1.246	NA[3]	1.283	NA[3]	1.282	NA[3]	4.012	18.652	NA
Overhead												
Subtotal Management			36.599	4.340		4.465		4.464		13.974	63.843	
Remarks: See remarks for notes 1, 2, 3 and 4 in the Product Development Section.												
Total Cost			142.693	14.078		14.489		14.480		45.330	231.070	
Remarks												

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603923D8Z - Coalition Warfare**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	5.643	5.685	5.878	6.047	5.953	6.069	6.202
0603923D8Z Coalition Warfare	5.643	5.685	5.878	6.047	5.953	6.069	6.202

A. Mission Description and Budget Item Justification: The Coalition Warfare (CW) initiative is the only OSD Program dedicated to initiate cooperative research and development projects with allies and coalition partners. The goal of the effort is to assist the Combatant Commands, Services, and Agencies with integrating coalition-enabling solutions into existing and planned US programs. This adds value to the Department's overall international cooperation strategy by providing resources for the U.S. portion of bilateral and multilateral development projects aimed at improving interoperability with allies and other likely coalition partners.

Fighting the war on terrorism and coping with the new and emerging threat paradigms have highlighted coalition warfare issues on the radar screens of policy makers and senior leaders throughout the U.S. Government. Coalitions are and will be the standard means for addressing international crises, lending political legitimacy and providing resources that mitigate U.S. financial, materiel and personnel burdens (OPTEMPO). Interoperability gaps between and among coalition partners have compromised operational effectiveness and jeopardized force protection (e.g., fratricidal incidents). For example, recent tragedies linked to fratricide or friendly fire in OEF and OIF have brought on-going efforts in combat identification (CID) programs to the highest level of CW support and interest. By providing the necessary financial support, CW internationalized the Coalition Combat Identification Advanced Concept Technology Demonstration (ACTD) and the Coalition Blue Force Situational Awareness ACTD (FY 2004-FY 2005 project). Both U.S. and foreign technologies and research may be applied to improve fielded coalition capabilities.

Cooperative efforts with likely coalition partners are needed to close interoperability gaps include battlespace awareness, C4ISR, joint fires, intelligence fusion and data sharing, combat identification, logistics, weapon systems and information sharing capabilities. Moreover, these small investments early in the R&D process yield large dividends (e.g., Joint Strike Fighter). The CW initiative leverages foreign and other U.S. investment in ongoing projects by adding coalition-related enhancements that would otherwise not be realized. The OSD CW initiative encourages PMs and PEOs to involve friendly countries as well as Allies in cooperative development projects to the extent permitted by security considerations (classified data and critical technology), when such partnering is advantageous to the U.S. Government and necessary in terms of regional threat scenarios.

The CW approach to cooperative RDA projects is consistent with OSD-articulated, preferred methodologies: spiral development and evolutionary acquisition (i.e., getting solution-oriented, threshold-capabilities into the hands of the coalition warfighter quickly). Projects benefiting from CW funding fall into one of two categories: those for which the CW funds no more than 50% of the coalition-directed portion, with foreign contributions making up the difference; and those involving CW funding of coalition-oriented features of U.S.-only projects. Priority is given, in both categories, to initiatives offering potential solutions to interoperability issues that can be leveraged across multiple Combatant Commands.

The Combatant Commands, Services, Defense Agencies, and OSD nominate candidate projects on a yearly cycle. These projects are funded for one to two years. OSD selects projects based on their compatibility with established CW criteria: meeting the needs and requirements specified by the warfighter, funding commitments of international partners, potential for leveraging results across multiple Combatant Commands, addressing potential risks related to security and controlled technology, responsiveness to USD (AT&L) priorities for international armaments cooperation (e.g., maritime domain awareness, joint and coalition experimentation and coalition logistics).

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603923D8Z - Coalition Warfare**

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	5.749	5.777	5.787
Current BES/President's Budget (FY 2007)	5.643	5.685	5.878
Total Adjustments	-0.106	-0.092	0.091
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-0.106		
Other		-0.092	0.091

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Coalition Blue Force Situational Awareness	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375
Mode V IFF/ Mark XII	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.650
Navigational Warfare Electronic Support UAV (NAVWAR ES)	0.478	0.472	0.000	0.000	0.000	0.000	0.000	0.000	0.950
Leadership, Commander's Intent and Operational Readiness	0.125	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Coalition Fires Interoperability	0.600	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.600
Subnet Relay	0.425	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.425
Network Centric Mapping Database	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Multi-Level Thin Client	0.623	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.623
US-Korea Battle Simulation Model	0.000	0.316	0.316	0.000	0.000	0.000	0.000	0.000	0.632
Coalition Communications Interoperability Guide	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Allied Wide Area Network RF Controller	0.527	0.360	0.000	0.000	0.000	0.000	0.000	0.000	0.887
Metrification of LIttorals Demo	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
CW Roadmap	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.300
Maritime Domain Awareness Conference	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0603923D8Z - Coalition Warfare**

CW Support	0.383	0.426	0.430	0.000	0.000	0.000	0.000	0.000	1.239
Collaborative Engagement in Logistics	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
Coalition Logistics Decision Support Capability	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.050
Small Boat Modeling and Validation	0.000	0.400	0.400	0.000	0.000	0.000	0.000	0.000	0.800
Coalition Airspace Management and Deconfliction	0.000	0.275	0.275	0.000	0.000	0.000	0.000	0.000	0.550
Over the Horizon Tactical Tracking System	0.000	0.240	0.000	0.000	0.000	0.000	0.000	0.000	0.240
GLIDE	0.000	0.500	0.500	0.000	0.000	0.000	0.000	0.000	1.000
Maritime Coalition Interoperability - Coalition DEP	0.000	0.995	0.395	0.000	0.000	0.000	0.000	0.000	1.390
Global Coalition In-Transit Visibility Network	0.000	0.416	0.416	0.000	0.000	0.000	0.000	0.000	0.832
Maritime Information Exchange	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.500
Collaborative Initiatives	0.000	0.410	0.493	0.000	0.000	0.000	0.000	0.000	0.903
FY07-08 New Starts	0.000	0.000	2.312	0.000	0.000	0.000	0.000	0.000	2.312

Comment:

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604016D8Z - Corrosion Prevention and Control (CPC)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	7.619	4.966	5.142	5.266	5.249	5.000
P015	Corrosion Prevention and Mitigation R&D Technologies and Projects	0.000	7.619	4.966	5.142	5.266	5.249	5.000

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 between $10 billion and $20 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.

(U) The DepSecDef designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Official in May 2003. The DoD Corrosion Official subsequently established a Corrosion Control and Oversight office in the Defense Systems Directorate to implement the program. A major responsibility of the Corrosion Control and Oversight Office 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 already has selected and funded O&M projects for FY 2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidances in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs.

(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 NASA. The Services are given project guidelines and selection criteria. The CPC project board from DDR&E, L&MR, I&L, DS and the J-4, Joint Staff chaired by the Special Assistant, Corrosion Control and Oversight reviews the projects and makes recommendations to the DoD Corrosion Executive for final approval.

(U) As a result, the Acting USD(AT&L) 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 the DoD Corrosion Official have 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 scarce dollar availability and the high importance Congress places on effectively funding the program. Studies indicate that we may realize substantial rates of return on investment of 10 to 1 on many proposed projects over the next 5 to 10 years.

(U) The Department has identified well over 30 research and development projects that need to be funded and would have an impact on reducing the effects and costs of corrosion. These projects address critical corrosion issues in both DoD 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

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604016D8Z - Corrosion Prevention and Control (CPC)**

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 $5.000 million budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	5.141	5.135
Current BES/President's Budget (FY 2007)	0.000	7.619	4.966
Total Adjustments	0.000	2.478	-0.169
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		2.478	
Reprogrammings			
SBIR/STTR Transfer			
Other			-0.169

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy There is an annual 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.

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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), and documentation of mission criticality.
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.

The project evaluation criteria are also provided as part of the call for use by the CPCIPT in arriving at their prioritized project list. There are seven categories for evaluation:
1. Return on investment credibility: Degree to which there is evidence that the project will achieve a return on investment of greater than 10:1: 3, 2, 1 points respectively for low, medium, high risk
2. Benefits credibility: Degree to which there is evidence that the projected benefits will be achieved: 3, 2, 1 points respectively for low, medium, high risk
3. Technology maturity: Degree to which proposed technology has been developed or demonstrated and will satisfy project objectives: 3, 2, 1 points respectively for low, medium, high risk
4. Schedule confidence: Degree to which the project is likely to be completed on time: 3, 2, 1 points respectively for low, medium, high risk
5. Budget confidence: Degree to which the project is likely to be completed within the proposed budget: 3, 2, 1 points respectively for low, medium, high risk
6. Operational readiness improvement: Degree to which there is evidence that the project will improve readiness, reliability, maintainability or sustainability of the system or facility: 6, 4, 2 points respectively for low, medium, high risk
7. Management support: Degree to which management actively supports this project and has committed program resources to both manage and support this project: 6, 4, 2 points respectively for low, medium, high risk

The CPCIPT receives project plans and makes a priority ranking based on detailed analysis of each proposed initiative against the seven evaluation criteria. This priority ranking is sent to the CPCIPT lead. 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 priority and the evaluation process results.

Upon selection by CPCIPT of the highest priority projects and final funding approval, MIPRs are prepared by OSD to transfer individual project funding to the appropriate funding sites. These funding sites 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 CPC initiative through the CPCIPT. Project oversight includes the review of bi-monthly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.

The bi-monthly project report (PR) format has been defined and requires the following input:
1. statement of progress
2. outstanding issues
3. performance goals and metrics

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4. upcoming events
5. schedule status
6. current return on investment (ROI) status

These PRs are submitted to the CPCIPT office. The CPCIPT analyzes project status, progress and project statistics and informs the Service POCs of any project problems. Projects are also required to report verbally at Corrosion Forums, as appropriate.

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 IPT meetings.
2. Oversee project performance including review of bi-monthly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.
3. Perform 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 and implement the DOD Corrosion Prevention and Mitigation Strategic Plan.
11. Develop and maintain Roadmaps of IPT activities and accomplishments.
12. Assist in the annual project plan implementation and evaluation process, including the assessment of return on investment associated with proposed projects
13. Respond to Congressional, Government Accountability Office and DoD inquiries regarding the CPC Program.
14. Perform CPC Program communication and outreach to services, agencies and other organizations.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
06						

Comment: The objective of each of the projects is the reduction in the life cycle costs of corrosion for affected systems. ROI is the primary performance metric for the projects and for the CPC initiative. The average projected ROI for these projects (based on discounted cash flow calculations) exceeds 10:1 with estimated annual direct cost avoidance of over $50 million across the FYDP. Thus, the critical performance metric for this effort is the resulting life cycle cost reduction. Gains in reliability, maintainability, supportability, and thus readiness are

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the by-products of the projects with attendant additional cost reduction benefits Cost avoidances will be measured and tracked for each project, summed to the Service level, and totaled at the OSD level.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604016D8Z - Corrosion Prevention and Control (CPC)**	**P015**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P015	Corrosion Prevention and Mitigation R&D Technologies and Projects	0.000	7.619	4.966	5.142	5.266	5.249	5.000

A. Mission Description and Project 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 between $10 billion and $20 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.

(U) The DepSecDef designated the Principal Deputy Under Secretary of Defense (Acquisition, Technology, and Logistics) (PDUSD(AT&L)) as the DoD Corrosion Official in May 2003. The DoD Corrosion Official subsequently established a Corrosion Control and Oversight office in the Defense Systems Directorate to implement the program. A major responsibility of the Corrosion Control and Oversight Office 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 already has selected and funded O&M projects for FY2004 and FY2005. However, the DoD CPCIPT has determined that the biggest payoff in corrosion prevention and mitigation will come from investing in up-front prevention technologies, materials, and processes to leverage downstream cost avoidances in corrosion maintenance and repair. Likewise, development of improved predictive and prognostic techniques can eliminate unseen failure and reduce unnecessary maintenance and repair costs.

(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 NASA. The Services are given project guidelines and selection criteria. The CPC project board from DDR&E, L&MR, I&L, DS and the J-4, Joint Staff chaired by the Special Assistant, Corrosion Control and Oversight reviews the projects and makes recommendations to the DoD Corrosion Executive for final approval.

(U) As a result, the Acting USD(AT&L) 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 the DoD Corrosion Official have 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 scarce dollar availability and the high importance Congress places on effectively funding the program. Studies indicate that we may realize substantial rates of return on investment of 10 to 1 on many proposed projects over the next 5 to 10 years.

(U) The Department has identified well over 30 research and development projects that need to be funded and would have an impact on reducing the effects and costs of corrosion. These projects address critical corrosion issues in both DoD 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

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604016D8Z - Corrosion Prevention and Control (CPC)**	**P015**

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 $5.000 million budget request will provide a critically needed resource to trigger even larger investment and cost avoidance.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	2.045	1.210
Coatings and Corrosion Prevention Compounds			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	1.120	0.855
Diagnostics, Prognostics, Monitoring and NDI Technologies			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	0.745	0.625
Prediction, Modeling and Supporting Technologies			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	2.205	1.200
Maintenance and Cathodic Protection Technologies and Practices			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	0.745	0.580
Materials Selection Processes			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Corrosion Prevention and Mitigation:	0.000	0.759	0.496

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	PROJECT **P015**

Corrosion Control Management Activities

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy There is an annual 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.
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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), and documentation of mission criticality.
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.

The project evaluation criteria are also provided as part of the call for use by the CPCIPT in arriving at their prioritized project list. There are seven categories for evaluation:

1. Return on investment credibility: Degree to which there is evidence that the project will achieve a return on investment of greater than 10:1: 3, 2, 1 points respectively for low, medium, high risk
2. Benefits credibility: Degree to which there is evidence that the projected benefits will be achieved: 3, 2, 1 points respectively for low, medium, high risk
3. Technology maturity: Degree to which proposed technology has been developed or demonstrated and will satisfy project objectives: 3, 2, 1 points respectively for low, medium, high risk
4. Schedule confidence: Degree to which the project is likely to be completed on time: 3, 2, 1 points respectively for low, medium, high risk
5. Budget confidence: Degree to which the project is likely to be completed within the proposed budget: 3, 2, 1 points respectively for low, medium, high risk
6. Operational readiness improvement: Degree to which there is evidence that the project will improve readiness, reliability, maintainability or sustainability of the system or facility: 6, 4, 2 points respectively for low, medium, high risk
7. Management support: Degree to which management actively supports this project and has committed program resources to both manage and support this project: 6, 4, 2 points

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
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respectively for low, medium, high risk

The CPCIPT receives project plans and makes a priority ranking based on detailed analysis of each proposed initiative against the seven evaluation criteria. This priority ranking is sent to the CPCIPT lead. 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 priority and the evaluation process results.

Upon selection by CPCIPT of the highest priority projects and final funding approval, MIPRs are prepared by OSD to transfer individual project funding to the appropriate funding sites. These funding sites 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 CPC initiative through the CPCIPT. Project oversight includes the review of bi-monthly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.

The bi-monthly 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 PRs are submitted to the CPCIPT office. The CPCIPT analyzes project status, progress and project statistics and informs the Service POCs of any project problems. Projects are also required to report verbally at Corrosion Forums, as appropriate.

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 IPT meetings.
2. Oversee project performance including review of bi-monthly status reports which address progress summary, performance goals and metrics and upcoming key events, as well as reports to periodic Corrosion Forums.
3. Perform 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 and implement the DOD Corrosion Prevention and Mitigation Strategic Plan.
11. Develop and maintain Roadmaps of IPT activities and accomplishments.
12. Assist in the annual project plan implementation and evaluation process, including the assessment of return on investment associated with proposed projects

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
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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.

D. Performance Metrics:

The objective of each of the projects is the reduction in the life cycle costs of corrosion for affected systems. ROI is the primary performance metric for the projects and for the CPC initiative. The average projected ROI for these projects (based on discounted cash flow calculations) exceeds 10:1 with estimated annual direct cost avoidance of over $50 million across the FYDP. Thus, the critical performance metric for this effort is the resulting life cycle cost reduction. Gains in reliability, maintainability, supportability, and thus readiness are the by-products of the projects with attendant additional cost reduction benefits Cost avoidances will be measured and tracked for each project, summed to the Service level, and totaled at the OSD level.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604400D8Z - J-UCAS Advanced Component and Prototype Development**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	210.944	0.000	0.000	0.000	0.000	0.000	0.000
P440	J-UCAS Advanced Component and Prototype Development	210.944	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: The Joint Unmanned Combat Air Systems (J-UCAS) program is a joint effort to develop and demonstrate unmanned combat capabilities for high-threat Suppression of Enemy of Air Defense (SEAD), Information Operations/ Electronic Attack, Persistent Surveillance/Reconnaissance, and related strike missions within the emerging global command and control architecture for the warfighting community. The J-UCAS program combines and expands the efforts that were previously conducted under the DARPA/Air Force Unmanned Combat Air Vehicle (UCAV) program and the DARPA/Navy Naval UCAV (UCAV-N) program. These efforts were targeted towards service-specific needs, However the Department recognized the potential for significant synergy by combining the programs. The accomplishments and ongoing efforts of the X-45A technology demonstrator, as well as the development of the X-47A demonstrator, are reducing the risk of the "operationalized" demonstration system being developed for a joint operational assessment (OA) planned for the FY 2007-2010 timeframe. The J-UCAS concept incorporates the next generation family of demonstrator air vehicles, together with common subsystems (e.g. sensors, payloads, communications) and a Common Operating System to achieve the system's diverse mission functionality. These common system elements will maximize mission flexibility and operational versatility, while reducing overall costs and maintaining schedule toward a joint OA. The J-UCAS Office operates in close coordination with Service users and other operational components. The program is focused on demonstrating capabilities that support both Services and enable an operational system development decision by the end of the decade. PE 0604400D8Z is for J-UCAS Advanced Component and Prototype Development. These funds are used for the development of the common systems and technologies as well as the Boeing and Northrop Grumman demonstrator programs. In addition, these funds are used to conduct the joint operational assessment including modeling and simulation and flight testing.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	217.401	0.000	0.000
Current BES/President's Budget (FY 2007)	210.944	0.000	0.000
Total Adjustments	-6.457	0.000	0.000
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings	-6.457		
SBIR/STTR Transfer			
Other			

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604400D8Z - J-UCAS Advanced Component and Prototype Development**

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
PE 0604400F, Air Force	0.000	0.272	0.400	0.554	0.781	0.955	0.000	0.000	2.962
PE 0603400D8Z, OSD	0.355	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355
PE 0603400F, Air Force	0.000	0.078	0.000	0.000	0.000	0.000	0.000	0.000	0.078

Comment:

D. Acquisition Strategy The J-UCAS Advanced Component and Prototype Development acquisition strategy is to advance the work being conducted under PE 0603400D8Z (J-UCAS Advanced Technology Development and Risk Reduction) and prove the operational value of the J-UCAS concept in the joint operational assessment. The J-UCAS program blends the advantages of both the Advanced Technology Demonstration (ATD) and the Advanced Concept Technology Demonstration (ACTD) concepts to facilitate rapid development and integration of advanced technologies in an experimental system that addresses operational needs. Using the next generation of demonstrator air vehicle families, together with common subsystems and a Common Operating System, this nontraditional approach
also incorporates key acquisition considerations (i.e., user requirements, comprehensive system lifecycle perspective, and rigorous risk mitigation processes) to provide the necessary insights, operational data and identified options for the services to make an informed decision for accelerated acquisition near the end of the decade.

E. Performance Metrics: Not Applicable.

Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604400D8Z - J-UCAS Advanced Component and Prototype Development**	**0604400D8Z**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Common Systems Development Begins							
X-45A Flight Demonstrations Conclude	2Q						
J-UCAS Demonstrator Development Begins							
Joint Operational Assessment Begins			4Q				

Comment:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604400D8Z - J-UCAS Advanced Component and Prototype Development**	**P440**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P440	J-UCAS Advanced Component and Prototype Development	210.944	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: The Joint Unmanned Combat Air Systems (J-UCAS) program is a joint effort to develop and demonstrate unmanned combat capabilities for high-threat Suppression of Enemy of Air Defense (SEAD), Information Operations/ Electronic Attack, Persistent Surveillance/Reconnaissance, and related strike missions within the emerging global command and control architecture for the warfighting community. The J-UCAS program combines and expands the efforts that were previously conducted under the DARPA/Air Force Unmanned Combat Air Vehicle (UCAV) program and the DARPA/Navy Naval UCAV (UCAV-N) program. These efforts were targeted towards service-specific needs, however the Department recognized the potential for significant synergy by combining the programs. The accomplishments and ongoing efforts of the X-45A technology demonstrator, as well as the development of the X-47A demonstrator, are reducing the risk of the "operationalized" demonstration system being developed for a joint operational assessment (OA) planned for the FY 2007-2010 timeframe. The J-UCAS concept incorporates the next generation family of demonstrator air vehicles, together with common subsystems (e.g. sensors, payloads, communications) and a Common Operating System to achieve the system's diverse mission functionality. These common system elements will maximize mission flexibility and operational versatility, while reducing overall costs and maintaining schedule toward a joint OA. The J-UCAS Office operates in close coordination with Service users and other operational components. The program is focused on demonstrating capabilities that support both Services and enable an operational system development decision by the end of the decade. PE 0604400D8Z is for J-UCAS Advanced Component and Prototype Development. These funds are used for the development of the common systems and technologies as well as the Boeing and Northrop Grumman demonstrator programs. In addition, these funds are used to conduct the joint operational assessment including modeling and simulation and flight testing.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
	210.944	0.000	0.000

FY 2005 Accomplishments:

- Continue development of J-UCAS systems, specifically the Boeing and Northrop Grumman demonstrator programs as well as the common operating system and sensors.
- Prepare for joint Operational Assessment (OA).

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy The J-UCAS Advanced Component and Prototype Development acquisition strategy is to build on the work being conducted under PE 0603400D8Z (J-UCAS

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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RDT&E/ Defense Wide BA# 4	**0604400D8Z - J-UCAS Advanced Component and Prototype Development**	**P440**

Advanced Technology Development and Risk Reduction) and prove the operational value of the J-UCAS concept in the joint operational assessment. The J-UCAS program blends the advantages of both the Advanced Technology Demonstration (ATD) and the Advanced Concept Technology Demonstration (ACTD) concepts to facilitate rapid development and integration of advanced technologies in an experimental system that addresses operational needs. Using the next generation of demonstrator air vehicle families, together with common subsystems and a Common Operating System, this nontraditional approach also incorporates key acquisition considerations (i.e., user requirements, comprehensive system lifecycle perspective, and rigorous risk mitigation processes) to provide the necessary insights, operational data and identified options for the services to make an informed decision for accelerated acquisition near the end of the decade.

E. Major Performers:

The Boeing Company, St. Louis, MO
The Boeing Company, Seattle, WA
Northrop Grumman Corporation, El Segundo, CA
Northrop Grumman Corporation, Rancho Bernardo, CA
Northrop Grumman Corporation, Palmdale, CA
Lockheed Martin, Palmdale, CA
The John Hopkins University, Baltimore, MD

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0604400D8Z - J-UCAS Advanced Component and Prototype Development

PROJECT
P440

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
J-UCAS			0	210944	2-4Q	0		0		0	0	0
Subtotal:			0	210944		0		0		0	0	0

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**	**210944**		**0**		**0**		**0**	**0**	**0**

Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604400D8Z - J-UCAS Advanced Component and Prototype Development**	**P440**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Common Systems Development Begins							
X-45A Flight Demonstrations Conclude	2Q						
J-UCAS Demonstrator Development Begins							
Joint Operational Assessment Begins			4Q				

Comment:

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604648D8Z - Joint Capability Technology Demonstration (JCTD)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	2.946	3.047	3.050	3.053	3.052	3.049
P649	Joint Capability Technology Demonstration (JCTD)	0.000	2.946	3.047	3.050	3.053	3.052	3.049

A. Mission Description and Budget Item Justification: Beginning in FY 2006, a new business process was begun taking the successful ACTD program and updating it to meet the Department's transformational goal of becoming capability vice threat based in its focus. This new Joint Capability Technology Demonstration (JCTD) program includes many of the positive aspects of the ACTD program, but has been revamped to meet the defense challenges of the 21st century. The new process aligns with the new Joint Integration and Development System (JCIDS) developed by the Joint Chiefs of Staff (JCS) by adapting technology and concept solutions to meet pressing warfighter needs. FY 2006 was the first year of a three to five year transition period from the current ACTD process to the improved JCTD program. For FY 2006 the ten new starts were comprised of six ACTDs and four JCTDs. The new JCTD business model includes this Program Element to be used for initial transition of a limited number of "joint peculiar" technologies and a Defense Acquisition Executive (DAE) pilot program (in BA-5 and Procurement) which will take ACTDs/JCTDs past milestone B, through engineering and manufacturing, and into procurement, followed by initial sustainment--a "cradle to grave" approach. Because there were no existing JCTDs, the transition funding provided in this program element is being used to promote initial transitions of ACTDs that were deemed uniquely joint/combined (i.e., capability directly supports more than one Military Service) and/or transformational.

The appropriation, Program Element (PE) and Budget Activity (BA) structure for the new JCTD process includes the following:

- JCTD PE 0603648D8Z (RDT&E/DW BA-3)
- JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)
- Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5)
- JCTD Procurement (funded in Procurement Defense Wide, OSD Major Equipment: PE 0902198D8Z).

An initial allocation of resources ($40.000 million) from the ACTD PE 0603750D8Z was shifted into these program elements starting in FY 2006. During the three to five year transition period additional resources will be shifted into the various JCTD program elements until a fully resourced program is established which will support a minimum of ten new JCTDs each year. It is envisioned that the BA-3 JCTD PE will eventually replace the current ACTD BA-3 PE. However, during the transition period the JCTD and ACTD program elements will use combined resources to ensure continuity of ongoing ACTDs and program flexibility for the new JCTDs. During this period this program element will be used for both JCTDs and ACTDs. To establish resource visibility and accountability and to ensure a fully leveraged program, the Military Services and the Defense Advanced Research Projects Agency (DARPA) will be requested to create new program elements in BA-3 and/or BA-4. These program elements will be established during the transition period and will be specifically titled and associated with the JCTD process. JCTDs are initiated at the Budget Activity three (BA-3) level and are thereby pre-acquisition demonstrations, characterized by Technology Readiness Levels (TRLs) 4, 5 or 6. Although not fully developed for production, these newly initiated JCTDs can provide the path for transition of Science and Technology to acquisition and are low-to-moderate risk vehicles for pursuing those objectives. The addition of funding in this BA-4 program element as well as the DAE Pilot program, BA5, and Procurement program elements provide a path for those capabilities that are so transformational that they require a purposeful transition to acquisition to avoid some of the delay issues which have historically been experienced by the ACTD program. Funding managed by the Deputy Under Secretary of Defense for Advanced Systems and Concepts (DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including an "extended user evaluation," providing the Combatant Commanders, Services, Agencies, and operators with adequate time to address transition issues of supportability, maintainability and training identified by the JCTD/ACTD. If military utility is successfully proven through an independent test, DUSD (AS&C) will

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604648D8Z - Joint Capability Technology Demonstration (JCTD)**

move the successful JCTD/ACTD into this program element for initial transition to the warfighter. Completion of TRLs 6 and 7 are anticipated as logical progression.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	3.000	3.000
Current BES/President's Budget (FY 2007)	0.000	2.946	3.047
Total Adjustments	0.000	-0.054	0.047
Congressional Program Reductions		-0.111	
Congressional Rescissions			
Congressional Increases		4.000	
Reprogrammings		-3.943	
SBIR/STTR Transfer			
Other			0.047

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
ACTD PE 0603750D8Z (RDT&E/DW BA-3/Line #44)	207.818	170.275	158.334	164.696	177.936	182.380	177.252	0.000	1238.691
JCTD PE 0603648D8Z (RDT&E/DW BA-3/Line #36)	0.000	34.443	35.553	35.590	35.624	35.613	35.576	0.000	212.399
Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5/Line #99)	0.000	0.985	6.015	6.016	6.017	6.017	6.016	0.000	31.066
JCTD Procurement (OSD Major Equipment: PE 0902198D8Z)	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined below. Refer to the specific Budget Exhibit for more details on each funding line.

D. Acquisition Strategy Only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in this program element. The Urban Recon ACTD is currently completing its demonstration and is entering into the transition phase of development. Urban Recon technology is demonstrating an extremely high military utility and

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is, therefore, the likely candidate for the first use of the FY 2006 JCTD Transition funding. This funding will ensure Urban Recon transitions and fulfills a vital capability gap required by the CoCom. Urban Recon is under the Program Management of USSOCOM.

In FY 2007 the Network-Centric Collaborative Targeting (NCCT), Joint Distance Support & Response (JDSR) and Advanced Technology Ordnance Surveillance (ATOS) ACTDs will have completed demonstations and will be candidates to use these funds to aid the transition of these promising capabilities.

- NCCT will horizontally integrate intelligence, surveillance and reconnaissance (ISR) platforms into a network centric environment to allow machine-to-machine collaboration on target identification and geolocation.
- JDSR provides a joint, common and interoperable tele-maintenance/training environment providing end-to-end, low bandwidth reach back connectivity, customer relationship management, interoperable mobile computing devices, and case-based reasoning tools.
- ATOS will provide the warfighter, in real-time, the location of his ordnance, its availability and its condition. The ATOS system combines Commercial Off-The-Shelf (COTS) Radio Frequency and miniaturized environmental sensors to address: Automatic Data Capture of ammunition accountable and shipping transaction documents; Remote, automatic inventory management of ammunition; Life-cycle environmental history of packaged ammunition; Real-time ammunition condition and alerts; Data for Modeling & surveillance data/engineering investigations/service life assessment programs/future munition designs.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
	Project Selection Focus					
	Spiral Technologies					
	Time to Final Demonstration					
	Adequately Shared Funding and Visibility					
	Independent Assessment Capability					
	Successful Military Utility Assessment (MUA)					

Comment: • Fifty percent of the products from at least 80% of all completing JCTDs will transition to acquisition programs of record, a GSA schedule, CoCom sustainment or, in the case of software-based products, into operationally-sustained systems (such as the Global Command and Control System (GCCS).

• JCTD/ACTDs completing ACD&P will be at TRL 6 or 7 and a logical progression of program phases to include development and funding will be established via a documented

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)	Date: February 2006
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transition plan.

The JCTD/ACTD performance metrics are centered on how fast relevant joint and/or transformational technologies can be demonstrated and fielded 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. The table below defines these metrics and helps compare/contrast the current ACTD program with the new JCTD business process model.

Performance Metrics Comparison between ACTDs and JCTDs:

- Project Selection Focus: ACTDs are Threat Based (Shared Military Service and CoCom influence). JCTDs are Capability Based with greater CoCom influence looking at nearer term needs.
- Spiral Technologies: For ACTDs no Metric currently established. For JCTDs Spiral Technology available within one year of JCTD initiation.
- Final Demonstration Completed: For ACTDs - (Starting Point: Approved ID) 3 to 4 years after initiation (Implementation Directive (ID) Signed), 50% completed by the end of the 2nd year. All JCTDs completed by the end of the 3rd year.
- Shared Funding and Visibility of resources: For ACTDS - OSD provides no more than 30% of the budgeted resources. Funding provided from many different program elements. For JCTDs OSD provide significantly more funding (more than 50% OF THEIR PRODUCTS), especially in the first two years.
- Military Utility Assessment (MUA) conducted by an independent activity: MUA is traditionally tied to a specific planned exercise for evaluation. For JCTDs - not necessarily tied to an exercise. Greater flexibility to establish military utility via operational "real-world" demonstration or specifically designed test/venue.
- Transition of technology: For ACTDs 70% transition at least one product to sustainment. For JCTDs 80% transition at least 50% of their products to sustainment.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604648D8Z - Joint Capability Technology Demonstration (JCTD)**	**P649**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P649	Joint Capability Technology Demonstration (JCTD)	0.000	2.946	3.047	3.050	3.053	3.052	3.049

A. Mission Description and Project Justification: Beginning in FY 2006, a new business process was begun taking the successful ACTD program and updating it to meet the Department's transformational goal of becoming capability vice threat based in its focus. This new Joint Capability Technology Demonstration (JCTD) program includes many of the positive aspects of the ACTD program, but has been revamped to meet the defense challenges of the 21st century. The new process aligns with the new Joint Integration and Development System (JCIDS) developed by the Joint Chiefs of Staff (JCS) by adapting technology and concept solutions to meet pressing warfighter needs. FY 2006 was the first year of a three to five year transition period from the current ACTD process to the improved JCTD program. For FY 2006 the ten new starts were comprised of six ACTDs and four JCTDs. The new JCTD business model includes this Program Element to be used for initial transition of a limited number of "joint peculiar" technologies and a Defense Acquisition Executive (DAE) pilot program (in BA-5 and Procurement) which will take ACTDs/JCTDs past milestone B, through engineering and manufacturing, and into procurement, followed by initial sustainment--a "cradle to grave" approach. Because there were no existing JCTDs, the transition funding provided in this program element is being used to promote initial transitions of ACTDs that were deemed uniquely joint/combined (i.e., capability directly supports more than one Military Service) and/or transformational.
The appropriation, Program Element (PE) and Budget Activity (BA) structure for the new JCTD process includes the following:

- JCTD PE 0603648D8Z (RDT&E/DW BA-3)
- JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)
- Defense Acquisition Executive (DAE) PE 0605648D8Z (RDT&E/DW BA-5)
- JCTD Procurement (funded in Procurement Defense Wide, OSD Major Equipment: PE 0902198D8Z).

An initial allocation of resources ($40.000 million) from the ACTD PE 0603750D8Z was shifted into these program elements starting in FY 2006. During the three to five year transition period additional resources will be shifted into the various JCTD program elements until a fully resourced program is established which will support a minimum of ten new JCTDs each year. It is envisioned that the BA-3 JCTD PE will eventually replace the current ACTD BA-3 PE. However, during the transition period the JCTD and ACTD program elements will use combined resources to ensure continuity of ongoing ACTDs and program flexibility for the new JCTDs. During this period this program element will be used for both JCTDs and ACTDs. To establish resource visibility and accountability and to ensure a fully leveraged program, the Military Services and the Defense Advanced Research Projects Agency (DARPA) will be requested to create new program elements in BA-3 and/or BA-4. These program elements will be established during the transition period and will be specifically titled and associated with the JCTD process. JCTDs are initiated at the Budget Activity three (BA-3) level and are thereby pre-acquisition demonstrations, characterized by Technology Readiness Levels (TRLs) 4, 5 or 6. Although not fully developed for production, these newly initiated JCTDs can provide the path for transition of Science and Technology to acquisition and are low-to-moderate risk vehicles for pursuing those objectives. The addition of funding in this BA-4 program element as well as the DAE Pilot program BA5 and Procurement program elements provide a path for those capabilities that are so transformational that they require a purposeful transition to acquisition to avoid some of the delay issues which have historically been experienced by the ACTD program. Funding managed by the Deputy Under Secretary of Defense for Advanced Systems and Concepts (DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including an "extended user evaluation," providing the Combatant Commanders, Services, Agencies, and operators with adequate time to address transition issues of supportability, maintainability and training identified by the JCTD/ACTD. If military utility is successfully proven through an independent test, DUSD (AS&C) will move the successful JCTD/ACTD into this program element for initial transition to the warfighter. Completion of TRLs 6 and 7 are anticipated as logical progression.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
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JCTD Selection Process:
The JCTD Program will use a deliberate process for selecting the transitioning ACTDs into this program element. Successful MUAs will be balanced against the top priorities of the CoComs. Defense Components, industry and coalition partners. The proposed transitioning JCTD candidates will be briefed to the JCS Functional Capability Boards to ensure mission needs remains intact. The principal management tool for the transitioning JCTD will be the Transition Plan (TP), crafted during the initial JCTD program. Each approved JCTD will be described in these top-level documents which provide details of the demonstration/evaluation, the main objectives, approach, critical events, measures of success, transition options, participants, schedule, and funding.

General Program Plans: DUSD (AS&C) will initiate the JCTD program. This PE will focus on aiding the successful transition to programs of record of the most promising JCTDs. The transition phase has proven to be problemmatic for some highly successful projects in the past. This PE will aid in solving problems in the transition phase. The Urban Recon has been the first ACTD selected to recieve this transition funding in FY 2006 because of the tremendous capability if brings to the warfighter. Urban Recon is a 3-D imaging capability that provides a transformational capability for the warfighter in a Urban to see, plan, and act on in near-real world. Urban Recon is under the Program Management of Joint Program Sustainment and Development office and the Operational Management of USSOCOM. This project has high CoCom interest and support and is considered a viable capability for the JCTD transition funding. In FY 2007 the Network-Centric Collaborative Targeting (NCCT), Joint Distance Support & Response (JDSR) and Advanced Technology Ordnance Surveillance (ATOS) ACTDs completed demonstations and will be candidates for transition funds for these promising capabilities.

- NCCT will horizontally integrate intelligence, surveillance and reconnaissance (ISR) platforms into a network centric environment to allow machine-to-machine collaboration on target identification and geolocation.
- JDSR provides a joint, common and interoperable tele-maintenance/training environment providing end-to-end, low bandwidth reach back connectivity, customer relationship management, interoperable mobile computing devices, and case-based reasoning tools.
- ATOS will provide the warfighter, in real-time, the location of his ordnance, its availability and its condition. The ATOS system combines Commercial Off-The-Shelf (COTS) Radio Frequency and miniaturized environmental sensors to address: Automatic Data Capture of ammunition accountable and shipping transaction documents; Remote, automatic inventory management of ammunition; Life-cycle environmental history of packaged ammunition; Real-time ammunition condition and alerts; Data for Modeling & surveillance data/engineering investigations/service life assessment programs/future munition designs.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2006 Plans: Urban Recon (UR)	0.000	2.946	0.000

Provide advanced airborne and terrestrial 3-D reconnaissance capability to SOCOM (Operational Manager) using LIDAR sensor with rapid processing software and decision aid software. The user sponsor is U.S. Special Operations Command. Metrics include: Extent to which the Urban Recon ACTD sensors and software provide the high-resolution, 3-D data needed to support urban warfare operations; extent to which the equipment and software provided are easy to use and supportable by military personnel; and extent to which the Urban Recon TTPs can be effectively executed in meeting urban reconnaissance objectives. As an ACTD, Urban Recon completed the objective laser systems development supporting vehicle-deployed, soldier-deployed, and UAV-deployed configurations. Finalized the CONOPS for each objective system configuration. Completed Limited Objective Experiment (LOE) #3 at Ft. Lewis, WA. LOE #3 demonstrated mission planning and mission rehearsal of vehicle-mounted, soldier-borne, and UAV-mounted LIDAR sensors, using established CONOPS and TTPs. Completed Limited Objective Experiment (LOE) #4 at Fallon, NV. LOE #4 was a user defined demonstration and assessment of

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604648D8Z - Joint Capability Technology Demonstration (JCTD)**	**P649**

Airborne LIDAR data for mission planning and mission rehearsal scenarios. Completed development of CONOPS, TTPs and training package. Drafted and finalized a Capability Development Document for LIDAR Sensors. Developed transition strategy supporting follow-on development, acquisition and fielding based on successful MUA. Use Urban Recon as a JCTD pilot program for transition.

• FY 2006 Plans - Acquire two additional systems (1 airborne and 1 terrestrial system). Create technical field support and logistics support element such that all Urban Recon systems can be adequately sustained, maintained, and supported across a broad range of GWOT operations; and support system maintenance and spare requirements. Assess and implement product improvements to bring laser systems closer to objective state. Provide continued system training and refinement of CONOPS, TTPs, and training packages.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2007 Plans: Transition Candidates	0.000	0.000	3.047

There are three candidates that are demonstrating a high military value to merit transition funding in FY 2007. These projects have tremendous "joint" and CoCom capability potential. Transition funding determination will occur during FY 2006 after reviewing each projects status. The projects are: •Network-Centric Collaborative Targeting (NCCT) - Network operational intelligence, surveillance, and reconnaissance sensors to significantly improve the capability to detect, identify, and geo-locate time-critical targets. The user sponsor is U.S. Central Command. As an ACTD: NCCT resolved action items from the IMUA. Selected interim communications capability. Initiated transition of USAF specific elements of program. Live-Fly Demonstration to include US Navy participation and UK NIMROD using interim (transition) network communications system originally estimated for third quarter FY 2005 is now first quarter FY 2006 (exercise scheduling issue). Complete final Military Utility Assessment (MUA) in December 2005. Report out final results. Conclude interim capability support phase and complete the ACTD.

• FY 2007 Plans - ACTD completed and begin transition.

•Advanced Technology Ordnance Surveillance (ATOS) - Demonstrate a system that will provide ordnance managers (and therefore the warfighter) near real-time total asset visibility (i.e. war reserve storage, battlefield distribution, and the environmental piece of in-transit) of their ordnance stockpile while also providing data for predictions of future condition and performance. The user sponsor is U.S. European Command. As an ACTD ATOS: integrated flat file output of ATOS system for input into Ordnance Information System (OIS). OIS Retail availability scheduled for October 2005. Implemented/verified valid corrections for all recommended changes from the Military Utility Assessment (MUA). Finalized and presented MUA Outbrief to OSD and user sponsor. Completed the finalization of a joint CONOPS, joint transition plan, and joint specifications. Work with Naval Postgraduate School on independent cost benefit analysis (CBA). Pursued MIL-SPEC or STANAG for ATOS specifications. Continued installation planning for pilot implementation sites. Install ATOS system at select sites as determined by resource sponsor. Worked Service POM issues and continued to pursue Services buy-in for RFID/MEM POM lines utilizing the ATOS specifications as a minimum baseline. FY 2007 Plans: To transition to a program of record.

•Joint Distance Support and Response (JDSR)- Demonstrates and transitions joint, common, interoperable, tele-maintenance environment using a collaborative knowledge center and tool suite, with reach-back capability. JDSR ACTD focuses on timely employment of information, both automated and live, to the different service maintainers. Some of the top-level metrics include operational bandwidth in a common collaborative environment, access to multiple subject matter experts, technical information at point of maintenance, interoperable tool suites and maintainer productivity. Planned transition will be to Distance Support (DS), Joint Aviation Technical Data Integration (JATDI), Integrated Maintenance Data System (IMDS), Third Echelon Test Set (TETS) and Technical Data Distribution (TEDD) programs. The User Sponsor is USJFCOM. Continued implementation of the transition strategy including conduct of Extended User Evaluation (EUE) of residual package and follow-on development, acquisition and fielding. Completed the integration of JDSR ACTD with Joint Explosive Ordnance Demonstration (JEOD) ACTD. Continued EUE of residual packages including JDSR / JEOD ACTDs interoperability. Continued development of CONOPs, TTPs, training package and DOTML-PF recommendations. Upgraded common business process with modeling and simulation as needed for establishing joint common maintenance processes based on preliminary EUE results. Continued transition of JDSR products to Program of Records. Initiated fielding of JDSR products. Complete EUE. Finalize CONOPs, TTPs, training package and DOTML-PF recommendations. Continue transition of JDSR products to the POR. Complete JDSR ACTD.

FY 2007 Plans: Develop transition into a program of record.

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Advanced Concept Technology Development (ACTD)	207.818	170.275	158.334	164.696	177.936	182.380	177.252	0.000	1238.691

Continue projects initiated in prior years. Highlights of the projects include:

- Complete Electro-optical Sensor Technology efforts to fabricate and test a HPM field probe based on a novel electro-optical material that changes its optical characteristics when subjected to an HPM environment. This field probe will allow non-intrusive measurement of HPM environments with minimal impact on the fields measured.
- Complete Dielectric Electromagnetic Field Probes efforts to develop and demonstrate dielectric-based field probes that can measure electric and magnetic fields during HPM T&E events. These dielectric field probes will cause little or no perturbation of the electromagnetic environment during the event.
- Complete HEL Off-Target Temperature Sensor efforts to fabricate and demonstrate of an off target imaging system that can measure the surface temperature of HEL beams. The sensor will provide a method to remotely characterize the HEL beam/target interaction during T&E events.
- Complete T&E Adaptive Optics System efforts to integrate and test an adaptive optics system to remotely measure HEL temperature with high spatial and temporal accuracy. The adaptive optics system will be integrated into the Advanced Pointer Tracker at HELSTF.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Wide-spectrum, single substrate imagers to enhance imaging and detection of HEL beams from a variety of systems/sources.
- DE (HEL or HPM) hardened flight termination system/range destruct package to safely and reliably provide for termination of the target, even when high concentrations of DE are present on the target.
- Methods to measure optical transmissivity with a 100 times increase in sampling rates over current measurement techniques at different wavelengths along laser beam paths to support HEL T&E.
- Use of physics-based models incorporated into virtual geographical representations of T&E ranges to provide 3-dimensional, geodetically accurate models of beam propagation, beam spread, lethal range, fluence on target, and atmospheric effects.

Initiate a BAA to select efforts for FY 2008 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			NETCENTRIC SYSTEMS TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Netcentric Systems Test	0.000	1.812	3.986	6.274	6.351	7.165	8.367

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

The S&T community is developing advanced Netcentric Systems to support DoD's Critical Transformational Capabilities—Conduct Information Operations, Deny Enemy Sanctuary, and Leverage Information Technologies. Advancements in Netcentric Systems will provide commanders and staff with an adaptive, network-centric, configurable operational information visualization environment, which will improve the speed and quality of command decisions. Information assurance and survivability are central to achieving these advancements. These advances will enable a spectrum of operational capabilities ranging from enhanced management and exploitation of intelligence, surveillance, and reconnaissance assets to next-generation tactical radio systems. Successful implementation of these transformational capabilities will necessitate a corresponding transformation in DoD's ability to test and evaluate Netcentric Systems. The Netcentric Systems Test (NST) focus area will address the T&E scenarios, technologies, and analysis tools required to ensure that operational networked systems delivered to the warfighter provide an assured capability to acquire, verify, protect, and assimilate information necessary for battlefield dominance within a complex netcentric environment.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Netcentric Systems Test	0.000	1.812	3.986

FY 2005 Accomplishments: **See OT&E, D (0460) appropriation.**

FY 2006 Plans:

Continue projects initiated in FY 2005. Highlights for the projects include:

- Complete The Tactical-Report Generation Test Bed for C4ISR Systems efforts to develop and demonstrate the Tactical-Report Generation Test-bed (TGT). The TGT generates realistic sensor data and formatted message data streams from user-supplied scenarios to support Joint system tests, evaluations, experiments and programs of C4ISR systems.
- Complete Network Simulation and Analysis Tools (NSAT) for C4ISR development, integration and test of a suite of interoperable software tools, components, and enhancements to the Repeatable Performance Evaluation & Analysis Tool (REPEAT). These tools allow REPEAT to provide a framework to test next generation C4ISR systems based on a service oriented architecture in a Network Centric environment.

Initiate projects identified by the FY 2006 Broad Agency Announcement (BAA) process:

- Development of T&E metrics to determine the effectiveness of Information Operations.
- Tools that employ artificial intelligence to support the instrumentation and visualization of netcentric T&E environments.
- Development of non-intrusive instrumentation and T&E communication networks (including networks-of-networks) that do not affect the performance of networked systems under evaluation, especially for humans-in-the-loop network-centric environments.
- Methods to support T&E of decision aids used in network-centric operations.
- Ability to assess information assurance within complex systems-of-systems.
- Methods to evaluate the performance of network-centric operations in a multi-node dynamic environment.

Initiate a BAA to select efforts for FY 2007 award.

FY 2007 Plans:

Continue projects initiated in prior years. The projects include:

- Complete A Test Agent for Testing Command and Control, Decision Support and Intelligent Agents efforts to develop an intelligent agent based test systems that allows the T&E of network systems that use single or multiple embedded intelligent agents. This test tool will provide the ability to automatically evaluate command and control systems used in a Network Centric environment.

Initiate future investigations to address T&E technology challenges in the focus area for:

- Techniques for capturing spatial and temporal registration across large numbers of sensors, multimedia communications, and human-system interface devices.
- Techniques for capturing and evaluating multiple simultaneous collaborative user data links.
- Techniques for capturing and evaluating human physical and cognitive performance.
- Capability to evaluate advances from a "human-out" perspective; i.e., determine what information actually enhances a warfighter's performance.
- Technologies to non-intrusively assess low probability of detection/low probability of intercept communications and data links.
- Methods to assess the contribution of netcentricity to decision superiority in operational scenarios.
- Additional netcentric systems T&E technology issues will be identified, incorporated into the NST roadmap, and addressed in future research plans.

Initiate a BAA to select efforts for FY 2008 award.

C. **(U) OTHER PROGRAM FUNDING SUMMARY** NA

D. **(U) ACQUISITION STRATEGY** NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)							February 2006
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			ADVANCED UNMANNED VEHICLE SYSTEM DEVELOPMENT				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000	0.000	0.000	0.000	0.000

A. (U) **MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The DoD is developing a new class of complex autonomous unmanned systems to handle specialized, hazardous operations when appropriate. Early systems, such as soldier-in-the-loop unmanned aerial vehicles, already serve in critical roles in the operational environment. This new class of autonomous vehicle will require innovative methods to test and evaluate the system's performance and its ability to adapt to changes in the operational environment.

This Congressional add project is focused on the development, test, and evaluation of an integrated unmanned protection system in support of transport security missions. This research and development effort will provide the T&E/S&T program with insights into the T&E challenges associated with testing of autonomous systems and will act as a roadmap to guide T&E technology developments in this area.

B. (U) **ACCOMPLISHMENTS/PLANNED PROGRAM**

	FY 2005	FY 2006	FY 2007
Advanced Unmanned Vehicle System Development	0.000	4.200	0.000

FY 2005 Accomplishments: NA

FY 2006 Plans:

Initiate effort to investigate development of technologies associated with advanced unmanned vehicle systems in response to congressional add. This effort will conduct research to identify technology challenges associated with the development and test and evaluation of unmanned and autonomous systems. Included in this effort are tasks to evaluate and develop perception, behaviors, and interface methods to support use of intelligent unmanned systems in an operational environment. This involves:

- Conducting evaluations on relevant unmanned platforms instead of research systems.
- Performing field experiments to evaluate collaborative unmanned system behaviors and system responses.
- Extending primitive robot behaviors to complex, tactical behaviors for force protection, countermine operations, and remote characterization applications.

This effort also will provide data that will be incorporated into a roadmap to support the T&E/S&T program's evaluation of the technology shortfalls in unmanned vehicle testing that require S&T development.

FY 2007 Plans: NA

C. (U) OTHER PROGRAM FUNDING SUMMARY NA

D. (U) ACQUISITION STRATEGY NA

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2a)						February 2006	
DEFENSE WIDE RDT&E (0400) BUDGET ACTIVITY THREE, PE 0603941D8Z			SOFTWARE TEST				
$ in Millions	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Software Test	0.000	0.000	2.005	5.149	6.018	6.722	8.035

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Use of complex, high-speed, software-intensive systems is increasing within weapons; Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems; and other automated information processing systems. Most software-intensive systems are developed, tested, and fielded in significantly shorter periods than hardware systems. Software components are generally upgraded more frequently than hardware in systems. Testing systems with software components requires rigorous software configuration control to ensure that reported test results apply to the actual fielded software.

Most current software tests are manpower intensive and require expert knowledge of the system under test. An automated, objective test capability is required to assess the effectiveness and performance of future software systems as well as to determine the appropriate amount of regression testing required when that software is modified. As the use of "learning" software proliferates, testing will be required to identify unacceptable behavior, detect defects in behaviors that have yet to be learned, and to predict the future performance of the learning software. Significant integration and interoperability issues among software systems and large databases must be overcome to enable testing of software-intensive systems. Artificial stimulation will be needed for both load and security testing. Methods to verify software integrity must also be identified. The Software Test focus area will develop the T&E technologies necessary to adequately test software intensive systems as the complexity of these systems increases in the future.

B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2005	FY 2006	FY 2007
Software Test	0.000	0.000	2.005

FY 2005 Accomplishments: NA

FY 2006 Plans: NA

FY 2007 Plans:

Initiate efforts in the Software Test focus area, including:

- Exploring the capabilities of software centers of excellence to support advanced development efforts.
- Identifying an Executing Agent.
- Forming a working group of qualified T&E and S&T subject matter experts.

Initiate a Broad Agency Announcement to identify initial research projects in this area. The initial emphasis of this focus area will be developing and demonstrating technologies to objectively test software-intensive systems. Potential areas of investigation include:

- Development of metrics to objectively quantify the performance of software-intensive systems and adaptive software systems.
- Automated techniques to assess software system effectiveness and suitability.
- Development of metrics to quantify standards for regression testing of modified software.
- Methods to perform automated regression testing after accepted software has been modified.

Initiate a BAA to identify additional efforts for FY 2008 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	7.749	16.321	6.822	7.070	7.320	7.556	7.698
P343	Homeland Defense First Responders Technology Transfer	0.000	1.237	4.522	4.627	4.947	5.137	5.227
P942	Technology Link	7.749	15.084	2.300	2.443	2.373	2.419	2.471

A. Mission Description and Budget Item Justification: Defense TechLink is an element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into DoD systems, particularly from nontraditional defense contractors; (2) spin-off of DoD-developed technologies to the commercial sector to make these technologies more affordable for military acquisition; and (3) establishment of collaborative R&D projects with the private sector for cost-sharing of new dual-use technology development.

Defense TechLink has been highly successful at helping the Department transfer its technologies to U.S. companies, making these technologies available for both military and commercial applications.

TechLink is highly cost-effective and has provided a return on the investment to DoD of 4:1 on funds expended to date. This efficiently run organization currently accounts for 30 percent of all DoD patent license agreements (PLAs) and has brokered over 270 Cooperative Research and Development Agreements (CRADAs) and other R&D partnerships involving innovative companies new to DoD. The Congressional Record for November 18, 2003, page S15056, has a statement from Senator Burns (R-MT) commending TechLink for its outstanding achievements.

Beginning in FY 2006, the Defense Techlink Program is assisting DOD's Homeland Defense Office on first responder initiatives. The Homeland Defense First Responder Technology Transfer Project will enhance efficiency and continue cost effectiveness by leveraging off existing TechLink efforts to manage equipment and technology transfers to civilian communities and eliminate duplication of effort between Department of Defense parties involved in technology and equipment transfers to first responders. Funding to support this initiative was reprogrammed from a DOD's Homeland Defense program line into the Defense Techlink Program line during the FY 2006 POM process.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	7.985	3.435	3.433
Current BES/President's Budget (FY 2007)	7.749	16.321	6.822
Total Adjustments	-0.236	12.886	3.389
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		13.150	

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**

Reprogrammings			3.335
SBIR/STTR Transfer	-0.226		
Other	-0.010	-0.264	0.054

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: For FY 2005, established patent license agreements (PLAs) totalling 30% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)
For FY 2006, establish patent license agreements (PLAs) totalling 31% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)
For FY 2007, establish patent license agreements (PLAs) totalling 33% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P343**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P343	Homeland Defense First Responders Technology Transfer	0.000	1.237	4.522	4.627	4.947	5.137	5.227

A. Mission Description and Project Justification: Leverages off existing technology transfer programs to meet the requirements of the FY 2003 National Defense Authorization Act, Section 1401. Meets the requirement to identify DoD technology items and equipment developed or being developed with the potential to enhance public safety and improve homeland defense. Evaluates technology items and procured equipment useful to first responders and facilitates technology items and equipment to Federal, State, and local first responders. Identifies and eliminates redundant and unnecessary research efforts while advancing high priority projects. Through participation in outreach programs, communicates with first responders and facilitates awareness of available technology items and equipment to support crisis responses. Monitors all DoD research and development activities to identify potential first responder applications; coordinates with other Federal Departments and Agencies to facilitate the transfer of technology from DoD to first responders; and assists in the transfer of technology and equipment for first responders.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Homeland Defense First RespondersTechnology Transfer:	0.000	1.237	4.522

Actively work with Federal, State, and local officials to identify and participate in outreach events and activities to communicate with first responders and facilitate awareness of available technology items and equipment to support homeland security and enhance public safety.

In conjunction with outreach program, ensures a successful and balanced transfer of equipment and technology without impeding military readiness. Manages what first responders receive, achieves a balance between first responders and military equipment, and transfers technology through a transitional effort that has dual utility to enhance military readiness. Identifies military equipment and technology that is currently being transferred or that has the potential for being transferred to first responders. Leverages off existing programs to transfer equipment from military to first responders and share information throughout DoD and Federal Agencies.

Eliminates duplication of effort between DoD organizations involved in the transfer of equipment and technology to first responders. Meets the Congressional intent of the FY 2003 National Defense Authorization Act, Section 1401. Identifies equipment with the potential to enhance public safety. Establishes an overarching government program to assure the efficient and effective transfer of technology equipment useful to first responders. Eliminates redundant and unnecessary efforts concerning equipment and technology transfer to first responders. Facilitates the transitions of high priority DoD projects from research through implementation of initial manufacturing. Communicates to first responders the availability of equipment and technology items to support homeland security.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0603942D8Z - Defense Technology Link (TechLink)** PROJECT **P343**

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P942	Technology Link	7.749	15.084	2.300	2.443	2.373	2.419	2.471

A. Mission Description and Project Justification: Defense TechLink is a critical element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into DoD systems, particularly from nontraditional defense contractors; (2) spin-off of DoD-developed technologies to the commercial sector to make these technologies more affordable for military acquisition; and (3) establishment of collaborative R&D projects with the private sector for cost-sharing of new dual-use technology development.

Defense TechLink has been highly successful at helping the Department transfer its technologies to U.S. companies, making these technologies available for both military and commercial applications.

TechLink is highly cost-effective and has provided a return on the investment to DoD of 4:1 on funds expended to date. This efficiently run organization currently accounts for 30 percent of all DoD patent license agreements (PLAs) and has brokered over 150 Cooperative Research and Development Agreements (CRADAs) and other R&D partnerships involving innovative companies new to DoD. The Congressional Record for November 18, 2003, page S15056, has a statement from Senator Burns (R-MT) commending TechLink for its outstanding achievements.

Beginning in FY 2006, the Defense Techlink Program will assist DOD's Homeland Defense Office on first responder initiatives. The Homeland Defense First Responder Technology Transfer Project will enhance efficiency and continue cost effectiveness by leveraging off existing TechLink efforts to manage equipment and technology transfers to civilian communities and eliminate duplication of effort between Department of Defense parties involved in technology and equipment transfers to first responders.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Marketing of DoD Technologies:	0.739	1.074	1.440

FY 2005 Accomplishments: Undertook active marketing of DoD-developed technologies to United States companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are: (1) to accelerate the transition of DoD-developed technologies to the warfighter; (2) to lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) to provide a return of revenue to DoD labs from commercial spin-off of DoD-developed technologies; and (4) to fulfill DoD's Congressionally mandated technology transfer directives.

FY 2006/2007 Plans: Continue active marketing of DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

Congressionally mandated technology transfer directives.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Dual Use Technology Deployment::	0.560	0.560	0.560

FY 2005 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 focused on nontraditional defense contractors and is intended (1) to help lower the expense of new defense-related technology development through cost-sharing with industry, and (2) to help DoD benefit from private-sector technology investments and innovations.

FY 2006/2007 Plans: Actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on nontraditional defense contractors and is intended (1) to help lower the expense of new defense-related technology development through cost-sharing with industry, and (2) to help DoD benefit from private-sector technology investments and innovations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Spin-On of Advanced Commercial-Sector Technologies:	0.300	0.300	0.300

FY 2005 Accomplishments: Promoted the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies in the Northwestern United States in order to help DoD identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems.

FY 2006/2007 Plans: Actively promote the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies in the Northwestern United States in order to help DoD identify, fund, acquire, and integrate private-sector innovations and advanced commercial technologies into DoD systems.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Technology Transfer IEE:	1.500	1.700	0.000

These funds are used to support the Technology Transfer Commercialization National Center of Excellence for First Responders (NCEFR), called First Link. The NCEFR will assess user needs and priorities, collect and evaluate potential DoD technologies for first responder use, identify non-DoD technologies that address DoD and first responder needs, and create and execute a marketing plan for these technologies. Measures of success will include technologies made available for first responder use. FY 2005 Accomplishments: Coordinated activities with DHS to establish First Responder needs list to query against DoD laboratories for technologies to transfer. Established two (2) partnerships.

FY 2006 Plans: Continue assessing DoD technologies against First Responder needs, support transfer to First Responder community through demonstrations, assisting establish production capability, and coordinating with DHS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Remote Presence:	1.700	1.700	0.000

These funds are used for the Remote Presence Program to extend the Marine Corps Warfighting Laboratory (MCWL) Dragon Eye and Dragon Runner and other emerging low cost remote presence technologies and enhances their capabilities to support multiple mission scenarios across all Services, joint operations and homeland security activities. Additionally, a model for transferring DoD-developed

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

technologies will be developed and tested as an integral part of this effort. FY 2005 Accomplishments: Scoped work efforts, negotiated with Joint Robotics Program to ensure effort could fit into Dragon Runner program plans, and began contract negotiation.

FY 2006 Plans: Host seminar for Virginia's universities and companies, begin joint R&D leading to testing.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Technology Mapping:	1.950	2.000	0.000

These funds are used to broaden DoD technology transfer management by providing seamless intellectual property (IP) workflow processes based on established benchmarks. This effort will fully integrate IP docketing, management, and advertising. Measures of success will be facilitation of 15 Cooperative Research and Development Agreements/Patent License Agreements and a direct connection to facilitating 10 other partnerships between DoD and the private sector. FY 2005 Accomplishments: Completed "mirror" websites for Army, Air Force, and DoD. Provided initial application for patent and lab capability searches and for technology needs "push" to private industry.

FY 2006 Plans: Continue with application development, link with DTIC for database, finalize application for patent management (using IPMIS data), and establish 5 partnerships.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD -- Environmental Bioterrorism Detection:	1.000	0.000	0.000

These funds are to develop an Environmental Bioterrorism Detection Program which establishes a wildlife disease-monitoring network to collect and analyze near real-time clinical data from wildlife hospitals, wildlife rehabilitation organizations, veterinarians and individuals. The network will be coupled to the DoD/DHS network currently being developed for humans to provide a biosurveillance tripwire system at extremely low additional cost. This effort will design a way to transfer DoD-developed medical technology to the commercial market as a way to jointly pursue common objectives. FY 2005 Accomplishments: Scoped work efforts, negotiated with AFRL Information Directorate to ensure effort could fit into information technology program plans, and began contract negotiation.

FY 2006 Plans: Host seminar for Virginia's universities and companies, begin joint R&D leading to testing.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CONGRESSIONAL ADD - Springboard:	0.000	7.750	0.000

The Springboard resources are being evaluated for consideration in supporting potential Techlink activity for the Alaskan technology venture efforts initiated in FY 2004. If it is determined this funding can not be justified in part or whole for the explicit intent of Congress, DoD will request that the congressional committees approve the redirection of the funds to an appropriate program element under the "prior approval" process established for congressional interest line-items.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 3	**0603942D8Z - Defense Technology Link (TechLink)**	**P942**

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Labs				
	Air Force Research Laboratory	WPAFB, OH	Support continueing and new efforts in the TechLink program.	03 MAR 2005

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 3	**0605160D8Z - Counterproliferation Support**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	11.651	0.000	0.000	0.000	0.000	0.000	0.000
0605160D8Z Counter Proliferation Support	11.651	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: (U) Effective October 1, 2005, funding for this program will move from PE 0605160D8Z (Counterproliferation Support) Budget Activity 3, to PE 0605161D8Z (Nuclear Matters-Physical Security) in Budget Activity 6. The purpose of the Counterproliferation Support program, commonly called Nuclear Matters, is to sustain the U.S. nuclear deterrent posture. 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. 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 manage international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security. In fiscal year 2004, this program incorporated additional responsibility for policy development and implementation, and operations and oversight of nuclear weapons physical security and Personnel Reliability Programs for the protection of tactical, fixed and nuclear weapons systems, DoD personnel and DoD facilities.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	11.813	0.000	0.000
Current BES/President's Budget (FY 2007)	11.651	0.000	0.000
Total Adjustments	-0.162	0.000	0.000
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	0.162		
Other			

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE **0605160D8Z - Counterproliferation Support**

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604648D8Z - Joint Capability Technology Demonstration (JCTD)**	**P649**

RDT&E BA 3 line # 44									
Joint Capability Technology Demonstration (JCTD) RDT&E BA3 Line#36	0.000	34.443	35.553	35.590	35.624	35.613	35.576	0.000	212.399
Defense Acquisition Executive (JCTD Pilot Program) RDT&E BA5 Line#99	0.000	0.985	6.015	6.016	6.017	6.017	6.016	0.000	31.066
JCTD Procurement (OSD Major Equipment: PE 0902198D8Z)	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment: Other Program Funding Summary: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined in the table above. Refer to the specific Budget Exhibit for more details on each funding line.

D. Acquisition Strategy Only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in this program element.

E. Major Performers Not Applicable.

F. ACTD Tables:

FY 2006 ACTDs	FY 2005	FY 2006	FY 2007
Urban Recon (UR)	0.000	2.946	0.000

FY 2007 ACTDs	FY 2005	FY 2006	FY 2007
Future Transition Selections (NCCT), (ATOS), (JDSR)	0.000	0.000	3.047

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0604648D8Z - Joint Capability Technology Demonstration (JCTD)

PROJECT
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
JCTD			0	0		2946	3-4Q	3047	2-4Q	0	0	0
Subtotal:			0	0		2946		3047		0	0	0

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**	**0**		**2946**		**3047**		**0**	**0**	**0**

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604787D8Z - Joint Systems Integration Command**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	0.000	20.755	19.967	20.226	20.669	21.082
P787	Joint Systems Integration Command	0.000	0.000	20.755	19.967	20.226	20.669	21.082

A. Mission Description and Budget Item Justification: The Joint Systems Integration Command (JSIC) is the U.S. Joint Forces Command (USJFCOM) and Chairman, Joint Chiefs of Staff (CJCS) capability for warfighter exploration, prototyping, and evaluation of C2 and C4ISR capabilities. The Command provides the Combatant Commands, at the Joint Force Headquarters level, with a laboratory and assessment environment for the warfighter and technologist. This provides near-term joint operational capabilities and, within a Joint Command and Control (JC2) environment with the Interoperability Technology Demonstration Center (ITDC), demonstrates the joint operational, systems of systems, technical, software, and procedural interoperability of new systems and programs prior to further progress within the acquisition system. JSIC serves as the technical analysis and assessment activity for the Joint Staff capability driven requirements process by determining system "value-added", prior to introduction to the Combatant Commanders and in advance of system fielding in operational environments. JSIC also provides a joint interoperability compliance activity for the milestone decision authorities/program managers, e.g., Joint Battle Management Command and Control (JBMC2) Board of Directors, that ensures that selected acquisition systems and programs are fully interoperable PRIOR to being fielded. The intent is for the JSIC to be a forcing function for interoperable joint solutions and 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. The mission assignment of the JSIC is to provide for the fielding of warfighter C2 systems through rapid systems prototyping and technical and operational evaluations using laboratory environments and field venues joining the technologists and the operational warfighter to meet the validated needs.

The Joint Systems Integration Command (JSIC) is the U. S. Joint Forces Command's (JFCOM) facility for warfighter exploration and assessment of C4ISR capabilities. The mission of the JSIC is to prototype and to operationally assess current and emerging technology to address the joint warfighters' needs. The Command provides the Combatant Commands with near-term solutions that address C4ISR problems at the Joint Force Headquarters level.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	20.755
Total Adjustments	0.000	0.000	20.755
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			20.755

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604787D8Z - Joint Systems Integration Command**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: Performance of Joint Systems Integration Command systems is measured by successful delivery of system solutions to Combatant Commands by required delivery dates.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604787D8Z - Joint Systems Integration Command**	**P787**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P787	Joint Systems Integration Command	0.000	0.000	20.755	19.967	20.226	20.669	21.082

A. Mission Description and Project Justification: The Joint Systems Integration Command (JSIC) is the U.S. Joint Forces Command (USJFCOM) and Chairman, Joint Chiefs of Staff (CJCS) capability for warfighter exploration, prototyping, and evaluation of C2 and C4ISR capabilities. The Command provides the Combatant Commands, at the Joint Force Headquarters level, with a laboratory and assessment environment for the warfighter and technologist. This provides near-term joint operational capabilities and, within a Joint Command and Control (JC2) environment with the Interoperability Technology Demonstration Center (ITDC), demonstrates the joint operational, systems of systems, technical, software, and procedural interoperability of new systems and programs prior to further progress within the acquisition system. JSIC serves as the technical analysis and assessment activity for the Joint Staff capability driven requirements process by determining system "value-added", prior to introduction to the Combatant Commanders and in advance of system fielding in operational environments. JSIC also provides a joint interoperability compliance activity for the milestone decision authorities/program managers, e.g., Joint Battle Management Command and Control (JBMC2) Board of Directors, that ensures that selected acquisition systems and programs are fully interoperable PRIOR to being fielded. The intent is for the JSIC to be a forcing function for interoperable joint solutions and 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. The mission assignment of the JSIC is to provide for the fielding of warfighter C2 systems through rapid systems prototyping and technical and operational evaluations using laboratory environments and field venues joining the technologists and the operational warfighter to meet the validated needs.

The Joint Systems Integration Command (JSIC) is the U. S. Joint Forces Command's (JFCOM) facility for warfighter exploration and assessment of C4ISR capabilities. The mission of the JSIC is to prototype and to operationally assess current and emerging technology to address the joint warfighters' needs. The Command provides the Combatant Commands with near-term solutions that address C4ISR problems at the Joint Force Headquarters level.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Interoperability Technology Demonstration Center (ITDC)	0.000	0.000	12.505

FY 2007 Plan:
JSIC will demonstrate the five categories of operational, systems of systems, technical, software, and procedural interoperability of selected new programs or systems prior to further progress within the acquisition system. The Center will provide interoperability demonstrations of selected (configuration controlled) early capability implementations in coordination with the milestone decision authorities and joint program office. Major projects for FY 2007 include: JBMC2 JT&A JCAS JMT events, planning for the JBMC2 JT&A of the Joint Force Command and Control JMT, and execution of interoperability demonstrations on JC2 prototypes for DISA, and long-range planning for JSBA-08.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Advanced Systems Prototyping	0.000	0.000	2.900

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604787D8Z - Joint Systems Integration Command**	**P787**

FY 2007 Plan:
JSIC will build, test, and deliver operational prototypes that solve near-term capability gaps identified by one of several possible sources. Advanced Systems Prototyping will use organic laboratory resources, equipment, and technical personnel to perform these functions integrating external providers' technologies as necessary. Continue development of Wireless for the Warfighter prototype incorporating 802.16 technology.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
CCs Requirements Analysis and Capability Assessments	0.000	0.000	2.900

FY 2007 Plan:
Continue to analyze near-term requirements from all Combatant Commanders, identify current emerging or mature technology available to address these requirements, and perform comprehensive assessment for joint maturity and warfighter utility on legacy and transformational projects. JSIC projects are nominated to meet Combatant Commanders and Joint Force transformational requirements for the fiscal year.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
DOTMLP-F Transformation Change Package (TCP) Recommendations	0.000	0.000	0.450

FY 2007 Plan:
Continue to provide Doctrine, Organizational, Training, Material, Leadership, Personnel, and Facilities (DOTMLPF) recommendations on fielding strategies for USJFCOM and Joint Staff endorsement. Recommendations are based on results from technology assessments, which address the military utility of proposed solutions and identify relevant Service programs, doctrinal impacts, training implications, personnel requirements, etc. Upon completion of JSBA 06 document TCPs. Anticipate completion of Executive Command and Control (EC2) Block 3 and Command and Control On-the-Move (C2OTM) efforts. Develop TCP for Wireless for the Warfighter (W4W) prototype.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Concept Development and Experimentation Support	0.000	0.000	0.500

FY 2007 Plan:
JSIC will assess Warfighter feedback and measures of effectiveness from Deployed Joint Command and Control System in an operational environment six months post - IOC to enable improvements in system implementation and operational concept. Continue experimentation and prototyping laboratory support for Standing Joint Force Headquarters, Joint National Training Capability and Joint Experimentation events.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Federated Joint C2 Laboratories (FJC2L)	0.000	0.000	1.500

FY 2007 Plan:
The Federated Joint C2 Laboratories (FJC2L) is a voluntary consortium sponsored by the JSIC that leverages the capabilities of the Service Battle Labs, Systems Engineering Commands, RDT&E Labs and other aligned Agencies to promote near-term Joint C2 solutions for the Joint Warfighter based on operational needs/requirements. The JSIC will continue to provide support by aggressively engaging the Services in a collaborative effort to bring joint solutions through prototyping, interoperability demonstrations and capability assessments. The FJC2L will support the following JSIC projects: Command & Control On-the-Move (C2OTM) transition, Wireless for the Warfighter (W4W), collaboration with Army MBCOTM and USMC CONDOR PM's, USJFCOM (JDPO) Joint Force Projection ACTD LOE Spirals & final venue, Tactical Communications Systems (TACOMS) prototyping, engagements and the JSIC project development process.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0604787D8Z - Joint Systems Integration Command**	PROJECT **P787**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604828D8Z - Joint Fires Integration & Interoperability**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	0.000	16.782	17.103	17.408	17.767	18.068
P857	Joint Fires Integration & Interoperability	0.000	0.000	16.782	17.103	17.408	17.767	18.068

A. Mission Description and Budget Item Justification: JFIIT conducts assessments and evaluations of joint fires and combat identification (CID) capabilities to reduce the risk of fratricide and other friendly fire incidents. These events support the U.S. JFCOM mission of joint concept development and experimentation as directed in the Secretary of Defense's (SECDEF's) Strategic Planning Guidance. JFIIT events are also an integral part of fulfilling JFCOM's responsibility outlined in the SECDEF's Transformation Planning Guidance to measure transformation progress through experimentation and evaluation of findings. Capabilities assessments and evaluations of joint fires and CID during these evaluations are conducted in the surface-to-surface, air-to-surface, surface-to-air, and air-to-air combat mission areas. These areas may be evaluated at a single exercise or at several venues during the year. Venue selection and evaluation of a specific mission area are dependent on force availability. Evaluation of each mission area may require instrumentation of all participants influencing execution of missions within that mission area. Participants, both Blue Forces and Opposing Forces (OPFOR) including aircraft, ships and land based assets to include individual soldiers and Marines, may be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real-time data collection and subsequent detailed analysis. This analysis is required to support findings and recommendations that provide solutions to Combatant Commander's identified joint fires and CID deficiencies. Contractor support is required for instrumentation installation and operation as well as follow-on analysis of data. A realistic OPFOR will enhance each mission area to generate valid CID scenarios and joint fires capabilities assessments. This OPFOR consisting of ground, air and naval forces will be realistic OPFOR equipment whenever practical and can be leased and transported from their home base to the various exercise venues. JFIIT involvement in irregular warfare is on the increase due to mission support.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	16.782
Total Adjustments	0.000	0.000	16.782
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			16.782

JFIIT conducts assessments and evaluations of joint fires and combat identification (CID) capabilities to reduce the risk of fratricide and other friendly fire incidents. These events support the U.S. JFCOM mission of joint concept development and experimentation as directed in the Secretary of Defense's (SECDEF's) Strategic Planning Guidance. JFIIT events are also an integral part of fulfilling JFCOM's responsibility outlined in the SECDEF's Transformation Planning Guidance to measure transformation progress through experimentation and evaluation

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0604828D8Z - Joint Fires Integration & Interoperability**

of findings. Capabilities assessments and evaluations of joint fires and CID during these evaluations are conducted in the surface-to-surface, air-to-surface, surface-to-air, and air-to-air combat mission areas. These areas may be evaluated at a single exercise or at several venues during the year. Venue selection and evaluation of a specific mission area are dependent on force availability. Evaluation of each mission area may require instrumentation of all participants influencing execution of missions within that mission area. Participants, both Blue Forces and Opposing Forces (OPFOR) including aircraft, ships and land based assets to include individual soldiers and Marines, may be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real-time data collection and subsequent detailed analysis. This analysis is required to support findings and recommendations that provide solutions to Combatant Commander's identified joint fires and CID deficiencies. Contractor support is required for instrumentation installation and operation as well as follow-on analysis of data. A realistic OPFOR will enhance each mission area to generate valid CID scenarios and joint fires capabilities assessments. This OPFOR consisting of ground, air and naval forces will be realistic OPFOR equipment whenever practical and can be leased and transported from their home base to the various exercise venues. JFIIT involvement in irregular warfare is on the increase due to mission support.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: Performance of Joint Fires Integration & Interoperability systems is measured by successful delivery of system solutions to Combatant Commands by required delivery dates.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604828D8Z - Joint Fires Integration & Interoperability**	**P857**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P857	Joint Fires Integration & Interoperability	0.000	0.000	16.782	17.103	17.408	17.767	18.068

A. Mission Description and Project Justification: JFIIT conducts assessments and evaluations of joint fires and combat identification (CID) capabilities to reduce the risk of fratricide and other friendly fire incidents. These events support the U.S. JFCOM mission of joint concept development and experimentation as directed in the Secretary of Defense's (SECDEF's) Strategic Planning Guidance. JFIIT events are also an integral part of fulfilling JFCOM's responsibility outlined in the SECDEF's Transformation Planning Guidance to measure transformation progress through experimentation and evaluation of findings. Capabilities assessments and evaluations of joint fires and CID during these evaluations are conducted in the surface-to-surface, air-to-surface, surface-to-air, and air-to-air combat mission areas. These areas may be evaluated at a single exercise or at several venues during the year. Venue selection and evaluation of a specific mission area are dependent on force availability. Evaluation of each mission area may require instrumentation of all participants influencing execution of missions within that mission area. Participants, both Blue Forces and Opposing Forces (OPFOR) including aircraft, ships and land based assets to include individual soldiers and Marines, may be fully instrumented. Instrumentation provides time, space, position information and shot pairing for real-time data collection and subsequent detailed analysis. This analysis is required to support findings and recommendations that provide solutions to Combatant Commander's identified joint fires and CID deficiencies. Contractor support is required for instrumentation installation and operation as well as follow-on analysis of data. A realistic OPFOR will enhance each mission area to generate valid CID scenarios and joint fires capabilities assessments. This OPFOR consisting of ground, air and naval forces will be realistic OPFOR equipment whenever practical and can be leased and transported from their home base to the various exercise venues. Irregular warfare issues have been identified during these evaluations and will continue to be addressed by JFIIT. This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES (ACD&P) because it includes efforts to evaluate integrated technologies in a realistic operational environment to assess the performance potential of Tactics, Techniques, and Procedures (TTP), weapons systems, and expedites technologies that meet warfighters' needs.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FIELD EVALUATIONS	0.000	0.000	1.000

FY 2007 Plans: JFIIT will conduct Joint Fires and combat identification and interoperability evaluations in conjunction with JFCOM test and evaluation events in the areas of surface-to-surface, air-to-surface, surface-to-air, and air-to-air. Many JFIIT operations will require full instrumentation of all blue force and opposing force participants. All platforms including aircraft, ships at sea, and land based assets will be fully instrumented. JFIIT evaluations will require full instrumentation of ground maneuver mounted and dismounted elements, airborne platforms, ships at sea and an opposing force (OPFOR) air and ground force. Instrumentation provides time, space, position information and shot pairing for real time casualty assessment and kill removal and for post-mission and post-evaluation analysis. The data collected from the instrumentation will point to solutions to combat ID deficiencies. In accordance with OSD Director of Force Transformation policy guidance, a realistic OPFOR is employed in support of the exercise. JFIIT is also directed by charter to provide support to promising Combat Identification enhancements or joint fires initiatives. Irregular warfare issues have been identified during these evaluations and will continue to be addressed by JFIIT.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
JFIIT SUPPORT	0.000	0.000	0.647

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0604828D8Z - Joint Fires Integration & Interoperability**	**P857**

FY 2007 Plans: A tenant at Eglin AFB, JFIIT will receive base support to include: utilities, cleaning, communications, printing, shipping and vehicles. JFIIT will maintain and upgrade analytical capabilities with software and hardware improvements. Briefings on findings and recommendations will be prepared and made available for presentation to the Joint Staff, the Services and the Combatant Commanders. JFIIT plans to contract for Technical and Acquisition Management Support through a Host Base contract vehicle.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
ANNUAL SUPPORT CONTRACTS	0.000	0.000	14.635

FY 2007 Plans: JFIIT will continue to depend on advisory and support contract manpower for the planning, execution, analysis and reporting for joint fires and combat identification capabilities assessments, findings and recommendations to assist in developing solutions to prevent future fratricide during real world joint combat operations. The avenues for such may consist of National Training Center, Weapons Tactics Instruction, Joint Readiness Training Center and various other events

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
TRAVEL AND CONFERENCES	0.000	0.000	0.500

FY 2007 Plans: JFIIT will host and attend numerous planning conferences and site visits in preparation for National Training Center, Weapons Tactics Instruction, Joint Readiness Training Center and various other events. Additionally, JFIIT will provide Subject Matter Experts to various forums.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	24.429	25.289	26.030	25.563	26.075	26.641
P017	Reduction in Total Ownership Cost Projects	0.000	24.429	25.289	26.030	25.563	26.075	26.641

A. Mission Description and Budget Item Justification: The USD(AT&L)-defined mission for the Reduction in Total Ownership Cost (R-TOC) program is the reduction of ownership costs for defense systems. The R-TOC program provides funding for initiatives that will:
1. increase the reliability, maintainability, supportability and thus increase readiness of new or existing defense systems;
2. reduce logistics footprint; and
3. generate future cost reductions in total ownership cost.

These individual initiatives are complete efforts within themselves that yield complete redesigns that the Services are committed to put into production and operation. The initiatives optimize cost avoidance, ultimately reducing the operating and support costs for systems.

The USD(AT&L) has set an FY 2010 R-TOC goal of reducing the total defense systems inflation increase in Operations and Support (O&S) cost by 30 percent between FY 2004 and FY 2010. This Program Element (PE) provides a major portion of the program funding to achieve this goal. The successful demonstration of the R-TOC program initiatives should stimulate additional initiatives by the Services to achieve even greater cost avoidances.

The OSD R-TOC program lead is OUSD(AT&L) Defense Systems, Systems Engineering, Deputy Director for Enterprise Development. This office is supported by the Institute for Defense Analyses (IDA). Individual R-TOC Project Management rests with the Services and their Project Managers. Each Service has an active R-TOC Point of Contact (POC) for the initial interface between OSD and the R-TOC Project Managers.

Some of the FY 2006 projects require two years of funding through FY 2007. The average Return on Investment (ROI) for these projects (based on discounted cash flow calculations) is approximately 16.7:1 with $660.000 million in cost avoidance across the FYDP. The ROI is approximately 78.7:1 with $3.700 billion in cost avoidances across the life cycle of the affected systems. These cost avoidances will be lost without the requested funding in FY 2007, which is needed to complete the projects begun with FY 2006 funding. The average Return on Investment (ROI) for these FY 2007 new start projects (based on discounted cash flow calculations) is approximately 5.5:1 with $106.000 million in cost avoidance across the FYDP (new start FY 2007 investments of $13.240 million). The ROI is approximately 26.3:1 with $634.000 million in cost avoidances across the life cycle of the affected systems.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	24.824	24.896
Current BES/President's Budget (FY 2007)	0.000	24.429	25.289
Total Adjustments	0.000	-0.395	0.393
Congressional Program Reductions			

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**

Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other		-0.395	0.393

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy There is an annual USD(AT&L) call for proposed project plans in December. Projects are submitted by the Services annually in January. The project plan format is provided with the call for submission of Service projects. Each project plan contains:

1. problem statement,
2. impact statement,
3. technical description,
4. risk analysis,
5. proposed phases,
6. expected deliverables and results or outcomes,
7. program management,
8. cost/benefit analysis,
9. schedule, and
10. implementation plan.

The project evaluation criteria are also provided as part of the call for use by the Services in arriving at their prioritized project list. There are eleven categories for evaluation:

Objective measures:

1. ROI (Future Years Defense Program), Score 10, 5, or 3 points, respectively for high (>10:1), medium (between 10:1 and 5:1), low (<5:1)
2. ROI (System's or Program's Life Cycle), Score 10, 5, or 3 points, respectively for high (>20:1), medium (between 20:1 and 10:1), low (<10:1)
3. Service ranking, Score 10, 5, 1 points, respectively for top 1/3, middle 1/3, and bottom 1/3
4. crossover year (return greater than investment), Score 5, 3, 1 points, respectively for <5 years, 3 years, >3 years
5. payback year (total return greater than total investment), Score 5, 3, 1 points, respectively for <4 years, 4 years, >4 years

Subjective measures:

1. operational readiness improvement, 10, 5, 1 points, respectively strong, medium, weak discussion of operational readiness improvements
2. benefits credibility, 5, 3, 1 points, respectively strong, medium, weak discussion of projected benefits
3. technology maturity, 3, 2, 1 points, respectively strong, medium, weak discussion of technology maturity

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 4	PE NUMBER AND TITLE **0605017D8Z - Reduction In Total Ownership Cost**

4. schedule confidence, 3, 2, 1 points, respectively strong, medium, weak discussion of schedule confidence
5. budget confidence, 3, 2, 1 points, respectively strong, medium, weak discussion of budget confidence
6. management support, 3, 2, 1 points, respectively strong, medium, weak discussion of management support

The Services receive project plans and make a Service priority ranking based on detailed analysis of each proposed initiative against the eleven evaluation criteria. This priority ranking is sent to the OSD lead. Upon acceptance and approval of the projects by OSD, the projects are briefed to the R-TOC Forum and Congressional staff, as required. Funding is distributed equally between the Services based on priority and the evaluation process results.

Upon final funding approval, MIPRs are prepared by OSD to transfer individual project funding to the appropriate funding sites. These funding sites 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 R-TOC Initiative through the OSD lead office.

A quarterly project report (QPR) format has been defined, approved by the Services, and is required for each funded project. These reports require:

1. a statement of progress,
2. outstanding issues,
3. upcoming events,
4. schedule status,
5. current investment status, and
6. current estimate of savings or cost avoidance.

These QPRs are submitted to the OSD R-TOC Initiative lead office. OSD analyzes project status, progress and project statistics and informs the Service POCs of any project problems. Projects are also required to report verbally at the quarterly R-TOC Forums, as appropriate.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P017	Reduction in Total Ownership Cost Projects	0.000	24.429	25.289	26.030	25.563	26.075	26.641

A. Mission Description and Project Justification: The USD(AT&L)-defined mission for the Reduction in Total Ownership Cost (R-TOC) program is the reduction of ownership costs for defense systems. The R-TOC program provides funding for initiatives that will:
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B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.510	0.000
60mm Celluloid MICs			

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	2.141	0.000
CGA Development			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	1.350	0.000
HIMARS UFCS			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.466	0.000
Elim. Wirebound Box			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.950	0.000
UV for RDX			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.050	0.000
Replace AL layer			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.250	0.000
Small Arms Overhaul			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	2.000	0.000
Bradley Transmission			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.557	0.000

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Paladin Rammer Assembly

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.000	2.350
H-60 Tailcone			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.000	2.500
Guardrail Low Band Antenna			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.000	0.681
Lightweight Composite Container			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.000	1.992
REMBASS II Stand Alone Sensor			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.000	0.450
Replace PDU			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Army	0.000	0.000	0.325
ANS-157 Interface Software Loader			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.400	0.000
Fuel Management Control Panel			

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
	0.000	0.600	0.000
Midrange FLIR			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.782	0.000
H-60 Antenna Gaskets			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.290	0.000
V-22 EAPS Blower Seal			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.096	0.000
Whitehouse Duct RAMEC			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.204	0.000
Forward Cooling Turbine			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.196	0.000
Hydraulics Reservoir Endcap			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.600	0.000
V-22 COANDA Tube			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.104	0.036

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

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APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Rudder Actuator Hydraulic Seals

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.116	0.042

Stabilizer Actuator Hydraulic Seals

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.425	0.075

Ship's Material Condition Model

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.363	0.450

T-1 Fuel System Upgrade

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.500	0.150

EFV Aft Hydraulic Manifold

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	1.151	1.949

F/A-18 BIT Maturation

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.112	0.037

AFCS Actuator

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.312	0.046

Flaperon Actuator Seals

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.480	0.480
Self Cleaning Oil Filter			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.569	0.055
Digital Electronic Control Unit (DECU)			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.315	0.315
PSS II Mechanical Seals TPI Digitization PALs and Power Supply CRALTS H-1 Main Rotor Cuff Closures DRT Model HV Module Repairability CVN Magnetic Coupling			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.660	0.400
Ceramic Bearings			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	0.100
H-1 UGHW Cost Reduction			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	0.150
TPI Digitization			

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	0.427
PALs and Power Suppy			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	0.450
CRALTS			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	0.170
H-1 Main Rotor Cuff Closures			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	0.180
DRT Model			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	1.211
HV Module Repairability			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy	0.000	0.000	1.576
CVN Magnetic Coupling			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Force	0.000	1.270	1.130
Engine Component Repair			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Force	0.000	3.144	3.781

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 4	**0605017D8Z - Reduction In Total Ownership Cost**	**P017**

Engine Reliability Centered Maintenance (RCM)

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Force	0.000	0.623	0.200
MILSTAR Radome Replacement			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Force	0.000	1.450	2.100
Fuel System Icing			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Force	0.000	1.393	0.807
Aircrew Bladder Relief			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Force	0.000	0.000	0.674
F101-GE-102			

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 4

PE NUMBER AND TITLE
0605017D8Z - Reduction In Total Ownership Cost

PROJECT
P017

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**									

Exhibit R-2, RDT&E Budget Item Justification							Date: February 2006	
Appropriation/Budget Activity RDT&E Defense Wide, BA 4				R-1 Item Nomenclature: Joint Electromagnetic Technology (JET) Program PE 0303191D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		29.905	16.383	3.672	3.598	3.627	4.095	4.185

A. Mission Description and Budget Item Justification:

The JET Program supports the Defense Community in general with a particular emphasis on the requirements of Special Forces and Intelligence. Details of the program are classified. This program is funded under Budget Activity 4, Demonstration and Validation.

Program Accomplishments and Plans:

FY 2005 Accomplishments: ($29.905 million)

- Program planning and support.

FY 2006 Plans: ($16.383 million)

- Program planning and support.

FY 2007 Plans: ($3.672 million)

- Program planning and support.

B. **Program Change Summary:** (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	14.925	3.566	3.615
Current President's Budget	29.905	16.383	3.672
Total Adjustments	14.980	12.817	.057
Congressional program reductions			
Congressional rescissions, Inflation Adjustments	-.020	-.201	.057
Congressional increases		13.018	
Reprogrammings			
Transfer			
Supplemental	15.000		

Change Summary Explanation:
FY2005: Supplemental 15.000 million; Atomic Energy -.012 million; WHS reduction -.008 million.
FY 2006: Congressional Increases 13.018 million; FFRDC -.020 million; Economic Assumptions -.055 million; Rescission -.126 million.
FY 2007: Non-Pay Purchase Inflation .057 million.

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: N/A

E. Performance Metrics:

- Numbers of operational field demonstrations.
- Numbers of false-positive results.
- Successful technology transfer to service component.
- Number of service requirements satisfied.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604051D8Z - Defense Acquisition Challenge Program (DACP)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		24.727	33.533	29.500	29.855	31.055	31.758	32.102
P051	Defense Acquisition Challenge Program (DACP)	24.727	33.533	29.500	29.855	31.055	31.758	32.102

A. Mission Description and Budget Item Justification: Authorized by Title 10, Section 2395b, the Defense Acquisition Challenge (DAC) Program provides increased opportunities to insert innovative and cost-saving technologies into acquisition programs of the Department of Defense. 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 component, subcomponent, or system level.

In FY 2003/2004, DAC was a sub element in the Quick Reaction Special Projects Program (Program Element 0603826D8Z), which had three separate efforts: Defense Acquisition Challenge (DAC) Program, Technology Transition Initiative (TTI) and Quick Reaction Special Projects (QRSP). In FY 2005, the Defense Appropriation Act directed the Department of Defense to transfer the Defense Acquisition Challenge (DAC) Program from Budget Activity 3 to Budget Activity 5.

As a result of the DAC Program's rapid establishment in mid-FY 2003, the Comparative Testing Office and its Foreign Comparative Testing (FCT) Program were selected by OUSD(AT&L) as the infrastructure to support the DAC pilot business model. Currently, U.S. Special Forces Command, U.S. Army, U.S. Marine Corp, and the Navy's Naval Sea Systems Command, Naval Air Systems Command, and Space and Naval Warfare Systems Command are supporting DAC with the current FCT service infrastructure. The U.S. Air Force is supporting DAC through Secretary of the Air Force for Acquisition (SAF/AQ).

Proposal Solicitation Process:

The DAC process is a two-phased annual process. During Phase I, interested parties, within and outside the DOD, are invited through a Broad Area Announcement (BAA) to submit summary proposals. Summary proposals are evaluated and prioritized based on merit and their potential to benefit a DoD Program of Record (POR). In Phase II, candidate summary proposals are matched to the POR that has the potential to benefit from the proposed technology. POR Program managers, in collaboration with the weapon prime where applicable, evaluate and either "accept" or "reject" the proposed technology. A "reject" is defined as the POR determination that the technology cannot benefit the POR. An "accept" is defined as the POR determination the technology has potential benefit and wishes to compete for funding. The POR then develops a final proposal to compete for DAC funding to test and evaluate the proposed technology. The final proposal contains a brief description of the issue and how the proposed technology resolves the issue, test and evaluation strategy, and procurement and transition strategy if the technology meets the PORs requirements. Final proposals are submitted into OSD DAC by the POR where the proposals are evaluated and prioritized, then selected for funding by the OSD DAC Program Manager.

The DAC pilot business model leverages off the successful FCT personnel and business processes, where possible, except OSD DAC annually issues a BAA inviting interested parties to submit summary proposals.

Results of FY 2005 BAA Solicitation

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604051D8Z - Defense Acquisition Challenge Program (DACP)**

More than 580 summary proposals were submitted by industry and government representatives in response to the February 2004 BAA. Approximately 200 summary proposals were rejected during the administrative review for lack of proper documentation. Admin Review was completed in mid-July. Proposal Match to Program of Record was completed in September 2004. Final selection of 15 FY 2005 DAC new start projects was made in January 2005.

Results of FY 2006 BAA solicitation

Approximately 450 draft proposals addressing key technology thrust areas were submitted by industry and government representatives in response to the January 2005 BAA. Of the approximately 450 draft proposals submitted, approximately 400 summary proposals were rejected during the administrative and program manager review. 53 final proposals were submitted for consideration for FY 2006 funding. Final selection of FY 2006 DAC new start projects was determined in September 2005. Final selection of 18 FY 2006 DAC new start projects was made in January 2006.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	25.116	28.975	29.238
Current BES/President's Budget (FY 2007)	24.727	33.533	29.500
Total Adjustments	-0.389	4.558	0.262
Congressional Program Reductions		-0.542	
Congressional Rescissions			
Congressional Increases		5.100	
Reprogrammings			
SBIR/STTR Transfer	-0.333		
Other	-0.056		0.262

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604051D8Z - Defense Acquisition Challenge Program (DACP)**	**P051**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P051	Defense Acquisition Challenge Program (DACP)	24.727	33.533	29.500	29.855	31.055	31.758	32.102

A. Mission Description and Project Justification: Authorized by Title 10, Section 2395b, the Defense Acquisition Challenge (DAC) Program provides increased opportunities to insert innovative and cost-saving technologies into acquisition programs of the Department of Defense. 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 component, subcomponent, or system level.

In FY 2003/2004, DAC was a sub element in the Quick Reaction Special Projects Program (Program Element 0603826D8Z), which had three separate efforts: Defense Acquisition Challenge (DAC) Program, Technology Transition Initiative (TTI) and Quick Reaction Special Projects (QRSP). In FY 2005, the Defense Appropriation Act directed the Department of Defense to transfer the Defense Acquisition Challenge (DAC) Program from Budget Activity 3 to Budget Activity 5.

As a result of the DAC Program's rapid establishment in mid-FY 2003, the Comparative Testing Office and its Foreign Comparative Testing (FCT) Program were selected by OUSD(AT&L) as the infrastructure to support the DAC pilot business model. Currently, U.S. Special Forces Command, U.S. Army, U.S. Marine Corp, and the Navy's Naval Sea Systems Command, Naval Air Systems Command, and Space and Naval Warfare Systems Command are supporting DAC with the current FCT service infrastructure. The U.S. Air Force is supporting DAC through Secretary of the Air Force for Acquisition (SAF/AQ).

Proposal Solicitation Process:

The DAC process is a two-phased annual process. During Phase I, interested parties, within and outside the DOD, are invited through a Broad Area Announcement (BAA) to submit summary proposals. Summary proposals are evaluated and prioritized based on merit and their potential to benefit a DoD Program of Record (POR). In Phase II, candidate summary proposals are matched to the POR that has the potential to benefit from the proposed technology. POR Program managers, in collaboration with the weapon prime where applicable, evaluate and either "accept" or "reject" the proposed technology. A "reject" is defined as the POR determination that the technology cannot benefit the POR. An "accept" is defined as the POR determination the technology has potential benefit and wishes to compete for funding. The POR then develops a final proposal to compete for DAC funding to test and evaluate the proposed technology. The final proposal contains a brief description of the issue and how the proposed technology resolves the issue, test and evaluation strategy, and procurement and transition strategy if the technology meets the PORs requirements. Final proposals are submitted into OSD DAC by the POR where the proposals are evaluated and prioritized, then selected for funding by the OSD DAC Program Manager.

The DAC pilot business model leverages off the successful FCT personnel and business processes, where possible, except OSD DAC annually issues a BAA inviting interested parties to submit summary proposals.

Results of FY 2005 BAA Solicitation

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More than 580 summary proposals were submitted by industry and government representatives in response to the February 2004 BAA. Approximately 200 summary proposals were rejected during the administrative review for lack of proper documentation. Admin Review was completed in mid-July. Proposal Match to Program of Record was completed in September 2004. Final selection of 15 FY 2005 DAC new start projects was made in January 2005.

Results of FY 2006 BAA solicitation

Approximately 450 draft proposals addressing key technology thrust areas were submitted by industry and government representatives in response to the January 2005 BAA. Of the approximately 450 draft proposals submitted, approximately 400 summary proposals were rejected during the administrative and program manager review. 53 final proposals were submitted for consideration for FY 2006 funding. Final selection of FY 2006 DAC new start projects was determined in September 2005. Final selection of 18 FY 2006 DAC new start projects was made in January 2006.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Affordable Net Shape Stiffener-Forming Technology for F/A-18E/F (Navy)	1.766	0.000	0.000

This project is improving the affordability of the US Navy F/A-18E/F Super Hornet Strike Fighter by automation of the forming process for composite hat stiffeners in the airframe structure. Creating a process that reduces the cost of composite stiffening elements also has a potential benefit for future aircraft programs such as J-UCAS where lower cost stiffeners will reduce the cost of skin-stringer construction. Skin-stringer construction is more robust than competing structural solutions (e.g., sandwich construction) and should result in lower O&S costs. Successful execution will result in a RDT&E cost avoidance of $7.500 million by building on technology developed under an OSD/SADBU Challenge program. Implementation into F/A-18E/F production process is planned.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Battery Free Remote Sensing (USSOCOM)	1.004	0.000	0.000

This project is testing and evaluating a solar-based energy storage system for use in Unattended Ground Sensors (UGS). Existing vendor technology will be extended to provide higher output power and improved energy storage in a package more consistent with the stringent size, weight and power requirements necessary for SOF operations. FY 2005 Plans: Conduct project planning. Contract for and receive test articles. Conduct analysis, study and integration. Analyze vendor data. Conduct Phase I Technical Testing. Conduct Phase II Operational Test and User Assessment. Milestone C Decision. Submit DAC Close-out Report. Estimated total cost savings associated with this project exceeds $20.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Composite Twisted Rudder (Navy)	1.506	1.770	0.000

This project will build, qualify and install a ship set of composite rudders on DDG 51 Class Ship to demonstrate improved survivability and reduced acquisition and life cycle cost. FY 2005 Accomplishments: Small-scale laminate characterization performed on reinforcements ultimately selected for construction. Component static & shock test, static load testing conducted to verify the composite rudder's ability to sustain the maximum load defined in the DDG Ship Specification. FY 2006 Plans: Manufacturing Test Article Discussion of Hydrodynamic Design Loading as Applied to FEA. Discussloads on and design of HY-80 structure. Identify the E-glass shear tie stiffeners added to bottom (vertical ties) and front (horizontal ties) of rudder. Discuss FEA Models including fracture model of FRP/Steel joint. Full-scale

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static & fatigue testing, a series of shock tests will be performed on the first article full-scale composite twisted rudder. This testing will be conducted to verify the structural integrity of the composite rudder and the dynamic response analysis. Schedule the full-scale shock test-inspection and vibration (SIDER) testing. Installation for the at sea validation. RDT&E Cost avoidance: $10.000 million; Manufacturing Savings: $5.000 million; Savings in Procurement costs: $5.000 million; Sailaway (Unit) Cost of a single item: $350 thousand.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Enhanced Gunfire Detection System (USSOCOM)	0.110	0.000	0.000

This project is evaluating system enhancements (i.e., addition of sensors and processors) which have the potential to significantly improve the accuracy of the Gunfire Detection System (GDS) and locate a sniper prior to the sniper's first shot. This improved technology will be brought about through the integration of selected sensors (e.g., hyper-spectral imagers, unattended ground sensors, visible micro-sensors, infrared sensors, etc.) in the GDS and through the inclusion of automatic processing software. FY 2005 Accomplishments: Fielding & Deployment Release (F&DR) approved. Successfully integrated a Vehicle GDS with the Kongsberg (Norway) Remote-controlled Weapon System (weapon turret) on a HMMWV in support of the Anti Sniper Vehicle program (sponsored by the Rapid Equipping Force Office) and conducted live-fire testing of the combined system with excellent results. Let a contract modification to procure 32 GDS Vehicle systems for USSOCOM. Project Manager awarded contract for system modification. Complete integration of sensors into the gunfire detection system. Initiate technical testing. FY 2005 Accomplishments: Completed technical testing. Conducted operational testing and user evaluation. Compiled test results and prepared documentation in support of a milestone decision. RDT&E, Operation and Support, and procurement savings are projected in excess of $17.000 million, and accelerates fielding by 3 years.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Enhanced Military Readiness, Safety and Personal Bearing through Treatment of Pseudofolliculitis Barbae (PFB) (Air Force)	1.224	1.481	0.000

This project provides an effective and user-convenient topical treatment for Pseudofolliculitis Barbae (PFB), an inflammatory skin disease that affects warfighter responsiveness and morale and, thus, military readiness. PFB is recognized as a significant dermatologic disease that affects combat readiness, personal safety, unit cohesion, and individual morale in the US military. Primarily affecting those of African descent or Hispanic origin PFB effects up to 33% (400,000) of active duty males. FY 2005 Accomplishments: Contract not awarded by end-FY 2005 due to contractual difficulties and devastation of Keesler AFB by Hurricane Katrina; project has therefore slipped one year with planned project milestones being moved forward accordingly and project management moved to Wilford Hall Hospital, San Antonio. FY 2006 Plans: Determine the clinical safety and effectiveness of the vendor-developed ISW-AP-01 compound by assessing whether it shows improvement in the signs and symptoms of PFB. Skin irritation, sensitization and systemic absorption testing will be performed. Improvement in the signs and symptoms of PFB will also be measured. The safety and efficacy tests will follow the Food and Drug Administration and Wilford Hall medical institutional review board-approved protocol/plan for the topical therapeutic. In addition, product testing will be performed with the ISW-AP-01 compound to determine compatibility and impact on the integrity of the self-contained breathing apparatus seals. $25.000 - 30.000 million in RDT&E cost avoidance.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Enhanced Simulation Capabilities for Testing and Training (Army)	0.618	0.598	0.000

This project applies a client/server architecture that features network quality of service capabilities to the existing Distributed Interactive Simulation (DIS) architecture widely used by legacy simulations throughout the military. This effort will enable the re-use of millions of dollars worth of existing simulations in new warfighter training simulation applications. Currently, however, these simulations cannot be used in large-scale scenarios with real-time requirements. The Conductor platform will enable these large-scale scenarios with real-time requirements simulations and also provide a central integration point with new standards, the central collection of simulation data for analysis and the ability for field units to participate in high quality simulation. FY 2005 Accomplishments: Contract was awarded to Circadence in early July and all funds are obligated. All material has been purchased, and the threat simulations were delivered to the Circadence facility in August. Circadence has begun development of the interface between the existing DIS threat simulations and the Conductor technology platform. FY 2006 Plans: Comparison testing with and without the Conductor platform. Measurements will be taken to report on Throughput, Effective Data Throughput, Network Utilization, and Network Latency. In addition, application-level metrics such as frame rate and responsiveness will be developed to assess the impact on the

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simulation itself. The goal of the testing is to demonstrate a marked improvement in both the utilization of network resources as well as the quantitative measurement of simulation performance. Expect program completion June 2006. The estimated cost savings due to this program are RDT&E cost avoidance $12.000 million, Procurement savings $100.000 million, O&S Life-cycle savings $10.000 million, and Manufacturing savings $5.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Friction Stir Processing (FSP) for Virginia Class Submarines (Navy)	0.662	0.000	0.000

This project is assisting in the transition of a new manufacturing technology into the US Navy's propeller manufacturing infrastructure. FY 2005 Accomplishments: A FSP attachment feasibility study/design contract was awarded to General Tool Company (GT), Cincinnati, OH. The feasibility study was initiated and consisted of a initial kick-off meeting to establish the goals of the study and to identify the logistics of executing this study. GT was supplied with the available information on a large (Danly) N/C machine, which was the targeted equipment for introduction of the FSP process at the Naval Foundry and Propeller Center (NFPC). GT and NFPC agreed to make the equipment available in October to allow GT to conduct the necessary testing on the machine's axes motors and controls.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
GBS Transponder Throughput Improvement Using DVB-S2 (Air Force)	0.800	0.142	0.000

This project will dramatically reduce--by 30%, or about $58.000 million annually--the cost of transponders required to support the Air Force's Global Broadcast System (GBS) waveform by transitioning from the current air interface to a new, more efficient commercial standard. It will also provide advanced services such as a High Definition video and broadband data. Fewer transponders will be required to satisfy the mission requirements, thereby reducing the number of commercial Teleport sites needed. FY 2005 Accomplishments: Contract awarded 17 Aug 05. Satisfactorily completed Preliminary Design Review 7 Oct 05 and Critical Design Review 18 Nov 05. Completed the final version of the DVB-S2 for Global Broadcast Service (GBS2) Project - Functional Requirements. FY 2006 Plans: Perform satellite loop-back testing using Efficient Channel Coding (ECC) supplied DVB-S2 prototype equipment. Perform broadcasting of data from the Norfolk uplink facility to GBS user terminals in the field. Effort includes ECC providing an operational DVB-S2 transmitter for the Norfolk uplink facility and DVB-S2 receivers for the existing GBS terminals. The final GBS demonstration will show the operational effectiveness and suitability of the DVB-S2 waveform for actual field operations. Test will be conducted as part of field trials to furnish normal data products (digital video, imagery, FTP traffic, and Web traffic) and to perform adaptive modulation and coding operations for different terminal aperture sizes. Subsequently, final reports and documentation will be completed and this one-year project will be closed. Tangible benefits: Savings of about $58.000 million annually. Intangible benefits: More cohesive and comprehensive situational awareness for the warfighter.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Improved Durability F100 Ceramic Matrix Composite Divergent Seals (Air Force)	0.701	0.335	0.249

This project will significantly reduce the maintenance down-time for F-15 and F-16 aircraft by replacing existing metal components in high heat (hot streak) areas of the F100-PW-229 turbine engine nozzle with greater heat resistant ceramic matrix composite components. This replacement will result in a quantum (estimated to be a six-times) increase in the effective life of high stress components, thereby increasing the availability of combat-ready weapons platforms for USAF pilots. FY 2005 Accomplishments: Contract signed with Pratt & Whitney as a vehicle for directly supporting a live-fly field service evaluation. A field service evaluation test plan was developed and signed by Air Combat Command, Mountain Home AFB, McEntire ANGS, ASC-PRSS/YM, AFRL/ML, and OC-ALC. A field service evaluation is now in progress on McEntire ANGS F-16s. A site visit took place at Mountain Home AFB in preparation for that unit's field service evaluation activities. Snecma, the seals manufacturer, provided eight seals to the program free of charge in 2004 to allow for an early start of the flight program. Five of these seals were delivered to McEntire ANGS. A subcontract from Pratt & Whitney to Snecma for purchase of 20 divergent seals for flying at Mountain Home AFB was sent to Snecma on 3 Aug 05. FY 2006 Plans: Continue field service evaluation flight test of divergent seals at McEntire ANGS and Mountain Home AFB. Evaluate properties of a single divergent seal after it has accumulated adequate flying hours. Efforts to qualify Snecma as an approved vendor for Pratt & Whitney will continue. FY 2007 Plans: The field service evaluation flight test program will be completed. Measures of retained strength and properties of flight-tested hardware that reaches 700 total accumulated cycles will be completed. Compilation of test results and document preparation to verify flight durability of hardware will be completed. An engineering change proposal to officially document divergent seals as

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fully flight certified will be prepared. Tangible benefits: Approximately $7.000 million acquisition cost savings annually for component replacement. Intangible benefits: Significant decrease in maintenance downtime of critical combat aircraft.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Infrared Thermal Friendly Force Identifier (USSOCOM)	0.166	0.000	0.000

Current means of distinguishing dismounted operators as friend and foe are not sufficient to meet evolving battlefield situations. This project is determining final designs and testing and evaluating a compact lightweight beacon will that allow differentiation of friendly forces versus foe when viewed through current infrared and thermal sensors. The beacon will be programmable and adjustable for use in multiple situations and easily attachable to various types of existing Special Operations Forces (SOF) individual equipment. FY 2005 Plans: Complete technical review and down-select. Acquire test articles for Phase I technical and safety testing. Perform Phase I final test and design. Acquire test articles for Phase II testing. Begin Phase II Technical and Operational Tests. RDT&E, O&S, and procurement savings are projected at $3.500 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integrated Defensive Countermeasures Alternative (Air Force)	0.397	0.000	0.000

This project will provide aircrews and aircraft a more effective countermeasure to and enhanced protection from enemy radar-guided missiles. USAF fighter aircraft employ a towed decoy that is deployed from and trails the aircraft and emits a radar signature that will spoof an inflight radar-guided missile. A fiber optic alternative towline, the centerpiece of this project, has shown superior performance in the laboratory and requires engineering efforts to qualify it for integration and testing with the existing towed decoy. FY 2005 Accomplishments: System integration noise and unanticipated control signal problems were successfully resolved. Final integration testing followed at the F-18 Integrated Defensive Electronic Countermeasures facility and was successfully completed at Pt. Mugu. Subsequently the project successfully completed two milestones: the hardware Critical Design Review (CDR) was accomplished and the AFOTD software Preliminary Design Review (PDR) was accomplished. Thermal hardening of the fiber optic towline saw significant improvement. Two new towline designs were investigated. One was selected and successfully passed ground testing and surrogate aircraft flight testing. This new towline design is being incorporated into the mass models and electronic AFOTDs being delivered and will go through flight testing in FY 2006. RDT&E cost avoidance/procurement costs: Estimated $100.00 milion. Intangible benefits: Increased protection and survivability for USAF aircrews and aircraft.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Low Frequency Synthetic Instrument Measurement System (Air Force)	0.307	0.245	0.000

This project will expedite repair of critical aircraft avionics and electronic attack jamming pods, measurably contributing to aircrew and aircraft survivability and weapons platform availability. This single synthetic instrument leverages the power of the latest technologies in Digital Signal Processing (DSP) techniques and simplified VXI-based hardware to measure electrical signals more accurately than the many special purpose measurement instruments it replaces. The reduction in hardware resulting from the replacement of traditional measurement instruments with a single DSP-based system will increase the reliability of the test equipment and reduce the maintenance and calibration downtime of test equipment. FY 2005 Accomplishments: Successfully transition of SIMSS-LF instrumentation into full-scale development. Electronic Attack Improved Avionics Intermediate Shop (EA-IAIS), VXI Mobile IAIS (VXI M-IAIS), and production rackmount IAIS (R-IAIS) in place at Lockheed Martin Simulation, Training and Support (LM STS) for capabilities functional testing on the AN/ALQ-131 electronic attack pod and F-16 avionics line replaceable units. Initiated technical testing. Initial test results have met or exeeceded expectations. FY 2006 Plans: Complete technical testing to include completion of data gathering, analysis, and tabulation; test and evaluation report, signal measurement demonstration; and operational verification: Conduct operational testing. Incorporate SIMSS-LF into EA-IAIS and R-IAIS production baseline. RDT&E cost avoidance: $3.750 million; Procurement cost savings: $6.500 million; Operations and support life cycle savings: $5.000 million. Intangible benefits: Increased test station availability increases aircraft availability and reduces station enhancement costs necessitated when avionics configurations change. Timely and accurate diagnosis of electronic attack pod failures contribute to aircrew and aircraft survival.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Nickel Boron Coating to Extend the Service Life of Diesel Engine and Drive Assembly (USSOCOM)	1.270	0.000	0.000

This project is evaluating a process for Nickel Boron Coating to extend the service life of diesel engines and drive assembly. A lightweight high power density diesel engine is a highly desirable replacement for the current gasoline engines. Coating the propulsion system components with Nickel Boron is an effective way to increase the power to weight ratio and extend the propulsion systems lifecycle. This project will imrove engine performance by 8-10%, increase maintenance intervals by 150% and service life by 125%, and save over $3.000 million in RDT&E cost avoidance. FY 2005 Plans: Completed test planning. Contract awarded and received test articles. Begin Phase I test of uncoated test articles.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Miniature - Controlled Receive Pattern Antenna (MCRPA) (Navy)	0.183	0.000	0.000

The MCRPA is providing anti-jamming (A/J) GPS capability to the Navy's platforms that have size and weight restrictions for antenna systems, such as the UH-1Y and AH-1Z helicopters and submarines. The small footprint, integrated antenna electronics, light weight, and low cost of MCRPA all make it a viable solution for the size and weight restrictive platforms than the only other production CRPA available to the Navy today, the GAS-1. FY 2005 Accomplishments: The M-CRPA Antenna Electronics specification, Interface Control Drawing, and Outline & Mounting drawing were completed. The detailed designs for the antenna, nulling electronics, control box, and mechanical interface and packaging were completed. Initiated measurements on the first prototype antenna, ground plane and H-1 bracket assembly. Vibration tests were conducted on antenna assembly with a dummy AE unit to verify the bracket design. Testing has been conducted on the AE power and control card.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Miniature Day/Night Sight Integration (MDNS) (USSOCOM)	0.739	0.000	0.000

The Miniature Day/Night Sight (MDNS) program enhances Special Operations Forces (SOF) weapons capabilities for carbines, rifles and machine guns. It includes weapons components/sub-systems for fire control, target acquisition, and aiming. This project will evaluate the improvement, miniaturization, ruggedization and integration of numerous existing/improved components/ sub-systems to provide one fully integrated, modular and MDNS system for SOF weapons. FY 2005 Accomplishments: Received project funding. Contracted for and received test articles. Source selection completed. User assessment conducted. Estimated total cost savings associated with this project is $14.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Navy Close In Weapons System (CIWS) (Navy)	1.876	0.000	0.000

This effort will address several critical issues facing the power amplifier section of the Close-in Weapon System. This effort will convert the power amplifier section to a Spraycool solution to dissipate heat more efficiently and improve reliability. The improved reliability will also allow a greater range of choices for follow-on commercial-off-the-shelf circuit card replacement. Spray cooling is a very efficient process that enables the use of high density Circuit Card Assemblies (CCAs). It also provides other important attributes contributing to harsh environment survivability. FY 2005 Accomplishments: Technical interchange meeting and agreed to the schedule dates and milestones. Finalized the System Requirements Specification for cooling CIWS and concept was developed. RDT&E Cost avoidance: $ 37.000 million Life-Cycle Cost Reduction (~$60.000 million based on reduced failure rates resulting in only 2 technology refresh insertions over the remaining life of the program).

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
On-Aircraft (B2) Laser Additive Repair (LAR) of Titanium (Air Force)	1.887	0.427	0.000

This project will result in significantly greater operational availability of the Air Force's premier stealth bomber. Full mission capability rates of the B-2 Spirit have suffered due to the severe cracking issue

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that currently exists in the aft deck titanium structure. This project will operationalize an on-aircraft repair process that will provide a field repair option that will ensure full B-2 mission capability and avoid the necessity to return aircraft to depot for required maintenance. This program could represent the long-term solution to the aft deck cracking problem which could result in a large savings (~$200.000 million) to the Air Force and DoD. FY 2005 Accomplishments: Developed program requirements document with B-2 Systems Engineering at Northrop-Grumman. Formulated a repair design that does not introduce mechanical or thermal damage to substructure. A controlled process was demonstrated for Titanium 6-4 where maximum pore size found was less than 0.002". A well-defined systems engineering path to system development was also produced. Review by B-2 SPO and AFRL approved continuation of LAR program. FY 2006 Plans: Characterize fatigue life of Titanium 6-2-4-2 alloy LAR deposits for both on and off aircraft applications. Develop B-2 specific process details (e g., demonstrate process for a non-linear repair path and demonstrate remove and repair defect through fastener holes). Design/develop/build prototype repair hardware. Complete demonstration of mobile repair hardware to B-2 requirements. Tangible benefits: Estimated operations and maintenance cost savings of as much as $200.000 million. Intangible benefits: Significantly increased mission availability rates for the Air Force's frontline bomber fleet.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Precision Parachute Delivery System (PPDS) (USSOCOM)	0.166	0.000	0.000

This project is evaluating the High Altitude-Low Opening/High Altitude-High Opening (HALO/HAHO) Navigation Aid which will allow Special Operations Forces (SOF) infiltration capabilities in all environmental situations. Currently teams have little ability to navigate to a target unless it is seen at aircraft exit. This system makes it possible to land precisely during adverse weather conditions, which greatly reduces the possibility of detection, i.e. clouds, rain, and snow. This program will give the SOF community the capability and the confidence to accomplish the infiltration portion of their mission safely, accurately, and undetected in a wider range of environmental conditions. FY 2005 Accomplishments: A Basic Ordering Agreement (BOA) was initiated thru Yuma Proving Ground's contracting center to support tests and evaluation. A firm fixed price contract was awarded to Prescott Products. Discussions regarding equipment integration conducted with the user community as well as the prime contractor. Development of an IPT is underway with NSC, USSOCOM and USASOC. The Special Operations Airborne Test Board completed six High Altitude High Opening Free Fall operations to collect eight data sets, which defines the flight characteristics of the standard free fall parachute system (MC4 / MC5). Additional integration modification was carried out by contractor. RDT&E, O&S, and procurement savings are projected at $13.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Qualification of Conformal Fabrics (Air Force)	0.883	1.195	0.000

This project will qualify a conformal fabric material that will allow the integration of non-corrosive, highly durable composite structures into a greater cross section of airborne platforms. The fiber in this conformal fabric is discontinuous, allowing it to stretch into complex shapes before or during molding. The fabric conforms to complex shapes, thereby reducing fabrication costs of composite structures; the fabric becomes the reinforcement for composite structures used in advanced aircraft. FY 2005 Accomplishments: Pepin Associates signed a contract with Boeing to perform tasks contained in the Statement of Work. Fabric manufacturing process is ongoing. FY 2006 Plans: Finalize the fabrication process for discontinuous fabric. The Boeing Standard Material Specification (BSMS), the ultimate goal of the program, will be started during this time period. The design of the demonstration will also be started during FY 2006. Team will complete the fabrication of qualification lots of fabric and will fabricate test coupons in accordance with the approved test matrix. Testing will be done on these specimens and Boeing will develop material allowables for the Pepin discontinuous composite based on these test data. Nondestructive testing (NDT) tasks will be completed during this period. These tasks include inspection of the coupon panels, and development of an NDT process specification and standard. The demonstration component design will be completed and the part fabricated. It will be inspected using the NDT process developed under the program. The process control document will be updated from lessons learned during the program and the BSMS will be completed and approved. Tangible benefits: Probable 10-20% reduction in weight when aluminum structures on aircraft are replaced by composites; airframe weight reduction results in increased operational range, fuel savings, and increased armament loads. Intangible benefits: Decreased aircraft downtime due to corrosive maintenance; increased combat effectiveness.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Quiet Eyes Low Cost Directional Infrared Countermeasure (DIRCM) Laser-Pointer-Tracker Demonstration (Air Force)	2.980	3.641	0.000

This project will result in a lower cost directed infrared counter-measures turret that will provide protection from and defeat multiple-band, enemy-fired infrared missiles. The turret is based on the currently-in-production AIM-9X guidance unit; thus, dramatically significant savings can be achieved. FY 2005 Accomplishments: Two test IPT working group meetings occurred with appropriate Raytheon, Large Aircraft Infra-red Countermeasure (LAIRCM), and AFRL lab personnel participating. Completed Master Test Plan. Raytheon completed an internal authorization-to-proceed review, establishing that the program is in compliance with Raytheon's Integrated Product Development System and best practices. A System Demonstration Requirements Review (SDRR) was held in July 2005 during which an opportunity pertaining to newly available laser technology was identified. Diode pumped semi-conductor continuous wave (CW) laser technology was discussed and the team concluded that the CW laser would be able to transmit more energy out of the DIRCM system, thereby increasing the system effectiveness. It was also determined that the CW laser had potential to better execute jam codes, also increasing the system effectiveness. A Turret Design Review was conducted 14-15 Sep 05. FY 2006 Plans: Continue integration and testing of laser-pointer-tracker assembly. Complete environmental performance testing. Demonstrate capability on Raytheon range, Tucson. Conduct final demonstration at Aeronautical Systems Center laser tower facilities at Wright Patterson AFB. Complete Quick Look report and other required documentation. Tangible benefits: RDT&E cost avoidance: $100.000 million; manufacturing savings: $25.000 - 50.000 million; procurement savings: $140.000 million. Intangible benefits: Increased aircrew and aircraft protection in a wider sector of the electro-magnetic spectrum.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Restore Effective Survival in Shock (RESUS) (Air Force)	1.655	0.448	0.000

This project, polymerized hemoglobin (Hemopure), has the potential to save warfighter lives. This candidate item is a low volume and weight, room temperature stable substitute for blood transfusions for combat casualties, which can be stored for 3 years without refrigeration and is pathogen free. It is highly likely to significantly decrease combat casualty morbidity and mortality. FY 2005 Accomplishments: An Investigational New Drug (IND)-enabling preclinical traumatic brain injury was completed. This animal study was required before the Food and Drug Administration (FDA) would accept/approve the IND from the Navy. Submitted IND application to the FDA in order to execute the RESUS study. The FDA issued a clinical hold until a complete response to several questions was submitted and reviewed. An updated protocol was submitted to the Naval Medical Research Center Institutional Review Board (IRB), revisions were made and the protocol was approved pending minor modifications. Eighteen study sites were recruited, and contract and budget negotiations are in progress with these sites. The laboratory interference challenge was initiated at five sites and a contract was established for a data management system and system development has begun. FY 2006 Plans: When FDA allowance is granted, protocol will be submitted to the Navy Bureau of Medicine and Surgery. As RESUS requires provisions for Exception from Informed Consent, approval will be required from USN Surgeon General. Site recruitment and laboratory interference challenge activities will be completed. Conduct the Community Consultation and Disclosure process at each site as local IRB approval is received. Implement data management system and begin patient enrollment and data collection activities as all required approvals are granted. Operations and support life cycle cost: 50-70% reduction due to Hemopure increased shelf life. Intangible benefits: Life saver. Room temperature storage and long shelf life allow greater access in combat.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Secure Army Wireless Intercomm System (Army)	0.690	0.000	0.000

This project modifies the baseline PM Air Warrior Aircraft Wireless Intercommunications System (AWIS) to add an encryption module known as Windtalker that will provide compatibility with secure crew communications systems for all crew served air and ground vehicles. Tethered systems have inherent operational limitations and safety hazards and a fully integrated secure wireless intercommunications system will enhance combat crew performance and save lives. FY 2005 Accomplishments: Achieved Joint program status with the Navy's PMA 209. The Navy has merged their wireless intercom program with the Army, adopted the Trulink technology, and is participating in the Sectera technology secure encryption development program sponsored under this DAC. Memorandum of Agreement (MOA) kickoff meeting between the Navy and Army completed. Successfully demonstrated the Windtalker technology in Scottsdale, AZ at General Dynamics C4I, with representatives from the National Security Agency (NSA), Army, Navy, PM DCATS, and the prime contractor, Telephonics. This was a significant risk reduction milestone for technical integration. Completed the User Partnership agreement with the NSA, and obtained NSA endorsement of our technical approach. RDT&E investment costs of $48.000 million and Procurement investment costs of $1.687 million on the first 10 years.

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Date: February 2006

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Spray Cool TM Counter Targeting System (CTS) (Army)	0.230	0.000	0.000

This project is evaluating a new technology insertion to enable spiral development of the Counter Targeting System (CTS). CTS utilizes an infra-red (IR) sensor at high frame rates to detect sniper, mortar, RPG, and large caliber weapons fires. This system will assist in near real-time targeting and situational awareness for direct support of combat troops in operations such as Iraq and Afghanistan. First test articles will be field tested in Iraq. FY 2005 Accomplishments: Successfully deployed 5 Systems in support of OIF operations. Reduced form and fit from 350 pounds to less than 22 pounds. Satisfied our commitment to OSD to procure 20 additional systems. Submitted request for follow on OSD funding for aerial integration. Developed CONOPS for ground, air and on the move employment options. Established mission/procurement partnering with Department Of Energy (DOE). Integrated Acoustics sensor with CTS as a cueing sensor in June 05 at Quantico, VA in support of Marine Corps Warfighting Laboratory evaluation testing. Integrated CTS with existing Force Protection and Early Warning OIF architecture. Reduced sustainment cost in OIF by over 300% through DAC by reducing form, fit and increase functionality of CTS. Integrate system into aerial vehicle (manned/unmanned). $15.000 million Total O&S Savings ÷ Total Procurement of $150.000 million Total Procurement Cost = 10%.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Superior Surface Treatment Techniques (Army)	0.430	0.583	0.000

This project applies innovative surface treatment and plasma engineering technology to improve the deposition process of protective coatings on gun bores. This technology is applicable to US Army Legacy (Abrams), Future Combat System-FCS-MCS, FCS NLOS-C, FCNLOS-M, Navy Advanced Gun System, etc. FY 2005 Accomplishments: Completed contracting with SwRI (Southwest Research Institute) with extensive experience and expertise in plasma engineering and sputtering deposition. Under, SwRI prepared plasma enhanced planar magnetron system to test Army next generation environmental friendly sputtered Ta and Cr coatings. Conducted over 50 thin and thick Cr, Ta, and Ta on Cr depositions on gun steel to optimize sputter clean procedures and deposition parameters for planar magnetron sputter system. Analysis of these coatings at Benét Labs showed the coatings are hard, dense, with excellent microstructure and adhesion, which cannot be failed using Benét Labs aggressive microscratch and groove adhesion testing. FY 2006 Plans: Conduct surface cleaning tests in the cylindrical environment. Deposition tests on gun steel samples will be also be conducted. Thick Ta and Cr coating will be deposited on 1 ft long 120mm gun barrel sections for laser heating and vented combustor simulated firing tests. This is to evaluate adhesion of cylindrical magnetron sputter deposited coatings using techniques developed under, for potential transition to production. $53.000 million in total program cost savings in the next 5 years.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Transcritical CO2 Environmental Control System (Army)	0.214	0.000	0.000

This project is evaluating CO2-based environmental control technologies (refrigerant, compressors, and heat exchangers) for insertion into the Up-Armored HMMWV program to provide more cooling for soldiers and equipment in hot environments such as Southwest Asia. CO2 technologies will replace current environmentally-harmful synthetic refrigerants and systems with smaller, lighter and higher-capacity systems which are vital to the legacy fleet, the Future Tactical Truck System (FTTS), and the Future Combat System (FCS). This is extremely critical for the US Army to meet international environmental protocols in order to allow it to operate worldwide. FY 2005 Accomplishments: Demonstrated system at Expedited Modernization Initiative Procedure in Yuma, Arizona, explaining quicker and deeper pulldown of the vehicle's interior temperature. A next-generation CO2 air-conditioning system was fabricated with improved components and air-distribution, reducing size and weight. Completed new round of wind tunnel testing. Conducted field testing at Death Valley, California, demonstrating improved occupant comfort. Tested at Yuma Proving Ground to observe the system's ability to withstand rough terrain. Initiated design and fabrication of a Hot Gas Bypass system to provide supplemental passenger compartment heating. 25-50% capacity improvement, 10-20°F lower evaporator outlet temperature, and 30°F pull-down. Achieve 50-100% improvement in pull-down time. Weight and space claim less than or equal to current system.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
WDM Fiber Optice GPS Anti-Jam Antenna (Navy)	0.828	0.000	0.000

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This project is evaluating Wave Division Multiplexing (WDM) technology with shipboard GPS Anti-Jam antenna assembly to determine if it can provide transmission of multiple RF signals through a single optic fiber. This project will enable relocation of the GPS antenna electronics from high on the mast to below decks where it is proteeted and readily accessible for maintenance. FY 2005 Accomplishments: Component Level Test and System Performance testing on the GAS-1 Antenna/Antenna Electronics using 7-Channel WDM was completed. The Pre-Production Unit of the WDM FOAL was received. A Pre-Production Unit Test Plan was finalized. Reliability Analysis based on Fiber-Span WDM Bill of Material for the transmitter and receiver was tasked to the Reliability Analysis Center (Defense Technical Information Center). Performance Specification for GAS-1 WDM FOAL subsystem was finalized. This investigation of the use of WDM technology for shipboard anti-jam installations has been briefed at the Navigation Warfare Multi-National Memorandum of Understanding Conference. The Pre-Production Unit was tested under RF signals and temperature variations and for comparison to a non-WDM configuration.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
X-Cor Replacement for Conventional Honeycomb (Army)	1.435	1.195	0.000

This project is a lightweight, damage tolerant core material that replaces conventional honeycomb in aerospace structures. A 10% weight reduction over the baseline honeycomb on Black Hawk is estimated. This is critical because weight reduction is quite significant to the program in two respects. First, it greatly increases helicopter performance, particularly in vertical lift/rise capability, which greatly increases aircraft survivability and capacity; and, second, this 10% reduction could amount to a 25% RDT&E cost avoidance over other weight reducing alternatives. FY 2005 Accomplishments: Risk reduction: A revised set of manufacturing requirements has been implemented to control and monitor the manufacturing processes that control the pin reveal which will assure repeatable mechanical properties. Quality control: Process and quality control procedures have been revised to incorporate the latest requirements. During the past quarter, a draft process specification and acceptance criteria were reviewed during a technical interchange meeting at GKN. Work continued at Aztex to develop quality control documentation for each of the raw materials and manufacturing processes employed in core manufacture. The quality plan continues to mature with the inclusion of data gathered from the producibility trials conducted as part of the manufacturing scale up task and process trials conducted in conjunction with the evaluation of material property variability. Configuration: X-CorTM boundaries of the right hand and left hand skin were finalized. All 20 core-forming tools were designed and fabricated. FY 2006 Plans: Complete testing. Fabricate full scale components for flight test articles. Savings in Procurement costs: $67.200 million minimum 45%.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
7.62 & 9mm Small Arms Reduced Environmental Hazard Ammunition (SAREHA) (Navy)	0.000	0.807	0.000

This project will provide the warfighter with a lead-free, training and combat cartridge that will alleviate $106.000 million in range remediation costs while demonstrating the Marine Corps greater commitment to its stewardship of preserving the environment. This project will qualify commercially available Small Arms Reduced Environmental Hazardous Ammunition (SAREHA) to replace the current 7.62mm, 4 & 1 Linked cartridges (DODIC A131) and 9mm cartridges (DODIC A363) that contain lead components. Without regular remediation, the lead based components in these cartridges can seep into the ground and poison the supply of drinking water used by surrounding communities or wildlife and can make the air within indoor training ranges toxic to breathe. By qualifying commercially available ammunition, the USMC will avoid $8.800 million in RDT&E costs and provide a ROI of 280:1. FY 2006 Plans: Contract Prep & Award will be completed following the release of FY 2006 DAC Funding. During the same period, test planning will be conducted in preparation for the receipt of test articles. The fabrication of test articles from each of the vendors will commence after contract award. Test article delivery is anticipated during the 4th Qtr FY 2006, at which point, the comparative testing of each round will begin at the NSWC, Crane. The Project Office will determine which vendor best meets the USMC requirements and perform a down select to one vendor. A contract option for additional test quantities from the winner will be exercised. After delivery, the project office will conduct testing for the qualification of energetics, safety/environmental testing, and a user evaluation coordinated with the Navy Ordnance Safety and Security Activity (NOSSA). After completion of all testing, a WSESRB package will be prepared for certification. Concurrently, the technical test report will be completed.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Topical Paromomycin for the Treatment of Cutaneous Leishmaniasis (Army)	0.000	1.494	0.990

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This project will provide the first Food and Drug Administration (FDA)-approved, easily applied skin cream treatment for Cutaneous Leishmaniasis (CL), a parasitic disease spread by sand-flies that has become a serious medical threat to our forces deployed in support of OIF/OEF. As of Dec 2005, approximately 1,100 US soldiers have been diagnosed with CL which is endemic to Iraq, Afghanistan, and other areas in the Middle East. Although the disease is non-life-threatening, it is potentially disfiguring, and the resulting ugly "volcano crater" lesions can persist for many weeks to months. The FDA has allowed use of daily injections, over a 10 to 20 day period, of intravenous Pentostam™ to treat CL in soldiers as an investigational drug but it may only be administered under strict medical surveillance within the US at either Walter Reed or Brook Army Medical Centers. Infected soldiers must be evacuated to one of these two US locations where they must reside during the extent of the treatments. Currently, the average cost per patient receiving Pentostam™ is approximately $17,000 for hospitalization and treatment with approximately 60 lost duty days per incident. This equates to roughly $18.000 million in direct costs for the infected troops requiring treatment from 2003-2005. "Topical Paromomycin" will be positioned as a first-line therapeutic drug at deployed combat hospitals to treat this disease. Prior to selection as a DAC Program new start, a Phase 2 clinical study was completed in Tunisia and France, and awarded a contract to a pharmaceutical company for production and continued testing of the drug product. FY 2006 Plans: Manufacture the drug product for Phase 3 clinical studies that will support FDA approval. FY 2007 Plans: Initiate the pivotal Phase 3 clinical study and continue stability testing of the drug. Finish the Phase 3 clinical study and prepare the licensure package for FDA approval. Cost Avoidance: $17.000 million per 1000 soldiers treated while minimizing lost duty time.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Compact Broadband Remote Antenna (CoBRA) Intelligence and Information Systems Enhancements (USSOCOM)	0.000	1.046	0.055

This project will provide SOF with a more robust communications capability, reduce the dependence of commercial satellites for secure satellite transmissions and to provide military users with increased mission flexibility using existing Compact Broadband Remote Antenna (CoBRA) equipment sets to complete their missions. This project will test and evaluate an enhanced tri-band satellite antenna design that has been optimized for FCC compliance for Ku-band, X-band and Ka-band. The RDT&E and manufacturing cost avoidance is $10.000 million. Savings in procurement costs is expected to be $2.500 million and Operational Life Cycle savings are $1.000 million. FY 2006 Plans: Receive funds, contract for and receive test articles. Conduct analysis/study/sntegration and analyze vendor data. Conduct initial technical testing in Phase I. FY 2007 Plans: Perform operational test in Phase II, Milestone C decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Communications and Networking for a Deployable Internet (CANDI) (Air Force)	0.000	1.494	0.220

This project will enhance the warfighter's network-centric operations and warfare capabilities by providing risk reduction and enhanced operational capabilities for emerging Joint Tactical Radio System (JTRS) communications equipment. The program will take the software of the existing Interim Capability for Airborne Networking (ICAN) program and retool it in compliance with the Software Communications Architecture (SCA) standards. This technology provides enhanced warfighter capabilities and addresses an urgent operational need to enhance existing worldwide command and control communications. The SCA standards provide a software framework, enabling modular, standardized architecture for the emerging JTRS radios. Rewriting the ICAN system software to be SCA compliant provides an evolutionary migration path to future network-centric capabilities, improving JTRS, and streamlining integration with existing legacy capabilities. FY 2006 Plans: Develop required architecture and documentation. Perform required software modification and enhancements to implement SCA compliance. Initiate testing of modified software in laboratory environment. Investigate and develop additional transition opportunities. FY 2007 Plans: Complete testing and finalize documentation. Continue to investigate and develop additional transition opportunities. Tangible benefits: Provides compatibility between existing platform networking capabilities and emerging future systems (JTRS), seamlessly enabling improved communications. Provides additional networking capabilities, and lessons learned for JTRS, resulting in cost savings. Intangible benefits: Improved network centric operational capabilities for existing and emerging weapons systems and warfighters.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Covert Eyes 3-D Video Camera (USSOCOM)	0.000	1.121	0.066

This project will test and evaluate a multi-purpose, high-resolution, 3-D flash laser system that enables Special Operations Forces (SOF) to acquire and view targets through vegetation, window blinds, smoke, and tinted windows during daylight or total darkness. This system serves as both a camera and camcorder, and will support standoff ranges of up to 250 meters. It will allow the viewer to rotate/pan/zoom and

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examine a subject from any viewing angle, in real-time. This camera will provide SOF: increased force protection, enhanced building inspection and surveillance capabilities, plus improved warfighter spotting, tracking and reconnaissance capabilities. The RDT&E cost avoidance is $10.000 million. Additionally, savings in procurement, operations and support life cycle cost saving are expected to be $2.750 million. FY 2006 Plans: Receive funds. Contract for and receive test articles. Conduct Phase I system definition and analyze vendor data. Conduct Phase II Technical Testing. FY 2007 Plans: Conduct Phase III Operational Testing and User assessments. Milestone C Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
ELINT Receiver (USSOCOM)	0.000	0.299	0.000

This project will evaluate a threat warning receiver that detects threat radar signals emitted from enemy missiles, maritime craft, helicopters and surveillance aircraft which represent a potential threat to Special Operations Forces (SOF) personnel and maritime craft. Paramount to the safety of SOF is the ability to detect and immediately react whenever counter-detection by hostile forces has occurred. This receiver will provide that capability. FY 2006 Plans: Receive funds, contract for and receive test articles, analyze vendor data, conduct initial technical and operational tests. Perform user evaluation in a side by side test. Milestone C decision. Cost savings include a $5.000 million RDT&E cost avoidance, $2.000 million in manufacturing savings and $5.000 million in procurement cost savings. Additionally $1.000 million in Operations and Support Life Cycle savings are expected.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Extended 1553B Databus (Air Force)	0.000	2.331	1.815

This project will save the Air Force approximately $1.600 million per generic aircraft and avoid extended non-availability of combat and combat support aircraft by eliminating the need to install new cabling to accommodate required higher throughput rates within an aircraft's local area network (LAN). The integration of an innovative scheduling and control capability, the centerpiece of this project, will enable increased throughput rates, in excess of 200 Mb/sec, over existing cable, and will thus provide legacy aircraft, such as the F-15 and 16, a capability to more responsively support network-centric operations and warfare. FY 2006 Plans: Activities will include testing of 1553 performance compliance and B-2 systems integration lab integration to validate that the technology is capable of supporting B-2 avionics requirements. This testing will result in verification of basic functionality on all B-2 bus lengths with analysis of signal characteristics, validation of acceptable system performance and verification of system compliance with established MIL-STD 1553C protocols. The DAC team will work closely with the FCT to leverage findings and to refine DAC demonstration activities that will occur in FY 2007. FY 2007 Plans: Qualification testing and demonstration of the capability to maintain suitable and predictable LAN operation during imposed system overload conditions. Continue qualification testing and evaluation while characterizing the LAN operation under a full spectrum of degraded conditions that could be expected by the inherent demands of net-centric operational warfare activities, battle damage or adverse environmental conditions such as electromagnetic interference or jammers. Tangible Benefits: $15.000 million plus in RDT&E cost avoidance; procurement cost savings about $1.600 million per aircraft. Intangible Benefits: Tri-Service utility (main battle tanks, ships, Navy and Marine aircraft); enhanced support to network-centric operations and warfare; avoidance of major re-wiring effort.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
HH-60M External Aircraft Rescue Hoist (Army)	0.000	1.460	0.000

This project will lower the risk of potential loss of life of wounded soldiers in the field by providing the HH-60M Medical Evacuation (MEDEVAC) Helicopter with a fully mission capable External Aircraft Rescue Hoist. Improvements: Increased Time Between Overhaul from 5 years to 10 years and a 25% reduction in the procurement price. Procurement Savings: $10.000 million; Life Cycle O&S Savings: $60.000 million. 1st Quarter FY 2006 Accomplishments: Conducted IPT Meeting, Test Plan finalized. FY 2006 Plans: Initiate and complete Phase I of testing (Bench/Environmental Testing) at the Redstone Technical Testing Center (RTTC). Initiate Phase II (Flight Testing) at the Aviation Technical Testing Center (ATTC) at Fort Rucker. Complete Phase II Testing at ATTC at Fort Rucker, complete Engineering Change Proposal, and begin installing hoist on new production HH-60M aircraft.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Green Light Aiming Laser for SOF Small Arms (USSOCOM)	0.000	0.515	0.000

This project will evaluate green light laser aiming devices as a superior replacement to the existing red light laser aiming device for small arms. Green light lasers are closer to the center of the spectrum of human vision and they provide much better contrast than red lasers when used against green or black targets, even in bright sunlight. FY 2006 Plans: Contract for and receive test articles. Technical and safety testing. Operational Tests. Obtain Milestone C. RDT&E cost savings are expected to be approximately $4.000 million. Manufacturing savings will be $3.975 million and savings in procurement costs and Operations and Support Life Cycle savings are about $2.500 million each.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Improved IR Missile Self-protection for F-15 Aircraft (Air Force)	0.000	0.628	0.561

This project will significantly enhance the F-15 self protection capability against IR missile threats. The existing operational and fielded AN/ALE-58 self protection countermeasure dispenser (CMD) system is not integrated into the aircraft systems. Project improvements to the current AN/ALE-58 dispenser and LAU-128 missile launch rail will provide the MIL-STD-1553 interface needed to enable the path to full integration into the aircraft Operational Flight Program (OFP). Integration provides the path to full situational awareness of the operating state of the BOL system, which is not available in the current configuration. FY 2006 Plans: Test planning, upgrade of initial dispenser and missile launch rail test units, and design and upgrade of the Boeing System Integration Lab (SIL) to support the initial testing. FY 2007 plans: Development of the test software, verification test and evaluation at the Boeing St. Louis SIL, implement design changes coming out of testing and obtain final design hardware. Tangible benefits: Procurement savings: $3.6 million. Intangible benefits: With the enhancements provided, pilots will be able to protect themselves and their aircraft during threat engagements through increased situational awareness, enhanced self protection and reduced pilot workload. These benefits will result in greater mission effectiveness.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Land Warrior Modular Fuel Cell Power System (Army)	0.000	2.166	1.430

This project, led by DuPont, will enable the U.S. Army's Land Warrior (LW) and future soldier systems to meet current and future requirements for power, mission duration, and weight. This hybrid soldier power source, using a revolutionary miniature fuel cell technology has been determined to be the only course available to satisfy cost, schedule, and performance metrics for the mid and far term to meet overall immediate and next generation soldier power needs on the battlefield. Miniaturized Direct Methanol Fuel Cell (DMFC) technology will dramatically reduce the number of batteries that must be organically transported by the future force unit of action soldier and/or the requirement for battery recharging capabilities. The DMFC will efficiently convert small quantities of an inexpensive and safe fuel into large quantities of electrical energy needed by Soldiers. Four ounces of fuel is equivalent to one Li Ion battery (35 oz). This 9 to 1 weight advantage quickly translates into a lighter load for the soldier while also providing a robust power system for long missions where resupply may not be feasible. FY 2006 Plans: Generate Program SOW, milestone payments, test and safety requirements, prepare test plans, and safety plans. Award the contract for building and testing of the DMFC power system. Convene Integrated Product Team (IPT) meetings and prepare final test evaluation, and safety assessment plans. Conduct system requirements, preliminary, and critical design reviews. Contractor will build and test alpha units, prepare for critical design review, and perform integration into Land Warrior systems. FY 2007 Plans: Convene beta system critical design review. Contractor builds and delivers Beta systems for technical test (verification of interface with Land Warrior, environmental requirements, and user feedback. Conduct the final design review. Contractor builds and delivers M-25 Test and Evaluation systems. Final procurement decision. RDT&E Cost Avoidance is estimated to be $45.000 million. O&S Cost Savings is estimated at $193.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Nickel Nanostrands for Plastics, Coatings and Composites (Air Force)	0.000	1.120	1.100

This project will result in a cost reduction on refueling booms manufactured as a component of the boom redesign to a composite structure. The materials supplied under this effort will enable a cost saving in the boom manufacture by providing a previously unavailable lightning strike protection and electromagnetic interference (EMI) protection mechanism of the article. In addition the boom will allow for refueling in an all weather environment, greatly increasing the mission capable rate of the aircraft. FY 2006 Plans: Obtain contract for test articles, manufacture prototype booms for 1/4 scale testing. By June

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2006, manufacture and ground evaluate a full scale boom representative of the production article. By the end of FY 2006, demonstrate a flight capable boom based on technology accelerated under this effort. FY 2007 Plans: Limited flight testing, make nanostrand materials available on GSA schedule. Tangible benefits: RDT&E cost avoidance: $4.000-10.000 million; manufacturing savings: $10.000-25.000 million; procurement savings: $35.000 million. Intangible benefits: Enable improved all weather mission refueling capability and protect aircraft for the direct and indirect (EMI) effect of lightning.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Risk Reduction for Specific Emitter Identification (SEI) Insertion into AN/ALQ-211 Systems (USSOCOM)	0.000	0.523	0.715

This project will first be tested and validated as an integral part of the AN/ALQ-211 multi-spectral threat awareness console aboard the MH-47, MH-60 and eventually the CV-22. It will then be validated as a cost savings initiative to integrate the SEI concurrently with the development of the digital receiver upgrade scheduled for FY 2007. FY 2006 Plans: Receive funds, contract for and receive test articles. Phase I Tech Requirments Definition, Phase II Implementation of Test Equipment. FY 2007 Plans: Complete Phase II, Acceptance decision. Production cost savings of approximately $38.500 million could be realized by developing an SEI capability during the development of the digital receiver. Additionally $5.000 million RDT&E costs, $23.200 million savings in procurement and $19.500 million Operations and Support Life Cycle savings will be realized.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Supercapacitor Power Source for Gun Launched Munitions (Army)	0.000	0.515	0.279

The supercapacitor power source has an unlimited usage life that will eliminate the need to discard or fire the Excalibur projectile within fifteen days after the projectile has been initialized with GPS data. It will also allow the Excalibur to be field-initialized an indefinite number of times versus a maximum of twenty-times over a fifteen-day operating life period associated with the current battery. Completion of this project will provide the warfighter with improved operational flexibility at significant cost savings per projectile. FY 2006 Accomplishments to date: SOW was completed and contract award awaiting funding. Preparations completed to start the accelerated life testing and conducted preliminary cold temperature electrical performance characterization testing at ARDEC on sample supercapacitors. FY 2006 plans: Develop an artillery gun launch survivable packaging concept for the power source. Conduct power source subassembly high G survivability air gun and electrical performance validation testing. Conduct component level accelerated aging tests. Modify the Excalibur Guidance and Navigation Unit (GNU) subsystem design to incorporate the new power source. Conduct performance verification testing using prototype GNU subassemblies. Demonstrate interoperability between the prototype GNU and the Enhanced Portable Inductive Artillery Fuze Setter (EPIAFS) which is used to charge the power source and program the projectile. FY 2007 plans: Manufacture two tactical GNUs that incorporate the new power source for electrical performance qualification testing and high G survivability testing in the rail gun. Modify the Excalibur projectile production TDP for insertion of the supercapacitor power source into the production build. RDT&E Cost Savings: $1.400 million. O&S Cost Savings: $1.100 million. Procurement Cost Savings: $5.400 million. Fielding Reduction: 30 Fewer Rounds @ $36 thousand ea. Procurement Potential: $2.100 million. Other Benefits: Increased factory handling safety since supercapacitor power source approach eliminates battery primer.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Tactical Remote Sensor Systems (TRSS) Monitoring System Modernization Program (Navy)	0.000	2.240	0.000

This project will provide a compact TRSS Monitoring System that will enable sensor monitoring on-the-move at the unit level, be adaptable to legacy sensor systems as well as future designs, and reduce equipment and lifecycle costs of over $98.000 million. By integrating commercially available components into a unit level monitoring system, intelligence information will be provided directly to the units on the battlefield and in operation centers simultaneously. Successful completion of this project will enable the USMC to avoid RDT&E costs of up to $15.000 million. FY 2006 Plans: Test Planning will start upon project approval and will be completed prior to the delivery of test articles. The fabrication of test articles will start at the completion of contract award and delivery is expected at the beginning of the fourth quarter FY 2006. Technical testing will commence at Nova Engineering in Cincinnati, OH to accurately evaluate true operational performance, measuring three dozen RF parameters required by the TRSS communications interface specification. Completion of Technical Testing. The hardware will be installed in a HMMWV platform for Operational Testing at Camp Pendleton to determine the system's on-the-move capabilities for picking up sensors as they come into range and its ability to capture data. The User Evaluation will be conducted at the Marine Corps Communications-Electronics Schools in 29

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Palms, CA to determine user interface deficiencies and to test the Built-In Test (BIT) and repair processes. Upon completion of all testing, a Technical Test Report will be furnished and a procurement decision reached.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Titanium Encapsulated Skirt Armor (TESA) (Navy)	0.000	1.124	0.385

This project will allow the Expeditionary Fighting Vehicle (EFV) to integrate multi-hit capable composite skirt armor that will provide a 5% vehicle weight reduction and a durability increase of up to 6 times, translating into a minimum cost savings of over $56.000 million for EFV production and maintenance. To protect the lower half of the vehicle, including the track system, propulsion components and operators inside, the EFV currently utilizes composite skirt armor protection, which has experienced environmental durability issues and lacks multi-hit capability. Successful transition of TESA for EFV will result in RDT&E savings of $2.5 million. FY 2006 Plans: Test Planning will commence upon receipt of funding and will be complete by the third quarter FY 2006. Test articles will be fabricated and lab tested at Cercom, Inc. in Vista, CA to ensure a consistent thickness and encapsulation. Upon successful lab testing, the test articles will be shipped to EFV. FY 2007 Plans: Validation Testing will commence at EFV with support from General Dynamics and Cercom for EFV fit and integration. The Safety/Environmental Testing will be conducted at the Aberdeen Test Center for rapid aging, durability, flammability and on vehicle testing. During the S/E Tests, the Army Research Lab at Ft. Belvoir, VA will conduct the Field/User Evaluation with representatives from EFV and General Dynamics to complete live-fire testing. Upon completion of the live-fire testing, a technical test report will be provided. Upon successful completion of the project, a procurement decision will be made by General Dynamics for inclusion in the EFV design and build.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
UUV Mine Neutralization by EOD teams in the VSW environment (Navy)	0.000	1.345	1.320

An effective, efficient, low risk method for providing mine neutralization initially from a Manned Surface and ultimately from a Unmanned Surface Vehicle (USV) is proposed. Notional USV will be a Rigid Hull Inflatable Boat (RHIB) currently in use by NSCT-1, using a developed and proven USN fleet mine neutralizer system. This fleet Mine Neutralization System is a Military-off-the-Shelf (MOTS) mature and reliable system for the relocation, identification and disposal of sea mines and other ordnance found at sea. FY 2006 Plans: Definition and establishment of a DAC UUV-N IPT; Refining the SOW and deliverables (includes life cycle support contract); DAC Contract Award; Development of notional CONOPS and Exit criteria; AMNS Prototype Demonstration to NSCT 1; Contract execution RDT&E Cost avoidance: $6.300 million, Manufacturing Savings: $3.000 million, Savings in Procurement costs: $3.000 million, Operations and Support Life-Cycle savings: $600 thousand.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Washable Read/Read-Write 2.45GHz RFID Tags with Highly Flexible Antenna (Army)	0.000	1.245	0.000

This project is testing Radio Frequency Identification (RFID) tags that have the capability of being read swiftly from long distances. These labels are suitable for applications where exposure to temperature and weather extremes is possible. The Air-Tune Tag has a memory lifespan of 10 years and can be rewritten 100,000 times. FY 2006 Plans: Tags will be tested and evaluated for military environment use on Army M4 Carbine modular weapon, AN/PRC-148 Multi-band Inter/Intra Team Radio (MBITR), and other Soldier equipment items. Technical tests will include, but are not limited to: RF emissions interference testing to determine potential effect on sponsor identified military and commercial systems; Best use recommendations for adhering RFID tags to M4 Carbine modular weapon, AN/PRC-148 Multi-band Inter/Intra Team Radio, other systems and uniforms/textiles; Recommendations for operator programmed data content; Field trials and operation tests with the M4 Carbine, AN/PRC-148 Multi-band Inter/Intra Team Radio, and possibly NBC clothing; Standard DoD MIL-STD-810 testing; Characterize and confirm read/read-write function; Opposing force analysis, readability distance scenarios; Conformity to applicable standards; Other test/evaluation criteria as required. A full test plan and detailed pass / fail criteria for individual tests will be provided to the OSD DAC program office within 90 days of contract award. RDT&E cost avoidance: $22.000 million. Using publicly available information on US Army annual expenditures on military uniform issue and maintenance as a benchmark, ~$180.000 million in FY 2005 with 10% annual adjustments for the out years, we determined estimated savings of $29.700 million over the three year period, or approximately $10.000 million annually.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604051D8Z - Defense Acquisition Challenge Program (DACP)**	**P051**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2007 Plans	0.000	0.000	20.315

For FY 2007, the DAC program will continue to fund testing activities on 15 projects executing $11.000 million in FY 2007 funding.
Remaining funding will be used to initiate new start DAC Projects selected from the FY 2007 DAC Proposal Process. The FY 2007 DAC Proposal Process began with the release of the BAA in December 2005. Final selection of FY 2007 New Start DAC Projects is planned for the third quarter FY 2006.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers

Category	Name	Location	Type of Work and Description	Award Date
Others				
	VARIOUS	VARIOUS	The majority of funding from this Program Element is forwarded directly to the Services and US Special Operations Command (USSOCOM) who manage all contracting and support requirements for the DACP projects identified above.	

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 5

PE NUMBER AND TITLE
0604051D8Z - Defense Acquisition Challenge Program (DACP)

PROJECT
P051

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
DACP			0	24727		33533		29500		0	0	0
Subtotal:			0	24727		33533		29500		0	0	0

Remarks: R3 submitted separately

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**	**24727**		**33533**		**29500**		**0**	**0**	**0**

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604161D8Z - Nuclear & Conventional Phys Sec Equip**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	0.000	9.277	3.517	4.576	4.709	4.827
P163	Nuclear & Conventional Phys Sec Equip	0.000	0.000	9.277	3.517	4.576	4.709	4.827

A. Mission Description and Budget Item Justification: The purpose of this program is to design physical security equipment (PSE) systems for all DoD components. This program supports the protection of tactical, fixed, and nuclear weapons systems, DoD personnel and DoD facilities. The funds are used to provide PSE RDT&E for individual Service and joint PSE requirements. The PSE program is organized so that members of the physical security equipment action group (PSEAG), which consist of the Army, Navy, Air Force, and Defense Threat Reduction Agency (DTRA) representatives monitors, directs and prioritizes potential and existing PSE programs. With few exceptions, each Service sponsors RDT&E efforts for technologies and programs that have multi-service application. This program element supports the Army's advanced engineering development of robotic and detection systems. The program element also supports all four Services' identification and redesign of developmental, non-developmental, and commericial-off-the-shelf equipment to meet physical security requirements. Activities within this program will seek to reduce risk associated with integrating, fielding, and supporting the equipment once it becomes a part of the overall security system.

Prior efforts were transitioned from Air Force PE 604287F.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	9.277
Total Adjustments	0.000	0.000	9.277
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			9.277
SBIR/STTR Transfer			
Other			

Recognizing the synergy between nuclear weapons and conventional physical security, a realignment from PE 604287F and 605161D8Z to this PE for oversight responsibilities regarding non-nuclear (conventional) physical security equipment from the Air Force to DATSD(Nuclear Matters)was directed. This will allow DATSD(Nuclear Matters) to leverage nuclear weapons and conventional physical security equipment programs to develop common solutions to common capability gaps.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604161D8Z - Nuclear & Conventional Phys Sec Equip**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: 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.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604161D8Z - Nuclear & Conventional Phys Sec Equip**	**P163**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P163	Nuclear & Conventional Phys Sec Equip	0.000	0.000	9.277	3.517	4.576	4.709	4.827

A. Mission Description and Project Justification: The purpose of this program is to design physical security equipment (PSE) systems, to include for all DoD components. This program supports the protection of tactical, fixed, and nuclear weapons systems, DoD personnel and DoD facilities. The funds are used to provide PSE RDT&E for individual Service and joint PSE requirements. The PSE program is organized so that members of the physical security equipment action group (PSEAG), which consist of the Army, Navy, Air Force, and Defense Threat Reduction Agency (DTRA) representatives monitors, directs and prioritizes potential and existing PSE programs. With few exceptions, each Service sponsors RDT&E efforts for technologies and programs that have multi-service application. This program element supports the Army's advanced engineering development of robotic and detection systems. The program element also supports all four Services' identification and redesign of developmental, non-developmental, and commericial-off-the-shelf equipment to meet physical security requirements. Activities within this program will seek to reduce risk associated with integrating, fielding, and supporting the equipment once it becomes a part of the overall security system.

Prior efforts were transitioned from Air Force PE 604287F.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Robotic Security Systems Integration	0.000	0.000	9.277

- P3I for Mobile Detection Assessment and Response System (MDARS) for greater sensing distance.
- Increase MDARS speed and response feed to support Remote Detection Challenge and Response (REDCAR).

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604618D8Z - Man Portable Air Defense Systems (MANPADS) Countermeasures**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	15.280	18.548	0.000	0.000	0.000	0.000	0.000
P618	Man Portable Air Defense Systems (MANPADS) Countermeasures	15.280	18.548	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: (U) Man Portable Air Defense (MANPAD) systems are very widely proliferated, with greater than 500,000 produced and many poorly controlled. These weapons can be easily concealed and transported in a container as small as a suitcase, and can be lethal to a wide range of military and dual use aircraft. MANPAD systems and their launchers are available on the black market for as little as $15,000. As demonstrated by recent events in Operation Iraqi/Enduring Freedom, Department of Defense (DOD) and Civil aircraft are attractive terrorist targets.

(U) The process of defeating an IR missile includes two necessary tasks, detecting missile launch, and executing countermeasures to defeat the missile guidance system. Modern IRCM systems rely on sensors mounted on the protected aircraft and either infrared decoys (flares) or directed energy lamp or laser systems. Although various onboard systems have been developed and fielded to counter the IRCM threat, including MANPADS, they remain costly (between $250,000 and $5,000,000 per aircraft installation) and their integration is complex and time consuming.

(U) Alternatives are needed to reduce the cost and lead time required to protect aircraft from IR missiles in the near-ground urban and expeditionary environment. This program investigates the development of a ground based, networked electro-optical sensor grid that would provide missile launch detection and warning, including examination of commercially available components to lower costs and to reduce the lead-time for system fielding. In conjunction with development of ground based sensor grid, directed energy technologies that could be used to counter ManPADS will be evaluated. By using vehicle mounting and wireless networking, it will be potentially possible make the system readily portable for rapid coverage area reconfiguration. Expeditionary airfields could thus be quickly protected.

(U) A second component of this program explores the development of more effective and affordable missile warning and countermeasures technologies suitable for use in urban and expeditionary airfield environments.

(U) The objective of this effort is to develop and demonstrate a low-cost, rapidly fieldable IRCM options for the rapid protection of expeditionary airfields and urban areas where comprehensive onboard protection cannot be guaranteed. An element of this task is to track and evaluate emerging electronic warfare techniques that can be used to counter asymmetric threats such as infrared and command guided ManPADS.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	11.923	13.349	0.936
Current BES/President's Budget (FY 2007)	15.280	18.548	0.000
Total Adjustments	3.357	5.199	-0.936

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604618D8Z - Man Portable Air Defense Systems (MANPADS) Countermeasures**

Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases	3.357	5.199	
Reprogrammings			
SBIR/STTR Transfer			
Other			-0.936

(U) Based upon results from an FY 2003 study, this effort is planned to consist of two demonstration phases. Phase I will consist of a ground-based sensor grid component evaluation, system design, performance evaluation and demonstration. Phase II will consist of reduced cost, ground and/or on aircraft countermeasures.

(U) The initial testing is under way at the Naval Air Warfare Center, Weapons Division (NAWC-WD), China Lake, and consists of a network of promising ground sensors. Objectives of the test are to show that the sensor and associated computational algorithms can reliably detect a missile launch and provide a declaration in sufficient time to initiate appropriate countermeasures (time is classified).

(U) The ground based sensor grid will consist of an array of sensors that constantly monitor for the presence of a MANPAD launch. Several factors favor this architecture, with much higher detection and lower false alarm rates than current on-aircraft launch detectors. The sensor grid will use commercially available components to reduce cost and the lead-time to field a system. Additionally, it will be possible make the system portable by mounting the sensors on vehicles and using wireless networking between the sensors. Expeditionary airfields and urban areas could be quickly augmented for MANPADS protection.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604618D8Z - Man Portable Air Defense Systems (MANPADS) Countermeasures**	**P618**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P618	Man Portable Air Defense Systems (MANPADS) Countermeasures	15.280	18.548	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) Man Portable Air Defense (MANPAD) systems are very widely proliferated, with greater than 500,000 produced and many poorly controlled. These weapons can be easily concealed and transported in a container as small as a suitcase, and can be lethal to a wide range of military and dual use aircraft. MANPAD systems and their launchers are available on the black market for as little as $15,000. As demonstrated by recent events in Operation Iraqi/Enduring Freedom, Department of Defense (DOD) and Civil aircraft are attractive terrorist targets.

(U) The process of defeating an IR missile includes two necessary tasks, detecting missile launch, and executing countermeasures to defeat the missile guidance system. Modern IRCM systems rely on sensors mounted on the protected aircraft and either infrared decoys (flares) or directed energy lamp or laser systems. Although various onboard systems have been developed and fielded to counter the IRCM threat, including MANPADS, they remain costly (between $250,000 and $5,000,000 per aircraft installation) and their integration is complex and time consuming.

(U) Alternatives are needed to reduce the cost and lead time required to protect aircraft from IR missiles in the near-ground urban and expeditionary environment. This program investigates the development of a ground based, networked electro-optical sensor grid that would provide missile launch detection and warning, including examination of commercially available components to lower costs and to reduce the lead-time for system fielding. In conjunction with development of ground based sensor grid, directed energy technologies that could be used to counter ManPADS will be evaluated. By using vehicle mounting and wireless networking, it will be potentially possible make the system readily portable for rapid coverage area reconfiguration. Expeditionary airfields could thus be quickly protected.

(U) A second component of this program explores the development of more effective and affordable missile warning and countermeasures technologies suitable for use in urban and expeditionary airfield environments.

(U) The objective of this effort is to develop and demonstrate a low-cost, rapidly fieldable IRCM options for the rapid protection of expeditionary airfields and urban areas where comprehensive onboard protection cannot be guaranteed. An element of this task is to track and evaluate emerging electronic warfare techniques that can be used to counter asymmetric threats such as infrared and command guided ManPADS.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Demo Phases	15.280	18.548	0.000

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 5	PE NUMBER AND TITLE **0604618D8Z - Man Portable Air Defense Systems (MANPADS) Countermeasures**	PROJECT **P618**

(U) Based upon results from an FY 2003 study, this effort is planned to consist of two demonstration phases. Phase I will consist of a ground-based sensor grid component evaluation, system design, performance evaluation and demonstration. Phase II will consist of reduced cost, ground and/or on aircraft countermeasures.

(U) The initial testing will occur at the Naval Air Warfare Center, Weapons Division (NAWC-WD), China Lake, and will consist of a network of promising ground sensors. Objectives of the test are to show that the sensor and associated computational algorithms can reliably detect a missile launch and provide a declaration in sufficient time to initiate appropriate countermeasures (time is classified).

(U) The ground based sensor grid will consist of an array of sensors that constantly monitor for the presence of a MANPAD launch. Several factors favor this architecture, with much higher detection and lower false alarm rates than current on-aircraft launch detectors. The sensor grid will use commercially available components to reduce cost and the lead-time to field a system. Additionally, it will be possible make the system portable by mounting the sensors on vehicles and using wireless networking between the sensors. Expeditionary airfields and urban areas could be quickly augmented for MANPADS protection.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604709D8Z - Joint Robotics EMD**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	31.549	20.464	6.004	3.004	0.000	0.000	0.000
P609	Joint Service EOD	25.549	8.219	2.000	3.004	0.000	0.000	0.000
P610	GLADIATOR unmanned ground vehicle	6.000	9.534	4.004	0.000	0.000	0.000	0.000
P611	Mobile Detection Assessment Response System Exterior (MDARS-E)	0.000	2.711	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: (U) This program is a budget activity level 5 based on the successful transition of robotic technologies from Concept and Technology Development activities to System Development and Demonstration (SDD) as part of an Evolutionary Strategy. Individual Services are responsible for requirements generation and procurement funding. Within the JRP, emphasis is on the development of robotic technologies that are usable in multi-service missions; provide capability in hazardous environments; provide improved battlefield efficiency using supervised autonomous operational capability; reduce or enhance force manpower and sustainability; and are affordable. This PE consolidates the DoD robotics program for Unmanned Ground Vehicles (UGV) and advances UGV concepts into SDD for programs of record.

The JRP is entering a planned transition period to re-orient this program element towards advancing and maturing robotics technologies for insertion into service SDD programs of record. This transition was approved by senior service representatives at the JRP Senior Steering Group meeting in November 2004. The Services agreed that after transition of the current programs of record, future SDD funding will become a Service responsibility. The JRP will concentrate on maturing specific technologies and interoperable capabilities for insertion into Service programs.

This PE will ramp down to zero funds as a new Program Element, 0603711D8Z (Joint Robotics Progam/Autonomous Systems) will address new robotics technologies.

Family of Integrated Rapid Response Equipment (FIRRE)

FIRRE provides our forward deployed Soldiers, Airmen, Marines and Sailors with an enhanced Near and Long Term unmanned force protection system of systems capability that reduces manpower requirements, enhance force protection and keeps our forces out of harms way. Near Term FIRRE consists of the best available force protection unmanned systems technology: semi-autonomous Unmanned Ground Vehicles (UGV); Unmanned Sensors—the Battlefield Anti-Intrusion System (BAIS), Ground Surveillance Radars (GSR) and the Multiple Resource Host Architecture (MRHA) for command and control purposes. FIRRE allows commanders to return Soldiers to their normal wartime missions. The Near Term will feed the Long Term which includes Unmanned Ground Vehicles (UGV), Unmanned Aerial Vehicles (UAV), Unattended Ground Sensors (UGS) and other value added technology for a wide variety of force protection missions. Lessons learned from Near Term FIRRE will assist the Combat Developer to refine capabilities documentation required for the Joint Capabilities Integration Development System (JCIDS) process.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	32.669	13.745	13.737

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0604709D8Z - Joint Robotics EMD**

Current BES/President's Budget (FY 2007)	31.549	20.464	6.004
Total Adjustments	-1.120	6.719	-7.733
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other	-1.120	6.719	-7.733

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604709D8Z - Joint Robotics EMD**	**P609**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P609	Joint Service EOD	25.549	8.219	2.000	3.004	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) This project supports the lifecycle management of EOD equipment for all four military Services. This project will conduct Concept and Technology Development efforts to determine maturity of existing technology and exploration of new concepts to meet EOD requirements. All four services have the Remote Odrnance Neutralization System (RONS) fielded with their EOD users, and this program includes the RONS Continuous Improvement Program to identify, develop, and qualify improvements to the system. The Joint EOD community has a requirement for a small Man Transportable Robotic System (MTRS) that can conduct EOD tasks to include the use of a manipulator arm to render safe or neutralize unexploded ordnance in confined areas that current systems have difficulty accessing. Once fielding of the MTRS begins, an MTRS Continuous Improvement Program will be initiated to add EOD capabilities and incrementally improve the system. Also, the Joint EOD community needs increased autonomy in its robotic platforms. The acquisition strategy for Joint Service EOD Robotics includes the conduct of an Analysis of Alternatives by the Joint users, development of a requirements document by the Joint Users, competitive solicitation of a development contract, with built-in options for production, upgrades, support and spare parts. Each Service individually funds for their production, upgrade, support, and spares.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	25.549	0.000	0.000

- Achieved Full Rate Production Decision for EOD Man Transportable Robotic System
- Completed Multiple Improvement Software Integration for RONS CIP

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 - FY 2007	0.000	8.219	2.000

- Initiate EOD Man Transportable Robotic System incremental improvements as defined in requirements document.
- Conduct formal Analysis of Alternatives for the Next Generation of DOD EOD Robotic Systems
- Initiate Technology Development phase of Next Generation DOD EOD Robotic Systems Project

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 5	PE NUMBER AND TITLE **0604709D8Z - Joint Robotics EMD**	PROJECT **P609**

E. Major Performers Not Applicable.

Schedule Detail (R4a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604709D8Z - Joint Robotics EMD**	**P609**

Schedule Detail	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
MTRS PSVM T&E							
MTRS PRM T&E	1Q						
MTRS AAP PROD DEC	1Q						
RONS CIP							
Next Gen EOD RCV	1-4Q	1-4Q	1-4Q				
EOD Cooperative Robotics		1-4Q	1-4Q	1-4Q	1-4Q		

Comment:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604709D8Z - Joint Robotics EMD**	**P610**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P610	GLADIATOR unmanned ground vehicle	6.000	9.534	4.004	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) The Gladiator Program is a USMC initiative based on the Joint Army-Marine Corps Tactical Unmanned Vehicle (TUSV) ORD originated by the U.S. Army Infantry School. Mission Need Statement (MNS) INT 12.1.1 (dated 4 November 1993) validated the need for a tactical unmanned ground vehicle system, and the ORD was approved by the Army in August 1995 and by the Marine Corps in May 1996. Changes in Service deficiencies and required capabilities have led both Services to reevaluate the existing ORD and to initiate efforts to revise it or to approve new requirements documents for robotic systems supporting the tactical commander. The Marine Corps then initiated Change 1 to the MNS in April 2001 and a Marine Corps ORD for the Gladiator Tactical Unmanned Ground Vehicle was approved in July 2004 to support the dismounted infantry of the Marine Ground Combat Element (GCE) with the organic unmanned capability to remote combat tasks including scout/surveillance. The system will reduce risk and neutralize threats to Marines across the full spectrum of conflict and military operations. The Gladiator is a teleoperated/ armed and armored, highly mobile UGV with, initially, the basic capability to conduct scout/surveillance missions and to carry various mission payloads for specific tasks. It will be inherently simple, durable, multi-functional, and easily transported. In the conduct of Operational Maneuver From The Sea (OMFTS), Ship To Objective Maneuver (STOM), Sustained Operations Ashore (SOA), and Operations Other Than War (OOTW), the Gladiator will enhance the ability to accomplish assigned missions. Operating just forward of the GCE units, Gladiator will perform basic scouting/surveillance, obstacle breaching, lethal and non-lethal direct fire, logistic support, and NBC reconnaissance tasks while permitting the operator to remain covered or concealed. The basic Marine Corps system will consist of a mobile base unit (MBU), an Operator Control Unit (OCU), and specific mission payload modules (MPMs). Initial MPMs will include Shoulder-launched Multi-purpose Assault Weapon (SMAW), Anti-Personnel Obstacle Breaching System (APOBS), Light Vehicle Obscurrant Smoke System (LVOSS), M240 and M249 Machine Guns, and current NBC detectors.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2005 Accomplishments	6.000	0.000	0.000
Begin DRR Begin SDD			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 - 2007 Plans	0.000	9.534	4.004

- Complete DRR
- Complete SDD
- Complete Developmental Testing.
- Obtain MS C.
- Award LRIP contract

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 5	PE NUMBER AND TITLE **0604709D8Z - Joint Robotics EMD**	PROJECT **P610**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0604709D8Z - Joint Robotics EMD**	**P611**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P611	Mobile Detection Assessment Response System Exterior (MDARS-E)	0.000	2.711	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: (U) The The Mobile Detection Assessment Response System - Exterior (MDARS-E) serves as the Unmanned Ground Vehicle (UGV) or the Family of Rapid Response Equipment (FIRRE). Purpose is to provide a semi-authonomous, high speed, cross-country, detection, persistent surveillance and response capability for forward deployed forces. Mission payload package includes ANPPS-5D Ground Surveillance Radar (GSR) integrated with a SEAFLIR, FIRRE provides our forward deployed forces with an enhanced layered force protection system of systems capability that provides the means to assess, detect and respond to enemy intrusion activities. FIRRE reduces manpower requirements, keeps our forces out of harms way and allows commanders to return Soldiers to their primary wartime missions.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
(U) FY 2006 - 2007 Plans	0.000	2.711	0.000

Continue to participate in the TRADOC Unit Protection Concept Capability Plan IPT.
Conduct in Unmanned Ground Vehicle critical design review and IPTs.
Upgrade integration software to meet mission requirements.
Evaluate command and control during field evaluations at the Early User Assessment.
Deliver 3 fully integrated UGVs to the user by August 2006.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy Integrate with FIRRE and Transfer to Program of Record in 2008 - 2010 timeframe.

E. Major Performers Not Applicable.

EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**			R-1 ITEM NOMENCLATURE **0604771D8Z Common Joint Tactical Information**				
COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	**17.075**	**10.899**	**8.177**	**17.079**	**21.057**	**21.389**	**21.864**
P771 Link-16 Tactical Data Link (TDL) Transformation Subtotal Cost	**13.743**	**10.899**	**8.177**	**17.079**	**21.057**	**21.389**	**21.864**
P 773 Multifunctional Information Distribution System-Low Volume Terminal (MIDS-LVT) Subtotal Cost	**3.332**						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The P771 program was developed to transform Joint Tactical Data Links (TDLs) (primarily the J Series of Link 16, Link 22, and the Variable Message Format) to comply with the Department's Net-Centric Operations Warfare (NCOW) vision. The program encapsulates the Department's needs for joint and combined network-enabled capabilities for all primary tactical and common data link (CDL) communications. The implementation of these network capabilities into the TDL and CDL environments will enhance the decision cycle between sensor-to-shooter; providing an information-superior, shared environment that will enhance combat power by increasing speed of command, higher tempo of operations, greater lethality, increased survivability, and self synchronization. To ensure the timely implementation, these network-enabling capabilities are being incorporated into the Joint Tactical Data Enterprise Services (TDES) Migration Plan (JTMP). The documentation of these network-enabling capabilities in the JTMP has been identified by the Joint Requirements Oversight Council (JROC), Allied/Coalition partners and the NATO C3 Board as critical to transformation of the data links.

The funds provided by this budget request will be used to update the JTMP to reflect the Services' migration plans towards the NCOW objectives. This plan in turn will be used by the Services and our Allied/Coalition partners in developing future acquisitions and fielding plans. In addition, funding will be used to expand the JTMP to incorporate the CDL family of tactical Intelligence, Surveillance, and Reconnaissance (ISR) communications systems, including the systems in used with Unmanned Aerial Vehicles (UAVs) and the Integrated Broadcast Service (IBS). Starting this funding period, the Allied TDES migration will be added to the JTMP to ensure combined network interoperability in future conflicts and training exercises. This international effort will begin by adding the UK and Australia; both of which are currently operating the same TDL systems as the US and are actively participating in the TDES migration. A final area to be added will focus on the development of network-enabled weapons.

The program will continue to fund the development of spectrum management and oversight for the TDES systems, and to fund for the coordination of these development efforts with the Services and other US and International spectrum management agencies, including the Federal Aviation Agency (FAA) and National Telecommunications and Information Administration (NTIA), to obtain Link 16 spectrum certification. In addition, funding will continue to be used to support the Defense Information System's Agency's (DISA's) and Services' interoperable improvement efforts and processes in the development of common NCOW standards and protocols. This effort includes initiating the Joint Interoperability Enhancement Process (IEP) that allows operators, engineers, and program managers to verify capabilities and identify issues in a design with Joint /Allied units prior to system fielding, or with fielded systems to identify required systems changes for systems upgrade planning. DISA will lead the effort to transform the current standards and interoperability management tools to a common set of Joint network-enabled standards for the implementation of future TDES capabilities. These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDES capabilities are synchronized with the development and integration timelines of other planned network-enabled Global Information Grid (GIG) initiatives.

A new initiative under this funding, will include the transition of the Net-Centric Operations Enterprise (NCOE) roadmap to include performing a detailed metrics evaluation and comparative analysis on the net-centricity of each of the DoD communications programs. This NCOE work will follow the guidelines of the OSD Net-Centric Checklist and aid programs transition into the NCOW environment of the GIG. The associated metrics will be updated as standards and protocols are approved in the Joint Technical Architecture or the NCOW and be used to derive the best alternative for spiral delivery of net-centricity into the GIG, including the TDES segment. During this process, policy, program oversight, and architectures for the wireless and mobility aspects of networking will also be updated or developed to ensure the best enterprise-wide solution(s). This will include funding the development of a joint-interoperable, net-centric, mobile ad-hoc networking (MANET) wireless architecture for the Joint Operations Area (JOA) in 2020 and a detailed GIG program synchronization roadmap.

The P773 program supported the RDT&E of MIDS-LVT. The last year of funding, FY 2005, supported the close out of the MIDS-LVT development as DoD started to plan the migration to the Joint Tactical Radio System (JTRS) Wideband Networking Waveform (WNW) which will field an interconnected end-to-end set of networking capabilities throughout the JOA in support of the NCOW objectives. Both the P771 and P773 were and are funded under BA-5, System Development and Demonstration, because the programs encompass engineering, manufacturing development, and demonstration of new end-items prior to production approval decision.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**	R-1 ITEM NOMENCLATURE **0604771D8Z Common Joint Tactical Information**

B. Program Change Summary:

	FY 2005	FY 2006	FY 2007
Previous President's Budget	18.515	11.075	8.050
Current BES/President's Budget	17.075	10.899	8.177
Total Adjustments	-1.440	-0.176	0.127
Congressinal program reductions			
Congressional rescissions, Inflation Adjustments	-1.440	-0.176	0.127
Congressional increases			
Reprogrammings			

Program Change Explanation:
FY2005: SBIR -.463 million; STTR -.056 million; Atomic Energy -.014 million; WHS Reduction -.011 million.
FY 2006: FFRDC -.018 million; Economic Assumptions -.048 million; Rescission -.110 million.
FY 2007: Non-pay Purchase Inflation .127 million.

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: In Executing JTDL tasking, existing cost-plus contracts will be utilized.

E. Performance Metrics: Program metrics will be developed in support of requests for program resources. The metrics will follow the guidelines of the OSD Net-Centric Checklist and aid programs in the move into the Net-Centric environment in the GIG. Metrics will be updated as standards and protocols and approved in the Joint Technical Architecture or the NCOW RM.

EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**					PROJECT NUMBER AND NAME P771 Link-16 Tactical Data Link (TDL) Transformation			
COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
P771 Link-16 Tactical Data Link (TDL) Transformation Subtotal Cost	**13.743**	**10.899**	**8.177**	**17.079**	**21.057**	**21.389**	**21.864**	
RDT&E Articles Qty								

A. Mission Description and Budget Item Justification:

The P771 program was developed to transform Joint Tactical Data Links (TDLs) (primarily the J Series of Link 16, Link 22, and the Variable Message Format) to comply with the Department's Net-Centric Operations Warfare (NCOW) vision. The program encapsulates the Department's needs for joint and combined network-enabled capabilities for all primary tactical and common data link (CDL) communications. The implementation of these network capabilities into the TDL and CDL environments will enhance the decision cycle between sensor-to-shooter; providing an information-superior, shared environment that will enhance combat power by increasing speed of command, higher tempo of operations, greater lethality, increased survivability, and self synchronization. To ensure the timely implementation, these network-enabling capabilities are being incorporated into the Joint Tactical Data Enterprise Services (TDES) Migration Plan (JTMP). The documentation of these network-enabling capabilities in the JTMP has been identified by the Joint Requirements Oversight Council (JROC), Allied/Coalition partners and the NATO C3 board as critical to transformation of the data links.

The funds provided by this budget request will be used to update the JTMP to reflect the Service's migration plans towards the NCOW objectives. This plan in turn will be used by the Services and our Allied/Coalition partners in developing future acquisitions and fielding plans. In addition, funding will be used to expand the JTMP to incorporate the CDL family of tactical Intelligence, Surveillance, and Reconnaissance (ISR) communications systems, including the systems used with Unmanned Aerial Vehicles (UAVs) and the Integrated Broadcast Service (IBS). Starting this funding period, the Allied TDES migration will be added to the JTMP to ensure combined network interoperability in future conflicts and training exercises. This international effort will begin by adding the UK and Australia; both of which are currently operating the same TDL systems as the US and are actively participating in the TDES migration. A final area to be added will focus on the development of network-enabled weapons.

The program will continue to fund the development of spectrum management and oversight for the TDES systems, and to fund for the coordination of these development efforts with the Services and other US and International spectrum management agencies, including the Federal Aviation Agency (FAA) and National Telecommunications and Information Administration (NTIA), to obtain Link 16 spectrum certification. In addition, funding will continue to be used to support the Defense Information System Agency's (DISA's) and Services' interoperable improvement efforts and processes in the development of common NCOW standards and protocols. This effort includes initiating the Joint Interoperability Enhancement Process (IEP) that allows operators, engineers, and program managers to verify capabilities and identify issues in a design with Joint /Allied units prior to system fielding, or with fielded systems to identify required systems changes for systems upgrade planning. DISA will lead the effort to transform the current standards and interoperability management tools to a common set of Joint network-enabled standards for the implementation of future TDES capabilities. These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDES capabilities are synchronized with the development and integration timelines of other planned network-enabled Global Information Grid (GIG) initiatives.

A new initiative under this funding will include the transition of the Net-Centric Operations Enterprise (NCOE) roadmap to include performing a detailed metrics evaluation and comparative analysis on the net-centricity of each of the DoD communications programs. This NCOE work will follow the guidelines of the OSD Net-Centric Checklist and aid programs transition into the NCOW environment of the GIG. The associated metrics will be updated as standards and protocols are approved in the Joint Technical Architecture or the NCOW and be used to derive the best alternative for spiral delivery of net-centricity into the GIG, including the TDES segment. During this process, policy, program oversight, and architectures for the wireless and mobility aspects of networking will also be updated or developed to ensure the best enterprise-wide solution(s). This will include funding the development of a joint-interoperable, net-centric, mobile ad-hoc networking (MANET) wireless architecture for the Joint Operations Area (JOA) in 2020 and a detailed GIG program synchronization roadmap.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**		PROJECT NUMBER AND NAME **P771 Link-16 Tactical Data Link (TDL) Transformation**

B. Accomplishments/Planned Program

FY 2005 ACCOMPLISHMENTS ($13.743 million):
- Developed initial draft Joint TDES Migration Plan (JTMP) to NCOW objectives
- Led Joint team with OSD, JCS, DISA, Services, and Agencies for TDES migration
- Initiated the revisision of June 2000 Joint Tactical Data Link Management Plan (JTDLMP) to TDES transformation to NCOW objectives
- Worked on Joint, Allied, and Coalition Tactical Interoperability and Net-Centric Transformation Initiatives
- Provided Joint oversight for Joint TDL interoperability and transformation initiatives (e.g., Joint Electro Magnetic Compatibility Features DoD Performance Specification, Service TDES migrations)
- Supported the GIG End-to-End Systems Engineering teams with TDL expertise
- Developed transformational solutions for dissemination of tactical data within the GIG Enterprise
- Initiated development of approved standards, protocols, and processes for implementation and testing across programs from end to end including end-to-end testing.

FY 2006 PLANNED ($10.899 million):
- Publish JTMP documenting Joint TDES migration to NCOW objectives
- Lead Joint team with OSD, JCS, DISA, Services, and Agencies for TDES migration
- Revise and update 2000 Joint Tactical Data Link Management Plan (JTDLMP) into the Joint TDES Migration Plan (JTMP) in the transformation toward NCOW for publication in 2006 and begin preparations for 2008 update to JTMP
- Lead required TDES teams to address transformation of the tactical gateways and the Joint Interoperability of Tactical Command and Control Systems (JINTACCS)
- Act as the Joint subject matter experts for Joint, Allied, and Coalition Tactical Near-Term Interoperability and Net-Centric Transformation Initiatives
- Provide technical oversight, planning, and coordination of Joint TDL interoperability and transformation initiatives (e.g., Joint Electro Magnetic Compatibility Features DoD Performance Specification, Service TDES migrations)
- Act as Joint TDL subject matter experts and participate with GIG End-to-End Systems Engineering teams
- Complete tactical network loading and topology study to support migration to NCOW operations
- Identify transformational solutions for dissemination of tactical data within the GIG Enterprise
- Provide insight into operationally driven, technical functionalities needed to meet tactical data exchange requirements within a critical and/or warfighting environment (e.g., safety of life, tactical targeting)
- Conduct analytic evaluations to define and plan implementation of key technologies to include tactical information integration and configuration management
- Demonstrate TDES being accessible to other webservers/systems via extensible markup language (XML) translation for Advanced Waveforms initiatives
- Update program metrics that follow the OSD Net-Centric Checklist
- Continue development of approved standards, protocols, and processes for implementation and testing across programs from end-to-end
- Complete Joint warfighter utilization of networked Internet Protocol (IP) data in tactical cockpits
- Initiate the integration of the Common Data Link (CDL) family of waveforms into the JTMP roadmap
- Initiate the integration of the Integrated Broadcast Service (IBS) into the JTMP roadmap
- Plan and composite net-centric capability assessment
- Establish policy, provide oversight, and develop net-centric architectures which will address the wireless and mobility aspects of IP

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**		PROJECT NUMBER AND NAME **P771 Link-16 Tactical Data Link (TDL) Transformation**

B. Accomplishments/Planned Program

FY 2007 PLANS ($8.177 million):
- Update the Joint TDES Migration Plan (JTMP) documenting the TDES migrationtoward the Department's NCOW objectives
- Lead Joint team with OSD, JCS, DISA, Services, and Agencies for TDES migration
- Revise and update 2006 TDES transformation to NCOW in preparation for 2007 edition
- Lead required TDES teams to address transformation of the tactical gateways and the Joint Interoperability of Tactical Command and Control Systems (JINTACCS)
- Act as the Joint subject matter experts for Joint, Allied, and Coalition Tactical Near-Term Interoperability and Net-Centric Transformation Initiatives
- Provide technical oversight, planning, and coordination of Joint TDL interoperability and transformation initiatives (e.g., Joint Electro Magnetic Compatibility Features DoD Performance Specification, Service TDES migrations)
- Act as Joint TDL subject matter experts and participate with GIG End-to-End Systems Engineering teams
- Complete tactical network loading and topology study to support migration to NCOW operations
- Identify transformational solutions for dissemination of tactical data within the GIG Enterprise
- Provide insight into operationally driven, technical functionalities needed to meet tactical data exchange requirements within a critical and/or warfighting environment (e.g., safety of life, tactical targeting)
- Conduct analytic evaluations to define and plan implementation of key technologies to include tactical information integration and configuration management
- Demonstrate TDES being accessible to other webservers/systems via extensible markup language (XML) translation for Advanced Waveforms initiatives
- Update program metrics that follow the OSD Net-Centric Checklist
- Continue development of approved standards, protocols, and processes for implementation and testing across programs from end to end including end-to-end testing.
- Complete Joint warfighter utilization of networked Internet Protocol (IP) data in tactical systems
- Initiate the Joint Interoperability Enhancement Process (IEP) to improve Joint and Allied TDL/TDES capabilties adn provide Operators, Engineeris, and Program Managers the ability to determine systems interoperability and define work-arounds and required systems improvements
- Provide the initial drafts for the integration of the Common Data Link (CDL) family of waveforms into the JTMP roadmap
- Provide the initial drafts for the Integrated Broadcast System (IBS) into the JTMP roadmap
- Initiate the integration of Allied participants into the Joint JTMP starting with United Kingdom (UK)
- Develop policy-based network management preferred system concept and methodology for enterprise situational awareness. Current Programs of record are developed autonomously and need a common interface and visualization approach.
- Develop an ad hoc mobile net-centric tactical wireless architecture for 2020 that interfaces with the GIG

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E Defense-Wide/BA-5		PROJECT NUMBER AND NAME P771 Link-16 Tactical Data Link (TDL) Transformation

B. Accomplishments/Planned Program

FY 2008 PLANS ($17.079 million):
- Publish the 2008 version of the Joint TDES Migration Plan (JTMP) documenting the TDES migration towatd the Department's NCOW objectives
- Lead Joint team with OSD, JCS, DISA, Services, and Agencies for TDES migration
- Execute a Joint Deomnstrationof the Joint TDES Interoperability Enhancement Process (IEP)
- Revise and update 2007 TDES transformation to NCOW
- Lead required TDES teams to address transformation of the tactical gateways and the Joint Interoperability of Tactical Command and Control Systems (JINTACCS)
- Act as the Joint subject matter experts for Joint, Allied, and Coalition Tactical Near-Term Interoperability and Net-Centric Transformation Initiatives
- Provide technical oversight, planning, and coordination of Joint Tactical Data Link (TDL) interoperability and transformation initiatives (e.g., Joint Electro Magnetic Compatibility Features DoD Performance Specification, Service TDES migrations)
- Act as Joint TDL subject matter experts and participate with GIG End-to-End Systems Engineering teams
- Identify transformtational solutions for dissemination of tactical data within the GIG Enterprise
- Provide insight into operationally driven, technical functionalities needed to meet tactical data exchange requirements within a critical and/or warfighting environment (e.g., safety of life, tactical targeting)
- Conduct analytic evaluations to define and plan implementation of key technologies to include tactical information integration and configuration management
- Update program metrics that follow the OSD Net-Centric Checklist
- Continue development of approved standards, protocols, and processes for implementation and testing across programs including end-to-end testing
- Publish the first JTMP with the incorporation of the Common Data Link (CDL) family of waveforms
- Publish the first JTMP with the incorporation of the Integrated Broadcast Service (IBS)
- Initial drafts of UK integration into the JTMP
- Initiate the integration of Australian participants into the Joint JTMP
- Joint C4I Exercise participation to demonstrate warfighter net-centric capabilities and integrated these into the JTMP

EXHIBIT R-3, Cost Analysis									DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**			PROGRAM ELEMENT **0604771D8Z**				PROJECT NUMBER AND NAME **P771 Link-16 Tactical Data Link (TDL) Transformation**			
Cost Categories ($ in millions)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Product Development										
Spectrum Support	Various	Various	12.248	1.140	Various	1.000	Various	Continuing	Continuing	Continuing
Data Link Migration Engineering Support	Various	Various	14.227						14.227	
Net-Centric Engineering	Various	Various	1.604	2.227	Various	1.015	Various	Continuing	Continuing	Continuing
GIG Engineering Support	Various	Various	6.682	2.929	Various	0.912	Various	Continuing	10.523	Continuing
Enhancements	Various	Various	0.626	0.300					0.926	
JICO Toolset (JSS) Development	Various	Various	0.529						0.529	
Joint Initiatives	Various	Various	2.157	0.969	Various	1.000	Various	Continuing	Continuing	Continuing
Joint TDES Migration and Technology Insertion Plan	Various	Various	6.092	0.740	Various	3.070	Various	Continuing	Continuing	Continuing
Joint and International Engineering	Various	Various	2.691	2.094	Various	0.130	Various	Continuing	Continuing	Continuing
Joint Interoperability Enhancement Process	Various	Various	0.000	0.490	Various	1.050	Various	Continuing	Continuing	Continuing
Weapons Networks	Various	Various	1.403						1.403	
Web Enabled Cockpit	Various	Various	1.280						1.280	
Subtotal Product Development			**49.539**	**10.889**		**8.177**				
Total Cost			**49.539**	**10.889**		**8.177**				

EXHIBIT R-4, Schedule Profile | DATE: **February 2006**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E Defense-Wide/BA-5**

PROGRAM ELEMENT NUMBER AND NAME: **0604771D8Z Common Joint Tactical Information**

PROJECT NUMBER AND NAME: **P771 Link-16 Tactical Data Link (TDL) Transformation**

Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	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	1	2	3	4
TDES migration to NCOW - Joint TDES Migration Plan (JTMP)								Data Call △				Publish 2006 △				Data Call △				Publish 2008 △				Data Call △				Publish 2010 △				Data Call △
GIG End-to-End Testbed				Initiate △						Operational △																						
Joint Web Enabled Cockpit					Initiate △			Airborne Demonstration △				Joint C4I Exercise △																				
Joint Networked Weapons Concept of Operations				Initiate △					CONOPS △																							
Joint Networked Unmanned Air/Ground/Maritime Vehicles Integrated into JTMP										Initiate △				Draft △			Itegrate to JTMP △			First JTMP with UAVs △				Update △								Update △
Integrated Broadcast Service (IBS), and Common Data Link (CDL) integration to JTMP										Initiate △				Draft △			Integrate to JTMP △			First JTMP with IBS/CDL △				Update △								Update △
Integrate selected Allied TDES Migration into JTMP																	Initiate US Effort △		Initiate UK △					Draft UK to JTMP △			Initiate Aus △			Update UK △		Draft Aus to JTMP △
Interoperability Enhancement Process (IEP)														Initiate △			Joint Demonstration △															
GIG Capability Delivery Plan									Initiate △			Plan Delivery △																				
Wireless Architecture Policy								Initiate △				Policy Developed △																				
Tactical Wireless Architecture									Initiate △			Architecture Delivered △																				
Network Management									Initiate △			Architecture Delivered △																				

EXHIBIT R-4a, Schedule Detail					DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY **RDT&E Defense-Wide/BA-5**	PROGRAM ELEMENT **0604771D8Z**				PROJECT NUMBER AND NAME **P771 Link-16 Tactical Data Link (TDL)**		
Schedule Profile	**FY 2005**	**FY 2006**	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
Initiate Web Enabled Cockpit (WEC) Demonstration	1Q						
Draft Joint TDES Migration Plan (JTMP)	3Q						
Airborne Demostration of WEC	4Q						
GIG End-to-End Testbed Operational		1Q					
Newtorked Weapons CONOPS		1Q					
Initiate Unmanned Vehicle into JTMP		2Q					
Initiate Common Data Link (CDL) integration into JTMP		2Q					
Initiate Integrated Broadcast Service (IBS) into JTMP		2Q					
Publish 2006 JTMP		3Q					
Joint C4I Exercise with WEC		4Q					
GIG Capability Delivery Plan		4Q					
Wirelcss Architecture Policy		4Q					
Initiate Allied Integration into JTMP			1Q				
Draft Unmanned Vehicle into JTMP			2Q				
Draft Common Data Link (CDL) integration into JTMP			2Q				
Draft I Integrated Broadcast Service (IBS) in JTMP			2Q				
Initiate Interoperability Enhancement Process (IEP)			2Q				
Tactical Wireless Architecture			2Q				
Network Management			2Q				
Update JTMP Draft 2008			3Q				
Initiate UK into JTMP			3Q				

Exhibit R-2/R-2a, RDT & E Budget Item Justification							Date: February 2006
Appropriation/Budget Activity Engineering and Manufacturing Development RDT&E, DW, Budget Activity: 5					Item Nomenclature Transformation Support Office PE 0605016D8Z		
Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	41.408	79.697	0.000	0.000	0.000	0.000	0.000

A. Description and Budget Item Justification

BRIEF DESCRIPTION OF ELEMENT

The Business Management Modernization Program (BMMP) will drive greater innovation and higher levels of efficiency throughout the Department Of Defense. Our mission is to transform business operations to achieve improved Warfighter support while enabling accountability. BMMP is implementing enterprise level business capabilities to accelerate department-wide improvements in business processes and information systems. The next-generation BMMP is now characterized by the following agenda for action:

- Provide future business capabilities necessary to support the Warfighting Mission, and focus the activity of business system modernization on acquiring those business capabilities.
- Identify business capabilities that should be common throughout the DoD business enterprise and direct the implementation of enterprise-wide systems with greater visibility at the highest levels of leadership within the Department.
- Control current and future investments in business systems, through the governance of the Defense Business Systems Management Committee (DBSMC) and Investment Review Boards (IRBs).

The program is optimizing previous architectural work, focusing more intently on enhancing DoD enterprise-wide business capabilities, and has realigned governance to facilitate the implementation of measurable capabilities aligned to support the Warfighter. In realigning the BMMP, the Department has identified Business Enterprise Priorities, which are supported by the newly established governance process.

The goal of BMMP is to focus on *deploying* advanced capabilities that are DoD wide in scope is a priority of BMMP. System consolidation, although important, is not an objective – it is an outcome of capability–focused transformation. A capabilities-focused approach will naturally lead to systems reduction while maintaining focus on critical transformation objectives.

This new collaborative structure for decision-making is designed to eliminate past barriers to effective integrated operations and improve the defense Business Management Area execution where it is needed most – supporting the Warfighter!!

Program Accomplishments and Plans/New Starts:

FY 2005:

1. Established the Defense Business Systems Management Committee (DBSMC) as mandated in the National Defense Authorization Act (NDAA) for FY 2005.
2. Established the Investment Review Boards (IRBs)
3. Initiated new investment review process and reviewed all systems requiring certification.
4. Established certification criteria as mandated in the NDAA for FY 2005.
5. Established Business Enterprise Priority Leads
6. Published the Enterprise Transition Plan (ETP)
7. Completed and Released Business Enterprise Architecture (BEA) version 3.0.
8. Established performance metrics to reflect the program redirection.
9. Funded Initiatives that would provide capabilities to the warfighter such as:
   - Wide Area Work Flow- Provides DoD and the Warfighter insight into the supply chain for goods/services received
   - Online Representations and Certifications Application - Ensures DoD and Warfighters do business with commercial entities that comply with U.S. law. Provides the authoritative source of representations and certifications.
   - Business Enterprise Information Services - Standardizes the Treasury reporting process
   - Standard Procurement System/ Federal Procurement Data System – Next Generation - Provides DoD standard contract writing capabilities in accordance with statutes and regulations • Ensures legal and financial sufficiency of DoD sourcing practices.
   - Shipment Visibility Warfighter - Enables unified management of orders, inventory, shipments and forecasts in collaborative supply network
   - Advance Shipping Notice - Improved in transit visibility from contractor and vendor sources of supply, increased data availability for onward movement planning, and reduces the time needed to plan onward movement actions since the movement can be planned in advance of shipment receipt.

FY 2006:

1. Implement the ETP (bi-annual updates).
2. The following rapid deployment capabilities will be provided to the Warfighter

Name	Description	Impact
USXPORTS	USXPORTS provides an enterprise system that will improve the export control practices of the Department of Defense, Commerce and State.	a. Significantly reduces the amount of paper used in the export control process within DoD. b. Data is moved in a secure electronic environment to authorized DoD users. c. Precedent searches are run automatically based on sets of pre-defined user criteria.
DoD FPDS-NG Reporting Application	Develop, deploy & maintain a modernized tool through which to receive machine-to-machine contract action reports from contract writing systems to Federal FPDS-NG.	The Navy will not be able to report contract actions.
Standard Procurement System (SPS) (Increment 2 Sustainment)	Supports Increment 2 deployment by the Services; critical to upgrading SPS Incr 3 due to Milestone C decision in Feb 2006 & deployment in Jul 06; only 20% of sites and 31% of users have been migrated; additional 14000 users and 450 sites to go; also includes server migration.	Delay in getting all users to same Increment; heightened programmatic risk with delay of Increment 3 deployments. Inability to deploy SPS to remaining weapon systems communities and continued maintenance of legacy applications.
WAWF	Supports Phase 2 and 3 integrations w/ DLA for 3.0.9 release in Dec 2005; critical to timing of DLA's DSS upgrade and BSM (EDI 861) both scheduled for Jan 2006. Cost avoidance of separate testing if included in v3.0.9 release versus later patch of approximately $60K.	Potential delay of BSM deployment & Milestone C decision; rejection of UID information passed from DSS to WAWF. Additional cost if not part of release 3.0.9. Required by July 25.
BEIS/Standard Financial Information Structure Deployment	The Standard Financial Information Structure (SFIS) is a comprehensive data structure that supports requirements for budgeting, financial accounting, cost/performance management, and external reporting across the DoD enterprise.	Links program execution to performance, budgetary resources, and actual financial information. Provides contracting officers visibility into linkages between funding, execution, and performance. Standardizes financial reporting data across DoD, reduces costs by streamlining systems and enhancing interoperability

		Enables decision-makers to efficiently compare similar programs and activities across DoD
Advanced Shipping Notice (ASN)	DLA Consolidation and Containerization Points (CCPs) are now provided EDI 856 SC/A transaction sets as advance shipping notices of shipment arrivals that will be processed for onward movement by air or ocean container.	Improved in transit visibility from contractor and vendor sources of supply, Increased data availability for onward movement planning, Reductions in re-requisitioning due to lack of visibility of shipments from contractor and vendor ASN data and information received by automated means adds significant value to the onward movement planning process as well as to the in transit visibility and asset visibility processes. Reduces the time needed to plan onward movement actions since the movement can be planned in advance of shipment receipt. ASN information reduces the time needed for planning lift allocations since anticipated shipments can be inserted in the lift planning process sooner.
Assisted Determination of Semantic Equivalence by Intelligent Agents (ADSEIA).	Develops software based on the processing of structured data by intelligent agents to develop recommendations of semantic equivalence, accompanied by statistical degrees of confidence for the contextual data upon which the recommendation was based.	Frees critical human resources from data processing to the complex tasks of functional analysis and decision making.
DLMS Bridge	Supports a partial near term implementation of the Item Unique Identifier (IUID) and the Radio Frequency Identification (RFID) initiatives. It places middleware in front of legacy receiving systems that are not currently capable of interfacing with other systems using the DLMS.	Enables implementation of RFID receiving by legacy systems that are not DLMS compliant and supports passing of UID data to the UID registry.

DoD Master Data (DMD)	Provides the capability to identify, manage, synchronize and make master data available in shared spaces, focusing on the item, vendor and customer masters.	Accessible, accurate, timely, and trusted source of data for the warfighter. Identification of authoritative sources. DoD common capability in shared space. Synchronization of master data
DoD Standard Truck Manifest	Funds implementation and construction of a DOD standard truck manifest transaction set in both EDI and XML schemas; Provides visibility of truck shipments in theater in GTN 21 beyond the POD.	Manifest transaction set would permit visibility of truck shipments in theater in GTN 21 and provide visibility beyond the POD to the destination Supply Support Activity (SSA), eliminates error-prone manual processes, and fully automates manual process.
DODAAD Reengineering	This is a continuation of an ongoing initiative to reengineer the DODAAD. The effort is to overcome deficiencies that are inherent in the architecture of many of the DOD reference repositories that were put in place well before current technology capabilities.	Improves accuracy and currency of DODAAD data. Insures consistency of authoritative source database and utilize authoritative sources of customer master data to support application systems.
Ontology/Intelligent Collaborative Assistance	Provides DOD's deployment and distribution elements with an integrated, ontology-based, intelligent collaborative toolset that is focused on Distribution & Deployment Operations Center (DDOC) planning and re-planning, decision-support, automated discovery of changing conditions, query assistance, and in-transit visibility.	Ontology-based software and autonomic computing utilize the 'understanding' that can be represented within an information-centric (data in context) software Provides intelligent decision-support with collaborative software agents and automated interpretation of data Systems discover, diagnose, and react to disruption automatically reconfiguring themselves under dynamically changing conditions Anticipate, detect, identify, and protect themselves from external and internal attacks.
Shipment Visibility/Warfighter Support (SFWS)	Presents loss of visibility of containers has resulted in current operations has resulted in waste of perishables, excessive costs (since containers are normally leased), and unnecessary personnel costs to seek them out and return them for use/return.	Pull-based fulfillment system, that responds to actual demand, provides instant access to real time information throughout the network and support postponement strategies

Weapon System Management Product Data Interoperability using the Standard for the Exchange of Product Model Data (ISO 10303)	Converts the highest leverage DoD data objects that support business transformation WEB-language interpretable data exchange sets (DEX) in compliance with the international standard titled Standard for the Exchange of Product Model Data (STEP).	More accurate and interoperable data that optimize spare parts ordering reduce backlogs and customer wait times, improve accountability of defense material, and reduce workload to manage redundant product life cycle data for defense weapon systems.
Real Property Inventory Requirements	The initiative goal is to make consistent real property data (fiscal, physical, legal, environmental and geospatial) available across DoD through development of an integrated real property inventory where data is maintained by the authoritative source.	•Improved ability to achieve an unqualified audit opinion •Appropriately coordinated and integrated business processes •Effective business processes that eliminate duplication •Effective and comprehensive data management, including enterprise-wide data standards fostering transparency and interoperability

B. Program Change Summary	FY 2005	FY 2006	FY 2007	
FY 2006/2007 President's Budget	94.767	75.987	0.000	
FY 2007 President's Budget	41.408*	79.697	0.000	
Total Adjustments	-53.359	+3.710	0.000	
Congressional Adjustments(Distributed)	-45.000	+5.000		
Congressional Adjustments(Undistributed)	-3.359	-1.290		
Below Threshold Reprogramming	-5.000			

* FY 2005 actual Obligations and Expenditures are 72.507. Reflects $35 million carried forward from FY 2004.

Program Change Summary Explanation:

Resources have been realigned in FY 2006 to fund gap analysis for Business Enterprise Architecture and short-term and long-term initiatives that provide immediate capabilities to the Warfighter. Details of the initiatives are addressed in the September release of the Transition Plan. Release of Business Enterprise Architecture (BEA) and an update to the Transition Plan will be completed in FY 2006. The decrease in FY 2007 reflects the Deputy Secretary of Defense's decision to functionally transfer these mission's requirements, and resources to the Defense Business Transformation Agency (BTA). The details of the BTA are addressed in a separate exhibit.

Gap Analysis will be completed within the architecture. Release of updates to the BEA and Transition Plan will be completed that include findings from the Gap Analysis.

Schedule: Maintenance of the Department-wide BEA, perform Business Process Modeling (BPM) and integration Domain Business Process Engineering into the BEA.
Technical: Not Applicable

C. **Other Program Funding Summary:** N/A
D. **Acquisition Strategy:** The strategy will be to contract with the private sector for required effort, to include public accounting firms.
E. **Performance Metrics:** The performance metrics for these resources are separately addressed in the Exhibit 300, Part 1.C. Performance Goals and Measures.

Exhibit R-3, RDT & E, DW Project Cost Analysis		Date: February 2006
Appropriation: RDT&E, DW, Budget Activity: 5	Program Element: 0605016D8Z	Transformation Support Office

Cost Categories	Contract Method & Type	Activity & Location	Total FY PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Architectural Development / Maintenance	Competitive Blanket Purchase Agreement	BMMP	200.607	26.000	Feb 2005	20.587	Oct 2005	0.000	247.194	247.194
Independent Verification and Validation and OCI functions; Risk assessment; Systems Engineering Support	Competitive Time & Material	BMMP	5.800	1.899	Oct 2004	2.600	Oct 2005	0.000	10.299	10.299

Program Support	Competitive Time & Material	BMMP	3.300	2.618	Feb 2005	4.400	Dec 2005	0.000	10.318	10.318
Business Enterprise Priorities (Details Provided in Transition Plan)	Competitive Time & Material	BMMP	0.000	10.891	May 2005	43.660	Oct 2005	0.000	56.891	56.891
Governance, Transition, IRB & Start-up costs for Defense	Competitive Time & Material	BMMP	0.000	0.000	0.00	7.400	Jan 2005	0.000	7.400	7.400

Exhibit R-4, Schedule Profile			Date: February 2006
Appropriation: RDT&E, DW, Budget Activity: 5	Program Element: 0605016D8Z		Business Modernization & Systems Integration

Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2012			
	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	1	2	3	4
Develop BEA 2.4	△																															
Develop BEA 3.0						△																										
Transition Plan						△																										
Devlop BEA 4.0								△																								
Transition Plan								△																								
Develop 5.0										△																						
Transition Plan										△																						

R-4 Schedule Profile -

Exhibit R-4a, Schedule Detail					Date: February 2006				
Appropriation/Budget Activity RDT&E, DW, Budget Activity: 5	Program Element Number and Name 0605016D8Z Business Modernization & Systems Integration				Project Number and Name 016 Business Management System Improvement				
Schedule Profile	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
BEA 3.0	May 2005-Sept 2005								
Transition Plan	Jan 2005-Sept 2005								
BEA 4.0		Oct 2005-March 2006							
Transition Plan		Oct 2005-March 2006							
BEA 5.0		April 2006-June 2006							
Transition Plan		April 2006-June 2006							

R-4a Schedule Profile -

Exhibit R-2/R-2a, RDT&E Budget Item Justification	Date: February 2006
Appropriation/Budget Activity Engineering and Manufacturing Development RDT&E, DW, Budget Activity: 5	100 Item Nomenclature: Weapon System Lifecycle Management - Core Business Mission Area PE 0605019D8Z

Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	0.000	3.543	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification

The Business Management Modernization Program (BMMP) Core Business Mission Areas (CBMAs) were established as part of the program's governance approach. The mission of the CBMA is to lead business process transformation through business process reengineering (BPR) and system integration. The Supply Chain Systems Transformation (AQ) CBMA leads the transformation to strategic acquisition by integrating the people, processes, and technologies required to implement a modern acquisition environment that supports the Warfighter's needs.

The Weapons System Lifecycle Management (WSLM) CBMA is one of five end-to-end functional business areas established by the Department as a framework to transform business operations, implement the Department's Business Enterprise Architecture, and manage the Core Business Mission Area's Information Technology (IT) portfolio. Key mandates for the WSLM include the President's Management Agenda, the E-Government Act of 2002, and the National Defense Authorization Acts of 2003 and 2005. The WSLM Core Business Mission Area includes 153 reported procurement systems and almost 176,000 systems users, representing $124 million. In addition to managing its Defense Department investments, WSLM must also align federal enterprise systems and initiatives with DoD enterprise initiatives.

WSLM is an end-to-end functional area that includes systems and capabilities to better provide for the warfighter's needs. Through determination of common business processes and management of enterprise wide investments in information technology for WSLM business solutions, and within the framework of its governance structure, WSLM brings transparency to acquisition information. This transparency is critical to supporting full life-cycle management of the Department's processes that deliver weapon systems and automated information technology support systems.

Accomplishments/Planned Program:

FY 2005:

1. FY 2005 funds were used for specific program functionality changes in order to facilitate consolidation or retirement of specific information systems.
2. Wide Area Workflow engineering changes increased deployment of this system to additional users, assisted in the capture of Unique Identification and Radio Frequency Identification data, and helped the Military equipment valuation data capture and link multiple systems together using WAWF as the hub.
3. Changes to the system facilitated the elimination of other current forms of DoD electronic invoice and receipt processing such as the WINS system.
4. FY 2005 funds were used to merge two service level systems, Electronic Document Access (EDA) and Navy Air Force Interchange (NAFI), into one system for all services to use. The resulting system included the functionality of both EDA and NAFI, which saved the DoD in time and system maintenance efforts.

FY 2006:

1. Funds will continue to be used for system changes as part of the DoD portfolio management process with regard to merger or consolidation of systems based on duplicate capability.
2. Standard Procurement System (SPS) will incur some functionality adjustments based on the migration to the new Federal Procurement Data System -Next Generation.
3. This new system is mandatory for all Federal agencies and requires the shut down of multiple feeder systems from DoD agencies. Functionality must be included in SPS to shut down the systems.
4. Funds will also be used to incorporate strategic sourcing functional capability in existing systems. Currently there are multiple agencies with portions of this capability (Army, Navy, Air Force, etc.) that need to be merged or consolidated into a single capability delivery vehicle.

FY 2007:

For FY 2007, the Deputy Secretary of Defense approved the transfer of this program to the Business Transformation Agency. The planned program and accomplishments are separately addressed in the budget request for the BTA.

B. Program Change Summary	FY 2005	FY 2006	FY 2007	
FY 2006/2007 President's Budget	0.000	3.600	0.000	
FY 2007 President's Budget	0.000	3.543	0.000	
Total Revised Estimate	0.000	3.543	0.000	
Total Adjustments		-.057		
Congressional Adjustments(Distributed)				
Congressional Adjustments(Undistributed)		-.057		

Current Budget Submit/Budget Estimate

Funding: The decrease in FY 2006 reflects Congressional action for undistributed reductions. The decrease between FY 2006 and FY 2007 reflect a functional transfer of the Weapon System Lifecycle Management CBMA to the Defense Business Transformation Agency, which is separately addressed.

Schedule: Business process reengineering commenced with the completion of the first version of the BEA. The reengineering will be on-going in an incremental approach consistent with the increments of BMMP. All results will be documented in updates to the BEA. Additionally, this information is addressed in more detail in the Enterprise Transition Plan, which is provided separately to the Congress and the Office of Management and Budget.

Technical: Not Applicable

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: Program will make use of competed vehicles or internal resources. The strategy is to competitively contract work with the private sector for required effort. Additional details about the Acquisition Strategy are listed in the Exhibit 300/Modified 300.

E. Performance Metrics: The performance metrics for these resources are addressed in the Exhibit 300/Modified 300.

Exhibit R-3, RDT & E, DW Project Cost Analysis		Date: February 2006
Appropriation: RDT&E, DW, Budget Activity: 5 ($ in millions)	Program Element: 0605019D8Z	Weapon System Lifecycle Management Core Business Mission Area

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	Cost to Complete	Total Cost	Target Value of Contract
WAWF Eng Changes	Interagency Agreement	OSD	0.000	2.100	Mar 2005	0.000	0.000	0.000	2.100	2.100
SPS Eng Changes	Time and Material					3.543	Oct 2005		3.543	3.543

R-4 Schedule Profile - Item No. 20-3 of 20-4

Exhibit R-4, Schedule Profile			Date: February 2006
Appropriation/Budget Activity RDT&E, DW, Budget Activity: 5		Program Element Number and Name 0605019D8Z Weapon System Lifecycle Management Core Business Mission Area	Project Number and Name Weapon System Lifecycle Management Core Business Mission Area

Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2012			
	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	1	2	3	4
Merge Electronic Document Access (EDA) and Navy Air Force Interchange (NAFI)	△																															
SPS Eng Changes					△																											

R-4a Schedule Profile - Item No. 20-4 of 20-4

Exhibit R-4a, Schedule Detail				Date: February 2006					
Appropriation/Budget Activity RDT&E, DW, Budget Activity: 5	Program Element Number and Name 0605019D8Z Weapon System Lifecycle Management Core Business Mission Area			Project Number and Name Weapon System Lifecycle Management Core Business Mission Area					
Schedule Profile	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	2013
WAWF Eng Changes	Oct 2004								
Merge Electronic Document Access (EDA) and Navy Air Force Interchange (NAFI)	Oct 2004								
SPS Eng Changes		Oct 2005							

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0605140D8Z - Trusted Foundry**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	22.355	31.151	42.522	44.935	43.327	43.145	43.062
P014 Trusted Foundry	22.355	31.151	42.522	44.935	43.327	43.145	43.062

A. Mission Description and Budget Item Justification: The Department of Defense (DoD) and National Security Agency (NSA) require state-of-the-art microelectronics parts for incorporation into systems to satisfy existing and future DoD and NSA Information Assurance Directorate (IAD) and Signal Intelligence Directorate (SID) programs. The Director, NSA, has provided a mandate to continue operation of wafer manufacturing and mask-making in the Special Processing Laboratory (SPL), at least through FY 2006, to produce custom microelectronic parts for DoD/NSA and other external government consumers. The cost estimate to initially upgrade the SPL to keep pace with next generation NSA requirements is $1.7 billion. The estimate is beyond NSA's means. Advanced technology semiconductors are integral to a range of important capabilities and defense systems. Indeed, 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 SPL is not currently able to provide this cutting edge level of product, nor is it cost effective to incorporate the necessary improvements to attain such performance. Therefore, NSA has looked to commercial sources to satisfy their requirements. At the same time these needs have escalated, a variety of technical and economic pressures have eliminated many domestic on-shore suppliers and access to trusted fabrication sources for advanced technology semiconductors has declined. This trend is alarming to those uneasy about maintaining U.S. national competitiveness, but is of acute concern to the defense and intelligence community. Access to a Trusted Foundry 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.

The Trusted Foundry Program is a combined DoD-NSA project to develop and manufacture Application Specific integrated Circuits (ASICs) for critical DoD systems in a secure industrial environment. The Trusted Foundry process assures ASIC integrity from development and design through final delivery from NSA designated ASIC production facilities. ASD (NII) designates critical DoD systems to participate in the Trusted Foundry program. Identified Program Offices coordinate with NSA Trusted Foundry Program Office to design and deliver ASICs meeting DoD system specifications. The ASICs are provided to DoD programs as Government Furnished Equipment (GFE).The Department of Defense (DoD) and National Security Agency (NSA) require state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. DoD and NSA have determined that integrated circuits in critical/essential systems need to be procured from trusted sources in order to avoid counterfeit, tampered, sabotaged or suborned parts. Worldwide competition from state-subsidized manufacturing facilities (foundries) is making 'fabless' semiconductor companies the norm in the U.S. Sophisticated off-shore design and software 'factories' with engineering labor rates vastly less than engineering rates in the U.S. have resulted in 'outsourcing' of many parts of the design of 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 alarming to those uneasy about maintaining U.S. national competitiveness, but 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.

DoD and NSA have established this jointly funded effort in microelectronics to assure that all DoD system programs, NSA Information Assurance Directorate (IAD) programs and Signal Intelligence Directorate (SID) programs would have access to state of the art design, fabrication, packaging and test processes from trusted suppliers for their mission critical/essential functions. The Director, NSA, has provided a mandate to continue operation of wafer manufacturing and mask-making in the Special Processing Laboratory (SPL), at least through FY

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0605140D8Z - Trusted Foundry**

2006, to produce custom microelectronic parts for DoD/NSA and other external government consumers.

Over the next six years this program will provide NSA with the trusted state-of-the-art microelectronics manufacturing necessary to meet the performance and delivery needs of their customers while at the same time providing the Services with a cadre of trusted suppliers that will meet the needs of their mission critical/essential systems for trusted integrated circuit parts. NSA, in their role of Trusted Access Program Office has 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.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	31.655	41.860
Current BES/President's Budget (FY 2007)	22.355	31.151	42.522
Total Adjustments	22.355	-0.504	0.662
Congressional Program Reductions		-0.504	
Congressional Rescissions			
Congressional Increases			
Reprogrammings	23.195		
SBIR/STTR Transfer	-0.840		
Other			0.662

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
NSA funding support to the Trusted Foundry Program	30.000	31.151	42.522	44.935	43.327	43.145	43.062	0.000	278.142

Comment:

D. Acquisition Strategy NSA has negotiated a "take or pay" contract with IBM with 10 one year options going through FY 2013. IBM will provide custom integrated circuit parts in production and prototype quantities to meet DoD/NSA leading edge integrated circuit needs. Additional suppliers of 'behind the leading edge' production processes will be developed and accredited by DMEA and NSA as Trusted Suppliers to provide program managers the flexibility to acquire trusted parts appropriate to the minimum risk and vulnerability of their particular system needs. Process Intellectual Property will be obtained from trusted suppliers to assure the availability of parts over the long term. .

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0605140D8Z - Trusted Foundry**

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: All delivered parts will meet IBM standard commercial requirements. Any damaged or misprocessed parts will be replaced free of charge.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0605140D8Z - Trusted Foundry**	**P014**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P014	Trusted Foundry	22.355	31.151	42.522	44.935	43.327	43.145	43.062

A. Mission Description and Project Justification: The Department of Defense (DoD) and National Security Agency (NSA) require state-of-the-art design and manufacturing processes to produce custom integrated circuits designed specifically for military purposes. DoD and NSA have determined that integrated circuits in critical/essential systems need to be procured from trusted sources in order to avoid counterfeit, tampered, sabotaged or suborned parts. Worldwide competition from state-subsidized manufacturing facilities (foundries) is making 'fabless' semiconductor companies the norm in the U.S. Sophisticated off-shore design and software 'factories' with engineering labor rates vastly less than engineering rates in the U.S. have resulted in 'outsourcing' of many parts of the design of 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 alarming to those uneasy about maintaining U.S. competitiveness, but 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.

DoD and NSA have established this jointly funded effort in microelectronics to assure that all DoD system programs, NSA Information Assurance Directorate (IAD) programs and Signal Intelligence Directorate (SID) programs would have access to state of the art design, fabrication, packaging and test processes from trusted suppliers for their mission critical/essential functions. The Director, NSA, has provided a mandate to continue operation of wafer manufacturing and mask-making in the Special Processing Laboratory (SPL), at least through FY 2006, to produce custom microelectronic parts for DoD/NSA and other external government consumers.

Over the next six years this program will provide NSA with the trusted state-of-the-art microelectronics manufacturing necessary to meet the performance and delivery needs of their customers while at the same time providing the Services with a cadre of trusted suppliers that will meet the needs of their mission critical/essential systems for trusted integrated circuit parts. NSA, in their role of Trusted Access Program Office has 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.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Trusted Foundry (FY 2006 Plans)	0.000	31.151	0.000

Provide additional integrated circuits for the Army, Navy, Air Force, and DARPA to satisfy new and on-going programs. New product developments will occur, as well as production parts for some of the prototype developments sponsored the previous year(s). Dedicated secure communications equipment will be purchased and facility modifications necessary to clear the IBM fabrication facility in East Fishkill, New York will be initiated. Maintenance support for the facility infrastructure equipment in Vermont and New York is also included. NSA, DMEA & DSS will begin to assess supplier assurance processes leading to the accreditation of additional trusted suppliers.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0605140D8Z - Trusted Foundry**	**P014**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Trusted Foundry (FY 2007 Plans)	0.000	0.000	42.522

Provides additional integrated circuits for the U.S. Army, U.S. Navy, U.S. Air Force, and DARPA to satisfy new and on-going programs. Costs are projected to be higher due to increased number of parts estimated and cost increases necessary to procure advanced technology parts. Additional effort will be required to increase the number of trusted suppliers and to begin the acquisition of process IP and device codes to assure the long term availability of trusted parts. New product developments will occur, as well as production parts for some of the prototype developments sponsored the previous year(s). Maintenance support for the facility infrastructure equipment is also included.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy NSA has negotiated a "take or pay" contract with IBM with 10 one year options going through FY 2013. IBM will provide custom integrated circuit parts in production and prototype quantities to meet DoD/NSA leading edge integrated circuit needs. Additional suppliers of 'behind the leading edge' production processes will be developed and accredited by DMEA and NSA as Trusted Suppliers to provide program managers the flexibility to acquire trusted parts appropriate to the minimum risk and vulnerability of their particular system needs. Process Intellectual Property will be obtained from trusted suppliers to assure the availability of parts over the long term.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0605648D8Z - Defense Acquisition Executive (DAE)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	0.985	6.015	6.016	6.017	6.017	6.016
P650	Defense Acquisition Executive (DAE)	0.000	0.985	6.015	6.016	6.017	6.017	6.016

A. Mission Description and Budget Item Justification: The War On Terrorism challenges the Department of Defense (DoD) to devote resources not only to countering the asymmetric threats posed by adversaries but to also exploit the advantages of technology superiority in new, transformational ways. At the same time, it has become clear that a new balance must be struck between direct support for joint Combatant Commanders (CoComs) fighting on the front line of the War On Terrorism and longer term planned Service investment strategies. The Defense Acquisition Executive (DAE) Pilot program is designed to provide an avenue for joint and transformational capabilities from Advanced Concept Technology Demonstrations (ACTDs) and Joint Capability Technology Demonstrations (JCTDs) that may not be covered by Service programs to continue a logical progression of program phases and development in order to be suitable for full production and deployment to the warfighter.

This pilot program will also demonstrate spiral acquisition concepts with a goal of getting priority joint and transformational capabilities deployed to the warfighter more quickly. Specifically, this PE will support selected joint capability technologies that are being integrated into programs that have passed Milestone B and are conducting engineering and manufacturing development to meet validated joint needs. The aim is to fully integrate these more mature capabilities into either an existing system or a new system being deployed. The result should be a successful Milestone C decision. With strong support from CoComs, ACTDs have enhanced joint capabilities providing an "on ramp" to conventional acquisition processes for joint needs in a system that emphasizes Service-sponsored core military capabilities. JCTDs will concentrate that effort with continued emphasis on transitioning demonstration-proven capabilities into Programs of Record (PoR) for sustainment of residuals and rapid acquisition and fielding of production models. The DAE Pilot Program, using ACTDs and JCTDs funded in BA3 and BA4, will pioneer a transformational new model for Department of Defense acquisition by using funding in BA5 and Procurement to provide a path for those capabilities that are so transformational that they must be put on a "fast track" to acquisition. The DAE Pilot Program supports the Joint Capabilities Interoperability Development System (JCIDS) by addressing the needs of CoComs directly. The Defense Wide funding for this program in BA3, BA4, BA5 and Procurement allows the Deputy Under Secretary of Defense for Advanced Systems and Concepts (DUSD(AS&C)) on behalf of the DAE (USD (AT&L)) to support the spectrum of technology development through initial acquisition providing the Combatant Commanders, Services, Agencies, and operators with a new model for tailoring acquisition solutions to meet warfigher needs.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	1.000	1.000
Current BES/President's Budget (FY 2007)	0.000	0.985	6.015
Total Adjustments	0.000	-0.015	5.015
Congressional Program Reductions			
Congressional Rescissions		-0.015	
Congressional Increases			

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0605648D8Z - Defense Acquisition Executive (DAE)**

Reprogrammings			
SBIR/STTR Transfer			
Other			5.015

The program increase in FY 2007 is for the "joint peculiar" ACTD/JCTD projects that are ready for transition under the DAE pilot program.

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
ACTD PE 0603750D8Z (RDT&E/DW BA-3/Line #44)	207.818	170.275	158.334	164.696	177.936	182.380	177.252	0.000	1238.691
JCTD PE 0603648D8Z (RDT&E/DW BA-3/Line #36)	0.000	34.443	35.553	35.590	35.624	35.613	35.576	0.000	212.399
JCTD Transition PE 0604648D8Z (RDT&E/DW BA-4/Line #83)	0.000	6.889	3.047	3.050	3.053	3.052	3.049	0.000	22.140
JCTD Procurement (OSD Major Equipment: PE 0902198D8Z)	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined above. Refer to the specific Budget Exhibit for more details on each funding line.

D. Acquisition Strategy The DAE will take a few select JCTDs or ACTDs that do not neatly fit under a Service area of responsibility and provide resources to the most promising "joint peculiar" programs. The DAE will provide an avenue for joint and transformational capabilities that are not easily resourced by any one Service. The DAE pilot program aims to continue a logical progression of program phases and development in order to be suitable for full production and deployment to the warfighter. Fitting this strategy, the Joint Automated Deep Operations Coordination System (JADOCS) project has been selected as the first DAE project in FY 2006. JADOCS is under the purview of the Joint Precision Strike Demonstration (JPSD) program office and is providing new, enhanced automation support to command centers and component headquarters for horizontal and vertical interoperability of approximately twenty (20) C4ISR systems in the areas of Strike Planning, Situational Awareness, Joint and Combined Interoperability, and Force Transition in War. Currently, this joint capability has not been absorbed into a program of record prior to FY-08. To the joint warfighter, JADOCS has become a critical "go to war" planning and engagement execution tool. It continues to be used in OEF and OIF. The JADOCS prototype system is operationally deployed in four CoCom theaters. It is integrated with each Military Service and several Defense Agencies, with a wide range of real-world applications, from the tactical to the strategic level. JADOCS has not been supported by the Services as a program of record; however, it has evolved into a joint warfighting system deployed to over 900 locations and employed by over 5,000 joint operators worldwide. While still a prototype, it is presently embedded in the C2 architecture at USCENTCOM, USPACOM, USFK, and USEUCOM.

E. Performance Metrics:

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 5	**0605648D8Z - Defense Acquisition Executive (DAE)**

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
	Project Selection Focus					
	Spiral Technologies					
	Final Demonstration Completed					
	Shared Funding and Visibility					
	Independent MUA Assessment					
	Transition of technology					

Comment: E. Performance Metrics:
• Capability gained from at least one JCTD/ACTD per year will transition to an acquisition program(s) of record, GSA Schedule, CoCom sustainment or, in the case of software-based products, operationally-sustained systems (such as the Global Command and Control System (GCCS)).
• JCTD/ACTD products selected will reach Milestone C within one year of Milestone B decision.

The JCTD/ACTD performance metrics are centered on how fast relevant joint and/or transformational technologies can be demonstrated and fielded 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. The table below defines these metrics and helps compare/contrast the current ACTD program with the new JCTD business process model. Performance Metrics Comparison between ACTDs and JCTDs:

• Project Selection Focus: ACTDs are Threat Based (Shared Military Service and CoCom influence). JCTDs are Capability Based with greater CoCom influence looking at nearer term needs.

• Spiral Technologies: For ACTDs no Metric currently established. For JCTDs Spiral Technology available within one year of JCTD initiation.

• Final Demonstration Completed: For ACTDs - (Starting Point: Approved ID) 3 to 4 years after initiation (Implementation Directive (ID) Signed), 50% completed by the end of the 2nd year. All JCTDs completed by the end of the 3rd year.

• Shared Funding and Visibility of resources: For ACTDS - OSD provides no more than 30% of the budgeted resources. Funding provided from many different program elements. For JCTDs OSD provide significantly more funding (more than 50% OF THEIR PRODUCTS), especially in the first two years.

• Military Utility Assessment (MUA) conducted by an independent activity: MUA is traditionally tied to a specific planned exercise for evaluation. For JCTDs - not necessarily tied to an exercise. Greater flexibility to establish military utility via operational "real-world" demonstration or specifically designed test/venue.

• Transition of technology: For ACTDs 70% transition at least one product to sustainment. For JCTDs 80% transition at least 50% of their products to sustainment.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0605648D8Z - Defense Acquisition Executive (DAE)**	**P650**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P650	Defense Acquisition Executive (DAE)	0.000	0.985	6.015	6.016	6.017	6.017	6.016

A. Mission Description and Project Justification: The War On Terrorism challenges the Department of Defense (DoD) to devote resources not only to countering the asymmetric threats posed by adversaries but to also exploit the advantages of technology superiority in new, transformational ways. At the same time, it has become clear that a new balance must be struck between direct support for joint Combatant Commanders (CoComs) fighting on the front line of the War On Terrorism and longer term planned Service investment strategies. The Defense Acquisition Executive (DAE) Pilot program is designed to provide an avenue for joint and transformational capabilities from Advanced Concept Technology Demonstrations (ACTDs) and Joint Capability Technology Demonstrations (JCTDs) that are not covered by Service programs to continue a logical progression of program phases and development in order to be suitable for full production and deployment to the warfighter. This pilot program will also demonstrate spiral acquisition concepts with a goal of getting priority joint and transformational capabilities deployed to the warfighter more quickly. Specifically, this PE will support selected joint capability technologies that are being integrated into programs that have passed Milestone B and are conducting engineering and manufacturing development to meet validated joint needs. The aim is to fully integrate these more mature capabilities into either an existing system or a new system being deployed. The result should be a successful Milestone C decision.

DAE Selection Process:

The JCTD Program will use a deliberate process for selecting the transitioning ACTDs into this program element. Successful MUAs will be balanced against the top priorities of the CoComs. Defense Components, industry and coalition partners. The proposed transitioning JCTD candidates will be briefed to the JCS Functional Capability Boards to ensure mission needs remains intact.. The principal management tool for the transitioning JCTD will be the Transition Plan (TP), crafted during the initial JCTD program. Each approved JCTD will be described in these top-level documents which provide details of the demonstration/evaluation, the main objectives, approach, critical events, measures of success, transition options, participants, schedule, and funding. In order for the DAE Pilot Program to start in FY 2006, candidates for the first two years of the pilot will be selected from ACTDs already underway or recently completed. This pilot program will support selected joint capability technologies that are being integrated into programs that have passed Milestone B or are still waiting to be designated as a program of record with a potential sustainment path established. The goal is to fully integrate these more mature capabilities into either an existing system or a new system being deployed. This pilot program will also demonstrate spiral acquisition concepts with a goal of getting priority joint and transformational capabilities deployed to the warfighter faster than the traditional acquisition process. If warranted, the program office will proceed to Milestone B and Milestone C decisions.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2006 and FY 2007 General Program Plans:	0.000	0.985	6.015

AS&C will initiate the JCTD Program and the DAE Pilot program in FY 2006 by assessing the top priority needs of the CoComs and then reviewing the list of ongoing and completed ACTDs. The DAE Pilot Program will begin by selecting capability(s) from the ACTD program that are mature enough to transition to a Program of Record close to a Milestone B decision. By conducting engineering and manufacturing development to meet validated joint needs, the aim is to fully integrate these more mature capabilities into either an existing system or a new system being deployed. The result should be a

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 5	**0605648D8Z - Defense Acquisition Executive (DAE)**	**P650**

successful Milestone C decision. The FY 2006 President's Budget highlighted Joint Automated Deep Operations Coordination System (JADOCS) system as a recommended DAE pilot program. Due to the vital capability JADOCS provides it has been selected for DAE funding in FY 2006 and FY 2007. JADOCS has proven effective in both Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), but does not have a transition path or adequate funding to support continued operational development in direct, real-world support of the Combatant Commanders. The program increase in FY 2007 is to cover additional ACTD/JCTD projects that are ready for transition under the DAE pilot program.

C. Other Program Funding Summary	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Compl	Total Cost
Advanced Concept Technology Development (ACTD) RDT&E BA 3 line # 44	207.818	170.275	158.334	164.696	177.936	182.380	177.252	0.000	1238.691
Joint Capability Technology Demonstration (JCTD) RDT&E BA3 Line#36	0.000	34.443	35.553	35.590	35.624	35.613	35.576	0.000	212.399
Joint Capability Technology Demonstration (JCTD) RDT&E BA4 Line#83	0.000	6.889	3.047	3.050	3.053	3.052	3.049	0.000	22.140
Procurement (JCTD Pilot), Major Equipment-OSD Def Wide (0902198D8Z)	0.000	1.000	2.000	2.000	2.000	2.000	2.000	0.000	11.000

Comment: The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines are outlined in the table above. Refer to the specific Budget Exhibit for more details on each funding line.

D. Acquisition Strategy The Joint Automated Deep Operations Coordination System (JADOCS) has been selected as the initial project for DAE funding due to the vital capabilities JADOCS provides to the CoComs. This funding will ensure sustainment and further development of this 'joint peculiar" capability. JADOCS is under the purview of the Joint Precision Strike Demonstration (JPSD) program office.

E. Major Performers Not Applicable.

Exhibit R-3, RDT & E, DW Project Cost Analysis			Date: February 2006
Appropriation: RDT&E, DW, Budget Activity: 5 ($ in millions)		Program Element: 0901200D8Z	Real Property and Installation Lifecycle Management and Financial Management - Core Business Mission Area

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Financial Management Core Business Mission	Interagency Agreement	OSD	1.611	3.387	Feb 2005	3.551	Feb 2006	0.000	8.549	8.549
RP&ILM CBMA Technical and Administrative Services	GSA MOBIS Schedule Time and Material	OSD	2.869	0.230 3.008	May 2005 - Sep 2005	4.051	Jan 2006	0.000	10.158	10.158
JFMIP compliant DEAMS initiative support	Interagency Agreement	OSD	0.000	0.000		4.012	Jan 2006	0.000	4.200	4.200
RP&ILM CBMA AoA	GSA IT Schedule Time and Material	OSD	0.000	0.459	April 2005	0.000		0.000	0.459	0.459

Exhibit R-4, Schedule Profile			Date: February 2006
Appropriation/Budget Activity RDT&E, DW, Budget Activity: 5	Program Element Number and Name 0901200D8Z Real Property and Installation Lifecycle Management and Financial Management - Core Business Mission Area		Project Number and Name 210 Real Property and Installation Lifecycle Management and Financial Management - Core Business Mission Area

Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2012			
	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	1	2	3	4
Increment 1 BPR	△																															
Increment 2 BPR	△				△																											
Increment 3 BPR					△																											

R-4 Schedule Profile - Item No. 20-3 of 20-4

Exhibit R-4a, Schedule Detail					Date: February 2006				
Appropriation/Budget Activity RDT&E, DW, Budget Activity: 5	Program Element Number and Name 0901200D8Z Real Property and Installation Lifecycle Management and Financial Management - Core Business Mission Area				Project Number and Name 210 Real Property and Installation Lifecycle Management and Financial Management - Core Business Mission Area				
Schedule Profile	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
Increment 1 BPR	Oct 2005								
Increment 2 BPR	Oct 2005	Oct 2006							
Increment 3 BPR		Oct 2006							

R-4a Schedule Profile - Item No. 20-4 of 20-4

Exhibit R-2, RDT&E Budget Item Justification							Date: February 2006
Appropriation/Budget Activity RDT&E Defense-Wide, BA 6	R-1 Item Nomenclature: Special Technology Support PE 0603704D8Z						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	29.531	20.977	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification:

Special Technology Support to Intelligence and Light Forces is a classified program. See the Congressional Justification Book for program details.

Program Accomplishments and Plans:

FY 2005 Accomplishments:

- Mission Support $29.531

FY 2006 Accomplishments:

- Mission Support $20.977

FY 2007 Plans:

- Not applicable

B. Program Change Summary: (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	29.571	19.916	0.000
Current President's Budget	29.531	20.977	
Total Adjustments	-0.040	+1.061	
Congressional program reductions		-0.127	

Congressional rescissions		-.212
Congressional increases		+1.400
Other Adjustments	-.040	

Change Summary Explanation:

.

FY 2005: $.040 Department adjustments (Previous President's Budget included $11.000 in Congressional adds and $.703 Undistributed congressional reduction)
FY 2006: $1.400 Congressional add for Spray Technique Analysis; $.127 Congressional program reductions; $.212 Congressional rescissions
FY 2007: Funding transferred out of USD-I

C. Other Program Funding Summary: Not Applicable

D. Acquisition Strategy: Not Applicable

E. Performance Metrics: Classified

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: PROJECT TITLE:

GENERAL COMMENTS: Funding for Joint Training Transformation (T2) moved from Navy Program Elements (PE) 0603727N and 0804758N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005. These programs are not new starts.

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total PE			72,897	64,433	55,793	53,780	54,815
JOINT NATIONAL TRAINING CAPABILITY (JNTC) Project Code P758							
	0	0	34,906	31,741	26,371	27,003	28,148
JOINT TRAINING CAPABILITY ANALYSIS OF ALTERNATIVES (TCAOA) Project Code P759							
	0	0	10,700	11,000	8,600	5,600	5,077
JOINT COMBINED TRAINING CENTRE (JCTC) Project Code P760							
	0	0	5,000				
JOINT SIMULATION SYSTEMS (JSIMS) Project Code P761							
	0	0	11,991	11,092	9,922	9,977	9,990
JOINT INTEGRATION INFORMATION OPERATIONS RANGE/JNTC (JIIOR) Project Code P762							
	0	0	10,300	10,600	10,900	11,200	11,600

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Funds moved from Navy (Program Element 0603727N) to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

These RDT&E programs are each part of a coordinated effort to develop and deploy capabilities for rapidly linking and integrating live, virtual, and constructive (LVC) forces of Services, Combatant Commanders (COCOM), coalition, and interagencies by creating a realistic battlespace environment in which to train as a Joint Warfighting force to meet emerging mission requirements including the Global War

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: PROJECT TITLE:

on Terrorism. These investments support the Secretary of Defense's (SEC DEF) T2 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)
- Training Capability Analysis of Alternatives (TCAoA)
- Joint Combined Training Centre (JCTC)
- Joint Simulation Systems (JSIMS)
- Joint Integration Information Operations Range (JIIOR)

Initially established in 2003, JNTC continues to develop and integrate Advanced Training Technologies (ATT) into a seamless Joint training environment. JNTC establishes the overarching Joint framework and context necessary for COCOMs and Services to achieve a Joint operating environment through an integrated network of training sites and nodes. JNTC provides the common standards, architecture, and development processes required to link the other training transformation programs within this program element. These initiatives develop and enhance future Joint training capabilities to meet current and future training requirements.

The TCAoA effort focuses on comparing current training capabilities with training requirements in order to identify gaps in our current joint training capability, to identify alternatives for removing those gaps, and to assess the cost and effectiveness of these alternatives. Specifically, the TCAoA focuses on: (1) developing and integrating enhancements to the existing and programmed constructive simulations (Alt 3), (2) pursuing selected alternative training methodologies (Alt 4), (3) developing an innovative acquisition prototype,(Alt 4) (4) developing solutions to implement recommendations from the Joint Staff's comprehensive study to re-engineer Joint training (Alt 4 & 5), and (5) developing a clear management and oversight structure to meet future Joint training requirements (Alt 4). 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 TCAoA study. These efforts increase warfighter Joint training capabilities with improved constructive simulations, streamlined acquisition processes, and leveraging industry training methodologies and technologies to provide on-demand Joint training tailorable to COCOM requirements for Joint Task Force headquarters staffs and individuals.

At the July 2004 Australia/US Ministerial Consultations (AUSMIN), the SECDEF signed an Australian – United States Joint Statement of Principles of Interoperability and affirmed the development of a Joint/Combined Training Centre (JCTC) in Australia. This enables the

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: PROJECT TITLE:

linkage of JCTC to Department of Defense's (DoD) JNTC leveraging each other's training capabilities and providing the environment to exercise Coalition mission essential tasks.

In 2003, SECDEF tasked U.S. Joint Forces Command (USJFCOM) with the responsibility for continued development of JSIMS software. Significant investments were made under the JSIMS program and complete the transition and integration of selected residual JSIMS capabilities into the Joint Force Trainer Toolkit (JFTT). This effort provides warfighters with enhanced Joint LVC based training capabilities resident in the JFTT.

The Joint Integration Information Operations Range (JIIOR) will establish a secure, flexible, and seamless environment for the Services and Joint warfighters to test, train, develop tactics, and exercise simulated computer network attack using selected offensive electronic warfare capabilities. This environment enables the COCOM's 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 weapons that they have with kinetic weapons.

Note: Previous JIIOR funding was under Navy PE 0804758N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

B. PROGRAM CHANGE SUMMARY:

	FY 2005	FY 2006	FY 2007
Previous President's Budget Submission	0	0	0
President's Budget	0	0	72,897
Total Adjustments	0	0	0
Congressional Adjustment	0	0	0
Transfers	0	0	0
Program Adjustments	0	0	0

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: PROJECT TITLE:

PROGRAM CHANGE SUMMARY EXPLANATION: Funds moved from Navy PE 0603727N to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

Technical: Not applicable.

Schedule: Not applicable.

C. OTHER PROGRAM FUNDING SUMMARY: Not applicable

D. ACQUISITION STRATEGY: Not applicable.

E. PERFORMANCE METRICS:

Performance metrics apply to the five projects of the Joint Force Trainer RDT&E program (JNTC, TCAoA, JCTC, JSIMS, and JIIOR) through the USJFCOM Joint WarFighting Center (JWFC) Joint Force Trainer Technology Planning Board. The board will consist of senior technical, operational, program manager, and stake holder representatives within the Joint Force Trainer Community. The board will merge and prioritize technical training requirements. It will apportion work to the RDT&E elements based on an assessment of where the work is best accomplished. The board will evaluate the efficacy of development efforts based on performance metrics and will vote on whether or not to continue the effort. This process will ensure the Joint Force Trainer capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to; time, money, realism, and fidelity as defined below:

- Time – Will the effort enable the Joint Force Trainer to prepare and execute training faster than current capabilities allow?
- Money – Will the effort enable the Joint Force Trainer to prepare and execute training at a more effective and efficient cost than current capabilities allow?

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: PROJECT TITLE:

- 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?

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P758 PROJECT TITLE: JOINT NATIONAL TRAINING CAPABILITY (JNTC)

COST: (Dollars in Thousands)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT NATIONAL TRAINING CAPABILITY (JNTC) Project Code P758							
	0	0	34,906	31,741	26,371	27,003	28,148

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: DOD directed USJFCOM to establish the JNTC Advanced Training Technology (JNTC/ATT) to develop future training concepts and capabilities. The mission is to develop the robust RDT&E capabilities that integrate LVC elements into a seamless Joint training environment. JNTC creates Joint warfighting conditions through a networked collection of interoperable training sites, ranges, and nodes that synthesize personnel, doctrine, and technology to deliver and achieve "Joint Context" for COCOM and Service training requirements. These products train and better prepare our Joint/Coalition Service members and interagency partners going into combat theaters of operations and stabilization. These funds provide critical Joint warfighter 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 T2 vision. Three years worth of JNTC/ATT RDT&E funding to date has provided important training enablers facilitating successful Joint training events.

B. ACCOMPLISHMENTS/PLANNED PROGRAM: Under the Navy's Program Element 0603727N, JNTC performed research and development (R&D) within an LVC distributed test-bed supporting the advancement of training technologies in the context of a Joint integrated battlespace. The test-bed operated as a continuous training R&D environment and provided the foundation for a distributed and deployable Mission Rehearsal System, which integrated live Intelligence, Surveillance & Reconnaissance feeds into the Common Operational Picture. The LVC test-bed supported advancement of training technologies, R&D test events, experimentation, and interoperability certification assessments. The test-bed enabled new training Concept of Operations to drive efficiency into the planning and conduct of complex Joint training events. It also provided capability to identify, evaluate, and solve training system shortfalls. This test-bed established as a laboratory at USJFCOM, draws on other facilities through distributed communication links.

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P758 PROJECT TITLE: JOINT NATIONAL TRAINING CAPABILITY (JNTC)

ACCOMPLISHMENTS CONTINUED:

- Developed the Initial Capabilities Document for the Joint Rapid Distributed Database Development Capability (JRD3C) by implementing JRD3C into the Joint Capability Improvement Document System process.
- Designed, developed, tested and evaluated JRD3C proof of concept.
- Prototyped a knowledge management framework by providing access to digital libraries and distributing to centers of excellence in support of Standing Joint Force Headquarters training and mission rehearsal.
- Developed a real world database and distribution system for geospatial intelligence data and force data sharing to facilitate training and mission rehearsal capability.
- Developed Opposing Forces (OPFOR) Threat Systems to include service instrumentation, interoperability standards, weapons models, simulated terrain, and virtual training capabilities.
- Established the JNTC/ATT Laboratory's initial infrastructure support to operate and maintain the robust RDT&E lab environment in support of the JNTC certification program. This certification program provides the "to be" standards and architecture identification, development, and support for multiple R&D projects in technical focus areas such as: networking, Joint Command and Control, instrumentation, data collection, after action review, opposing forces technologies, live, virtual, constructive (LVC) technologies, knowledge management, information management, and training systems operations research.

	FY 2007
JOINT NATIONAL TRAINING CENTER (JNTC) ADVANCED TRAINING TECHNOLOGY (ATT) P758	34,906

FY 2007 Plans:

- Previous funding for JNTC/ATT was under Navy Program Element (PE) 0603727N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for Fiscal Year 2005.
- Develop Joint After Action Review tool set.

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P758 PROJECT TITLE: JOINT NATIONAL TRAINING CAPABILITY (JNTC)

- Integrate instrumentation capability into Joint training environment.
- Enhance and integrate space domain representations into Joint training environment.
- Develop and integrate Chemical Biological Radiological/Nuclear and Explosive capabilities into the Joint training environment.
- Perform RDT&E in new and emerging technologies such as immerse virtual technologies, story driven training, light simulation/federations, massive-multiplayer online games, training objective driven simulations, embedded training, and Joint community unique simulations.
- Perform migration testing of training applications to Global Information Grid infrastructure.

C. OTHER PROGRAM FUNDING SUMMARY: Funds moved from Navy (Program Element 0603727N) to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

D. ACQUISITION STRATEGY: Not applicable.

E. MAJOR PERFORMERS:

Recipients	City/State	Description
No performer in this PE received more than 15% of the program or $10 million.		

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P759 PROJECT TITLE: JOINT TRAINING CAPABILITY ANALYSIS OF ALTERNATIVES (TCAoA)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT TRAINING CAPABILITY ANALYSIS OF ALTERNATIVES (TCAoA) Project Code P759							
	0	0	10,700	11,000	8,600	5,600	5,077

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: JWFC will support development capabilities in Joint simulations to eliminate training gaps that are identified by the COCOMs and in accordance with SECDEF's T2 objectives. In accordance with the Unified Command Plan (2004), USJFCOM JWFC is the lead in the development and operation of systems and architectures that directly support distributed Joint training requirements of other COCOMs, Joint Task Forces (JTFs) and Defense Agencies. The underlying premise of TCAoA (Alt 4 and 5) centers on privatization of training support and development with the competitive market forces driving the development of technologies to reduce the cost of training. JFCOM will create the Joint Oversight Board established as a governance process to review the effectiveness of the tools and the providers. Management of the toolkit will be a government-led Consortium with industry and academia that ensure the tools in the toolkit comply with the requirements of the common architecture. A number of "Out of the Box' technologies from Industry, Government and Academic sources that offer the greatest potential to reengineer Joint training will be identified 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 PROGRAM: Under the Navy's Program Element 0603727N, TCAoA was a new start for FY 2006. It is not a new start in FY 2007.

	FY07
JOINT TRAINING CAPABILITY ANALYSIS OF ALTERNATIVES (TCAoA) P759	10,700

FY 2007 Plans

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P759 PROJECT TITLE: JOINT TRAINING CAPABILITY ANALYSIS OF ALTERNATIVES (TCAoA)

- Previous funding for TCAoA was under the Navy PE 0603727N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.
- Form governance and execution management groups.
- Develop contract models.
- Develop program assessment/exit criteria.
- Identify sites/program for training implementation.
- Develop/initiate and target Training Support Provider acquisition plan.
- Identify capabilities shortfalls for targeted market maker incentive investments – initiate focused call.
- Fund select development/integration proposals.

C. OTHER PROGRAM FUNDING SUMMARY: Funds moved from Navy (Program Element 0603727N) to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

D. ACQUISITION STRATEGY: Not applicable.

E. MAJOR PERFORMERS:

Recipients	City/State	Description
No performer in this PE received more than 15% of the program or $10 million.		

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P760 PROJECT TITLE: JOINT COMBINED TRAINING CENTRE (JCTC)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT COMBINED TRAINING CENTRE (JCTC) Project Code P760							
	0	0	5,000	0	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: At the July 2004 Australia/U.S. Ministerial Consultations (AUSMIN), the SECDEF signed an Australian – United States Joint Statement of Principles of Interoperability and affirmed the development of a Joint/Combined Training Centre (JCTC). The end-state for the JCTC is to enhance coalition training in Joint/Combined mission essential tasks in order to assess operational capability and preparedness, improve interoperability, facilitate capability development and develop recommended solutions, and enhance regional security. The JCTC will link DoD's Joint National Training Capability (JNTC) as part of the Global Joint Training Infrastructure (GJTI) via USPACOM's Gaming and Simulation Facility (GSF) and eventually United States Pacific Command's Pacific Warfighting Center as a cooperative collection of training sites, nodes, simulations, and events. Without this funding, Australia may disengage from this strategic initiative, and could withdraw their AU$23 Million commitment thereby reducing coalition readiness in the Global War on Terrorism and other potential real world operations.

B. ACCOMPLISHMENTS/PLANNED PROGRAM: Under the Navy's Program Element 0603727N, JCTC was a new start for FY 2006. It is not a new start in FY 2007.

	FY 2007
JOINT COMBINED TRAINING CENTRE (JCTC) P760	5,000

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P760 PROJECT TITLE: JOINT COMBINED TRAINING CENTRE (JCTC)

FY 2007 Plans:

- Previous funding for JCTC was under Navy PE 0603727N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.
- Commission a Program Study and/or a series of planning and design studies of desired capabilities as described in the JCTC scoping study. These studies establish the Modeling and Simulation baseline systems to support Australian participation with the US Joint training community, the technical requirements for US-Australian network interconnection and finally discover the policy and technical requirements to satisfy Multinational Information Sharing for authorizing network interconnection.
- Establish connectivity between USPACOM and Australia JCTC Management Center.
- Prepare instrumented ranges as described in the JCTC scoping study to support a proof of concept demonstration.
- Lease and transport supporting architecture for a deployable and/or permanent live, virtual and constructive environment to support proof of concept demonstration.

C. OTHER PROGRAM FUNDING SUMMARY: : Funds moved from Navy (Program Element 0603727N) to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

D. ACQUISITION STRATEGY: Not applicable.

E. MAJOR PERFORMERS:

Recipients	City/State	Description
No performer in this PE received more than 15% of the program or $10 million.		

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P761 PROJECT TITLE: JOINT SIMULATIONS SYSTEMS (JSIMS)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT SIMULATION SYSTEMS (JSIMS) Project Code P761							
	0	0	11,991	11,092	9,922	9,977	9,990

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: In 2003, SECDEF tasked USJFCOM with the responsibility for continued development of JSIMS software. Additionally, in accordance with Unified Command Plan 2004, USJFCOM JWFC leads the development and operation of systems and architectures that directly support distributed Joint training requirements of other COCOMs, Joint Task Forces (JTFs) and other interagencies. Due to significant investments made under the JSIMS program, this project completes the transition and integration of selected residual JSIMS capabilities into the Joint Force Trainer Toolkit (JFTT). This effort provides warfighters with enhanced Joint LVC-based training capabilities resident in the JFTT. By continuing this level of effort, previous investments in the JSIMS program leverage existing capabilities and prevent the development of products from scratch.

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2007
JOINT SIMULATION SYSTEM (JSIMS) P761	11,991

Accomplishments: Under the Navy's Program Element 0603727N, these enhancements addressed COCOM training requirements such as:

- Integrated Joint Simulations (JSIMS) Theater Battle Management Core System adapter with Joint Multi-Resolution Model (JMRM). Complete and ready for use for Terminal Fury 2006 exercise.
- Built Run Time Manager Command, Control, Communications, Computers and Intelligence (C4I) interface completed for FY 2006 COCOM exercises to stimulate real world C4I info.

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P761 PROJECT TITLE: JOINT SIMULATIONS SYSTEMS (JSIMS)

- Developed High Level Architecture (HLA) Interface with Multiple Unified Simulation Environment/AF Synthetic Environment for Reconnaissance and Surveillance unmanned aerial vehicle simulation.
- Purchased Run Time Infrastructure for testing and developmental support during Terminal Fury 2006.
- Developed HLA Interface for Tactical Simulations (TACSIM).
- Identified/developed requirements for level II terrain for use in future exercises (two year development effort).
- Developed HLA Interface with Missile Defense Space Tool for Terminal Fury 2006.
- Developed Entity Level Server for Joint Theater Level Simulation (JTLS) for use in the JMRM Federation.
- Developed Web enabled JTLS for use in all future COCOM exercises.
- Funded analysis and documentation for Weapons affects data for Joint Conflict And Tactical Simulations (JCATS) as authoritative data repository for all Joint exercises.
- Integrated After Action Report tool for JMRM.
- Developed and integrated a JMRM Federation diagnostic tool, Simulation Interoperability Test Harness.

FY 2007 Plans:

- Previous funding for JCTC was under Navy PE 0603727N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.
- Integrate, enhance, and/or reengineer selected existing JSIMS capabilities into Joint Force Trainer Toolkit
  - Decision support tools
  - Modeling and Simulation (M&S) interfaces to command and control systems
  - Software utilities for rapidly translating and building simulation databases

C. OTHER PROGRAM FUNDING SUMMARY: Funds moved from Navy (Program Element 0603727N) to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P761 PROJECT TITLE: JOINT SIMULATIONS SYSTEMS (JSIMS)

D. ACQUISITION STRATEGY: Not applicable

E. MAJOR PERFORMERS:

Recipients	City/State	Description
No performer in this PE received more than 15% of the program or $10 million.		

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P762 PROJECT TITLE: JOINT INTEGRATED INFORMATION OPERATIONS RANGE/JNTC (JIIOR)

Project Number & Title	FY 2005 Actual	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
JOINT INTEGRATED INFORMATION OPERATIONS RANGE/JNTC (JIIOR). Project Code P762							
	0	0	10,300	10,600	10,900	11,200	11,600

Previous funding for JIIOR was under the Navy PE 0804758N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005. The Joint IO Range is under development with a planned initial capability of July 2006.

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. "Assuring information systems in the face of attack and conducting effective Information Operations" was one of the six critical operational goals in DoD's transformation efforts (2001 Quadrennial Defense Review). In addition, the DoD IO Roadmap, signed on 30 October 2003, explicitly identified DoD's need for the IO Range. The Fiscal Years 2004-2009 Defense Planning Guidance (DPG) stated the need to expand IO training and education for the developing cadre of IO professionals and provide an environment for analysis, testing, training, combat assessments, and measures of effectiveness for more reliable IO capabilities. Deputy SECDEF Memorandum on the IO Range signed 18 November 2005 established the requirement for creating a cooperative information operations range among military services under the leadership of USJFCOM.

Within SECDEF's Training Transformation (T2) objectives the IO Range establishes a secure, flexible, seamless and realistic test, training, and exercise environment for developing and operationalizing IO weapon systems and their associated tactics, techniques and procedures. It allows for effective and thorough Service and COCOM-sponsored training and exercises in an environment representative of actual combat targets and systems. Creating this capability requires a concerted effort across the IO community to achieve an

interoperable infrastructure incorporating representative operational environments, resources, capabilities, and intelligence necessary to effectively evaluate, characterize, and certify IO weapon systems and tactics.

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 test, training, exercise, and experimentation events. Capabilities at the selected sites will be securely connected and integrated into IO Range. A key feature of this concept is the 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 Range, supporting all the disciplines of IO Operational Security, computer network operations, electronic warfare, psychological operations, and military deception.

In short, the IO Range provides an environment enabling the Services and COCOMs 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 weapons that they have with kinetic weapons.

B. ACCOMPLISHMENTS/PLANNED PROGRAM: Previous funding for JIIOR was under the Navy PE 0804758N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005. The Joint IO Range is under development with a planned initial capability of July 2006. Ten initial sites will be linked together to create a new, transformational, IO Range capability with USJFCOM JWFC serving as the Lead Agent. JIIOR links existing Service, Agency, and Department of Energy range capabilities, enhancing those capabilities, and creating new capabilities where they do not exist. This provides Services and Joint warfighters a robust, realistic environment for test, training, tactics development, and exercising of computer network attack and selected offensive electronic warfare capabilities. This capability will expand to include the other IO disciplines as the IO range progresses toward its full capability in FY 2011.

BUDGET ACTIVITY: 06
PROGRAM ELEMENT: 0603757D8Z PROGRAM ELEMENT TITLE: JOINT TRAINING TRANSFORMATION (T2)
PROJECT NUMBER: P762 PROJECT TITLE: JOINT INTEGRATED INFORMATION OPERATIONS RANGE/JNTC (JIIOR)

	FY 2007
Joint Integration Information Operation Range (JIIOR)	10,300

FY 2007 Plans:

- Previous funding for JIIOR was under Navy PE 0804758N and transferred to Defense Wide PE 0603757D8Z starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.
- Demonstrate an IO "use case" in a COCOM exercise to test readiness for future events.
- Develop, test and evaluate IO Range concepts during a minimum of two COCOM sponsored events.
- Develop and publish a computer network defense study.
- Conduct the research and analysis to select the increase of an additional ten IO Range sites (#11-20) to continue expansion of the Range towards full capability.
- Continue the spiral implementation of IO capabilities at the Range sites. This continuing effort supports progress toward reaching full capability in which twenty persistent IO Range sites will be connected and integrated for IO Range use.

C. OTHER PROGRAM FUNDING SUMMARY: Funds moved from Navy (Program Element 0804758N) to Defense Wide starting in FY 2007, as directed in the National Defense Authorization Act for FY 2005.

D. ACQUISITION STRATEGY: Not applicable.

E. MAJOR PERFORMERS:

Recipients	City/State	Description
No performer in this PE received more than 15% of the program or $10 million.		

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0604140D8Z - Capital Asset Management Systems-Military Equipment Evaluation (CAMS-ME)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	4.736	0.000	0.000	0.000	0.000	0.000
P141	CAMS - Military Equipment Evaluation	0.000	4.736	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: CAMS-ME has been approved by the Finance and Accounting, Logistics, and Acquisition Domains as the Mid-Term Systems Solution for reporting the value of military equipment (ME). As part of the Department's enterprise system solution for valuing and reporting ME, CAMS-ME will maintain the work in process (WIP) cost, calculate the value of ME, and depreciate delivered ME end items over the course of their useful lives. CAMS-ME will be developed by the Department of the Navy working with OUSD(AT&L), and with Air Force and Army assistance, to ensure that all ME valuation requirements are met.

Implementation of CAMS-ME will:
Provide reliable and accurate information to decision makers
- Total acquisition cost of assets will be consistently determined
- Decision makers will get comparable information over time and between programs
- It will allow better investment planning for replacements

Increase public confidence in the Department's ability to account for its assets and help achieve a clean audit opinion.
Bring the Department into compliance with the Chief Financial Officers Act of 1990 and the Federal Financial Management Improvement Act of 1996.

The RDT&E budget funds business process modeling & analysis, configuration management, system engineering, reports design, hosting implementation, and software development costs for the CAMS-ME DoD-wide Enterprise Solution.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	7.779	8.715
Current BES/President's Budget (FY 2007)	0.000	4.736	0.000
Total Adjustments	0.000	-3.043	-8.715
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0604140D8Z - Capital Asset Management Systems-Military Equipment Evaluation (CAMS-ME)**

Other		-3.043	-8.715

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0604140D8Z - Capital Asset Management Systems-Military Equipment Evaluation (CAMS-ME)**	**P141**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P141	CAMS - Military Equipment Evaluation	0.000	4.736	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Project Justification: Not Applicable.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Capital Asset Management System	0.000	4.736	0.000

FY 2006 Plan: Capital Asset Management System-Military Equipment (CAMS-ME)
- Migrate from the baseline valuation tool release 1 to release 2
- Primary purpose is to change from calculating asset values at the program level (phase 1) to a contract level (phase 2)
- Will be used by the P&E Policy Office, and DoD Components for maintaining and updating the baseline and for valuing military equipment assets delivered under contracts awarded post 10/1/2006
- The system will include the functionality described in phase 1 and will have added capabilities to calculate asset and program Work-In-Process values using data obtained from the contract (e.g., asset values calculated using average contract value) and values for certain identifiable Government Furnished Property items embedded in the military equipment end items.
- Will have the capability to exclude (e.g. spares) or separately account for (e.g. ground support equipment) ancillary ME items
- The automation of the system will be limited to a number of interfaces to receive disbursement data at the contract level

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification							Date: February 2006
Appropriation/Budget Activity RDT&E/Budget Activity 6				R-1 Item Nomenclature: PE 0604774D8Z Defense Readiness Reporting System			
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	18.768	15.229	10.322	3.086	3.087	3.201	3.273

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) in their role as the Joint Force Provider.

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 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, 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 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 able to handle. This environment supports a suite of analysis tools that allow users to explore the consequences of readiness deficiencies in terms of the ability to generate forces and assess transportation feasibility as it pertains to specific scenarios. These tools and tool suites harness the power of the information environment to make possible the kind of quick-turnaround, excursion-driven readiness assessment that is at the heart of DRRS.

B. Program Change Summary: None

	FY 2005	FY 2006	FY 2007
Previous President's Budget	19.691	13.171	9.942
Current President's Budget	18.768	15.229	10.322
Adjustments to Appropriated Value			
Congressional program reductions	none	none	none
Congressional rescissions	none	none	none
Congressional increases	none	2.000	none
Reprogrammings	none	none	none
SBIR/STTR Transfer	none	none	none
Other Program Adjustments	-0.923	0.058	0.380

C. Other Program Funding Summary: None.

D. Acquisition Strategy: N/A

E. Metrics:

The FY 2007 DRRS metrics are:

- Ability of Combatant Commands to assess current operations and war plans based on actual forces that would be assigned
- Mapping of Tier 1 and Tier 2 Joint Capability Areas (JCAs) to joint services and agency tasks so J can be assessed
- Complete the integration of Active, Guard, and Reserve

	Exhibit R-2a, RDT&E Project Justification					Date: February 2006	
Appropriation/Budget Activity RDT&E. Defense-wide BA 6				PE-0604774D8Z Defense Readiness Reporting System			
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	18.768	15.229	10.322	3.086	3.087	3.201	3.273

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), Northern Command (NORTHCOM) 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. 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 quick-turnaround, excursion-driven readiness assessment that is at the heart of DRRS.

B. Accomplishments/Planned Program

Defense Readiness Reporting System	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	18.768	15.229	10.322
RDT&E Articles Quantity *(as applicable)	N/A	N/A	N/A

FY 2005 Accomplishments:

- Expanded resource information, reporting organizations; developed Joint Force Provider tools
- Successfully launched DRRS 1.0
  - Migrated users from prototype system to DRRS
  - All Combatant Commanders and Combat Support Agencies conducted METL assessments
  - Over 800 Navy organizations conducted initial METL assessments
  - All Pacific Command (PACOM) organizations conducted initial METL assessments
  - Linked to personnel, GSORTS, force structure, and training data for all Services; Comprehensive resource data for Navy
- Created initial joint force provider tools
  - Department-wide capability query application
  - Request for Forces/Capability management system
- Designed Distributed Data Environment
- Facilitates high-level information transfer from within the readiness domain and serves as a transition from current Global Information Grid (GIG) to Joint Command and Control (JC2)
- Created initial scenario library
- Set up four additional server clusters across the world

FY 2006 Plans:

- Expanded resource information, joint force providers tools and organizational METL reporting
- Began transition from GSORTS to ESORTS
- Continued ESORTS deployment to installations and other parts of the infrastructure
- Launched an unclassified DRRS tool for training
- Developed a Mobile DRRS
- All of the Services have identified and developed METs for their organizations
- Completed web-based scenario assessment and adaptive planning tools
- Developed customizable Resource displays
- Integrated with related communities and efforts
- Implemented initial primary Risk Assessment applications

- Implemented first phase of the Distributed Data Environment
- Expanded Force Allocation software
- Complete initial transportation feasibility tools

FY 2007 Plans:

- Expand mobility and transportation models; complete Distributed Data Environment
- Full risk and scenario assessment capability
- Complete risk assessment tools including collaborative software
- Complete Distributed Data environment and an extensive use of web services
- On-line global process for Request for Forces/ Request for Capabilities
- JCA Assessment
- Joint task force readiness capability to assess current operations and war plans

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0604875D8Z - Joint Systems Architechture Development (JSAD)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		4.754	10.780	9.390	9.705	9.479	9.448	9.450
P875	Joint Systems Architechture Development (JSAD)	4.754	10.780	9.390	9.705	9.479	9.448	9.450

A. Mission Description and Budget Item Justification: Transformation calls for top down, national security strategy driven, capabilities-based, planning. DoD Instruction (DoDI) 5000.2 and CJCSI 3170.01D promulgate capabilities-based requirements and acquisition processes. This program enables collaborative efforts to achieve these goals. These efforts include: systems support to conduct warfighting capability-based analyses; assessments of joint capability area and joint integrating concepts; development and support of needed sets of system and system-related data; development and application of systems engineering methodologies and tools, creating integrated roadmaps to support acquisition investment decisions; and assessment of major defense acquisition programs (MDAPs) and major automated information systems programs in a capability area context. Activities in this project are divided into three areas: capability based analyses, roadmaps, and support tools and guidance. Capability-based analyses consists of efforts that provide systems aspects (views) to analyze technology, functionality, and integration impacts on warfighting capability; this forms the front end of systems engineering. Roadmaps are proscribed by DoDI 5000.2, paragraph 3.2.2. Initiatives in this project enable roadmap development based on systems engineering and are used to guide systems acquisition decisions and associated investment plans. Support tools and guidance initiatives in this project will develop systems engineering methods, systems data, and tools, exploiting the value of modeling and simulation and architecture to improve effectiveness of Systems Engineering, to improve assessment capability, and to field and test integrated systems of systems to achieve joint mission capabilities.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	4.900	9.254	9.244
Current BES/President's Budget (FY 2007)	4.754	10.780	9.390
Total Adjustments	-0.146	1.526	0.146
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	-0.146		
Other		1.526	0.146

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0604875D8Z - Joint Systems Architechture Development (JSAD)**

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0604875D8Z - Joint Systems Architechture Development (JSAD)**	**P875**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P875	Joint Systems Architechture Development (JSAD)	4.754	10.780	9.390	9.705	9.479	9.448	9.450

A. Mission Description and Project Justification: Transformation calls for top down, national security strategy driven, capabilities-based planning. DoD Instruction (DoDI) 5000.2 and CJCSI 3170.01D promulgate capabilities-based requirements and acquisition processes. This program enables collaborative efforts to achieve these goals. These efforts include providing systems support to conduct warfighting capability-based analyses, and assessments of joint capability area and joint integrating concepts; development and support of needed sets of system and system-related data; development and application of systems engineering methodologies and tools, creating integrated roadmaps to support acquisition investment decisions, and assessment of major defense acquisition programs (MDAPs) and major automated information systems (MAIS) programs in a capability area context. Activities in this project are divided into three areas: capability based analyses, roadmaps, and support tools and guidance. Capability-based analyses consists of efforts that provide systems aspects (views) to analyze technology, functionality, and integration impacts on warfighting capability; this forms the front end of systems engineering. Roadmaps are proscribed by DoDI 5000.2, paragraph 3.2.2; initiatives in this project enable roadmap development based on systems engineering and use to guide systems development and associated investment plans. Support tools and guidance initiatives in this project will develop systems engineering methods, systems data, and tools, exploiting the value of modeling and simulation and architecture to improve effectiveness of Systems Engineering, to improve assessment capability, and to field and test integrated systems of systems to achieve joint mission capabilities.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
JSAD:	4.754	10.780	9.390

(U) FY 2005 Accomplishments: Perform Capability based analyses (CBA): Performed numerous CBAs with the Joint Staff, including DoD Electronic Warfare capabilities. Developed recommendations, including doctrine, materiel and training, to support evaluations of Service EW programs and technology. Development of Capability Roadmaps: Continued development and refinement of the Integrated Air and Missile Defense, Electronic Warfare and Joint Battle Management Command and Control Roadmaps. Support Tools and Guidance: Provided engineering support to acquisition programs. Used findings from these activities to study the impacts of acquiring systems of systems. Developed a model to synchronize the Department's requirements and acquisition processes. Established requirements for an open standard to model SoS architectures. Developed rules to permit exchange of architecture data from the DoD Architecture Framework to its commercial equivalent. Delivered spiral 3 of matrix mapping to; piloted for numerous user applications.

(U) FY 2006 Plans: Perform Capability-based Analyses: Support Joint Functional Capability Board Capability Based Analyses and front end systems engineering planning: Force Protection (Air and Missile Defense, Electronic Warfare); Force Application (Land, Sea, Air) Command and Control, Intelligence, Net-centric Operations; Focused Logistics Development of Capability Roadmaps: Roadmaps along with supporting systems engineering plans currently being planned under this project: JBMC2/AMD (updating), Global Strike, Sea Basing. Support Tools and Guidance: Update Matrix Mapping Tool for use across the Department to support Capabilities Based Planning; Conduct systems engineering verification of proposed joint capabilities; Perform systems of system modeling analysis, using state-of-the-art, industry endorsed, architecture and modeling practices and constructs such as Model Driven Architecture. Define data standards, and content interchange to promote M&S sharing across capability areas capability areas.

(U) FY 2007 Plans: Perform Capability-based Analyses: Support Joint Functional Capability Board Capability Based Analyses and front end systems engineering planning: Force Protection (Air and Missile

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)	Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0604875D8Z - Joint Systems Architechture Development (JSAD)**	**P875**

Defense, Electronic Warfare) Force Application (Land, Sea, Air) Command and Control, Intelligence, Net-centric Operations; Focused Logistics Development of Capability Roadmaps: Continue Roadmap development in support of warfighting capability-based analyses conducted by the Joint Staff and COCOMs; Support Tools and Guidance: Update Matrix Mapping Tool for use across the Department to support Capabilities Based Planning; Conduct systems engineering verification of proposed joint capabilities; Perform systems of system modeling analysis, using state-of-the-art, industry endorsed, architecture and modeling practices and constructs such as Model Driven Architecture. Focus on implementing an engineering environment to achieve systems engineering for capabilities. Cross-cutting architectures, models, tools, and test resources are related and used by acquisition systems.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2006
RDT&E, DEFENSE-WIDE (0400) BUDGET ACTIVITY SIX	CENTRAL TEST AND EVALUATION INVESTMENT PROGRAM (CTEIP) PROGRAM ELEMENT (PE) 0604940D8Z						
$ in Millions	FY 2005*	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
PE 0604940D8Z	0.000	138.918	130.290	138.236	137.771	140.316	143.372

*Language in the National Defense Authorization Act of 2003 directed the establishment of the Test Resource Management Center (TRMC). The Act also requires the TRMC to administer the Central Test and Evaluation Investment Program (CTEIP) effective Fiscal Year 2006.

Beginning with FY 2006, program element 0604940D8Z (CTEIP) is transferred from the Operational Test and Evaluation, Defense (OT&E, D) appropriation (0460) to the Defense-wide RDT&E (0400) appropriation. FY 2005 accomplishments are noted in the OT&E appropriation.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

Since its inception in FY 1990, this program element has been, and continues to be, 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 and Defense Agency 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 an ongoing operational test program (Resource Enhancement Project (REP)).

The JIM funds critically needed T&E investments in the major functional areas of test mission command, control, communications and instrumentation; electronic warfare systems; threat and computational simulation test and evaluation; space systems T&E; weapons effects test capabilities; targets; and physical and environmental test capabilities. The investments include both the demonstrations of advanced technologies needed to test increasingly complex and sophisticated weapon systems and the

transition of these technologies into test capabilities. Examples of project subject matter include: automated data collection, processing, display, and archiving; smart munitions testing; modeling and simulation (M&S); advanced electronic combat systems; low-observable technologies and signature measurements; targets and target control; time-space-position-information; end-game measurement; testing of advanced materials application; test design; and advanced sensors and space 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 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 DOT&E, or system-of-systems testing. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near-term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements. This PE also provides funds to perform travel to carry out oversight of the CTEIP program.

This Research Category 6.4 PE supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

Program Accomplishments and Plans:

FY 2005 Accomplishments: See OT&E,D (0460) appropriation.

FY 2006 Plans:

JIM Projects:

- Complete the Land and Sea Vulnerability Test Capability project to provide an instrumented land-sea interface test capability at the Aberdeen Test Center.
- Complete the development and demonstration of time-space-position information (TSPI), flight termination/safe and arm (FTSA), and telemetry functions on advanced missile platforms under the Joint Advanced Missile Instrumentation project.
- Complete systems development for the Joint Mobile Infrared Countermeasures Test Suite project to provide infrared spectrum test instrumentation for open air ranges.
- Complete concept development and initiate systems development for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities.
- Complete concept development and initiate systems development for the Joint Information Assurance Test Suite/ Web-Enabled Test project to provide a dynamic Information Assurance test tool suite with the ability to conduct extensive testing of web-based systems.
- Complete concept development and initiate systems development for the Interactive Electronic Attack project to provide an interactive electronic attack radio frequency capability to test electronic warfare, communications, and avionics systems against reactive air defenses in a secure, protected ground-based environment.
- Complete concept development and initiate systems development for the Advanced Communications Environment—Faithful Timeslot Messaging project to adapt the current Joint Communications Simulator antenna pattern and propagation effects that will provide timeslot dependent attenuation of Link-16 terminal output.
- Complete concept development and initiate systems development for the Test Capability Workstation / Data Collection Automation Tool project to develop a software suite and tools that focus on Capabilities-Based Test methodology to support operational test planning and the automation of test data collection, analysis, and reporting.
- Complete concept development and initiate systems development of a warhead compatible, universal, subminiature, low-cost flight termination system.
- Complete the Unmanned Systems Testbed project, to provide capabilities for using unmanned systems in training, operational exercises, and test and evaluation.
- Complete the Joint Gulf Range Complex Upgrade project to provide upgraded range control capabilities at the Gulf Range.
- Complete the Digital Video Laboratory project to provide digital video data analysis and reporting capability.

- Complete the Electromagnetic Effects Generating System project to provide a multi-Service test facility capable of

assessing actual performance of a full-scale, fixed, or rotary-winged aircraft completely immersed in a user-specified radio frequency environment.

- Complete the Communications, Navigation, and Identification follow-on effort under the Joint Installed Systems Test Facility Product Improvements project to provide improved installed systems capabilities needed to support next generation aircraft testing.
- Complete concept development and initiate systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number test capability at the Arnold Engineering Development Center.
- Continue validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems and Operations Validation Facility Program.
- Continue the Infrared Sensor Stimulator product improvement and continued development of the Advanced Radar Environment Stimulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing.
- Continue systems development of the Contamination Avoidance Detector Test Suite project to provide test methodology, instrumentation, and test fixtures required to test and evaluate current and developmental chemical/biological (CB) detector systems over the entire range of expected use conditions.
- Continue systems development of the Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons.
- Continue systems development of the Joint Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) project to develop a capability to test increasingly complex multi-discipline data fusion concepts.
- Continue systems development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate the point and angle of impact of projectile and missile weapons within an 800m by 800m impact area.
- Continue systems development of the Enhanced Flight Termination System project to develop a UHF digital flight termination system for DoD unmanned flight vehicles.
- Continue systems development of the Advanced Instrumentation Data & Control System project to develop state-of-the-art instrumentation and control systems to meet DoD T&E requirements for propulsion systems, aerodynamic systems and space systems.
- Continue systems development of the Enhanced Range Applications Project to provide a state-of-the-art Airborne Range Data System that supports next generation data collection requirements.

- Continue threat system simulator development efforts under the Threat Systems project 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 Tri-Service and CTEIP support projects.
- Continue proof-of-concept effort for a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background.
- Initiate and complete concept development and initiated systems development of an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges.
- Initiate and complete the Range Tactical Data Link and Relay Capability project to provide cross-range interoperability and establish a joint tactical data link training capability at selected ranges.
- Initiate and complete the Re-Locatable Command, Control, and Communications (C3) for Gulf Range Support project to provide re-locatable long-haul and inter/intra-communications to support interoperability and expanded operations at selected Gulf ranges.

Resource Enhancement Project:
- Complete the Advanced System Endgame Methodology for Actual Threat Systems subproject to develop and integrate emerging technology for high fidelity, real-time endgame assessment for threat system engagements in support of rotary wing aircraft operational testing.
- Complete the Probability of Raid Annihilation (PRA) Testbed Common Threat and Environment Capability subproject to develop a common set of threat and natural environment representations for consistent assessment of ship self defense systems across ship classes.
- Complete the Torpedo Proximity Scoring System subproject to develop a reliable and flexible prototype instrumentation system to support torpedo defensive system testing and evaluation requirements.
- Complete the Information Assurance(IA) Susceptibility Testing for Global Air Traffic Management Avionics (GATM) subproject to expand an existing capability to support Beyond Line of Sight GATM and ground system information assurance testing.
- Complete the Distributed Operational Test Command Center subproject to provide a distributed test control capability that integrates communications, data processing and test monitoring, and visual display systems into a single integrated capability.
- Complete the Test Control Communications Capability subproject to provide an integrated communications suite of hardware, software, and firmware protocols to provide realistic command, control, and communications testing.
- Complete the Magnetic Silencing Facility subproject to provide improved magnetic component calibration and adequate operational testing of the Advanced Degaussing System on new ship classes.
- Continue the Shootable Remote Threat Ground Targets subproject to provide six low cost ground targets operating in a

tactical formation and an integrated portable autopilot and remote control system.

- Continue the Advanced Capability Mobile Flight Simulator subproject to to provide more realistic Tactical Ballistic Missile (TBM) threat scenario simulations.
- Continue and complete the Portable Oceanographic environmental Sensors Instrumentation Suite subproject to provide an instrumentation suite for remote monitoring of environmental conditions during operational testing of amphibious weapon systems.
- Continue and complete the Decontamination Ground Truth Instrumentation subproject to provide instrumentation capable of measuring the effectiveness of decontamination materials and processes for chemical and biological warfare simulants and interferents.
- Continue the Air and Missile Defense Operational Test Suite subproject to provide data collection, transfer, and analyses capabilities required to conduct Combatant Commanders' Integrated Command and Control System and Ground-Based Midcourse Defense operational and interoperability testing.
- Initiate the Infrared (IR) Man-Portable Air Defense System (MANPADS) Real Time Casualty Assessment Simulator subproject to provide added realism to assess tactics, techniques and procedures to test the survivability of the Armed Reconnaissance Helicopter against MANPADS.
- Initiate the Portable Underwater Tracking System subproject to provide real-time time/space/position information (TSPI) during operational testing of Systems Under Test operating in a shallow water minefield with various in-volume and bottom mines or in littoral regions.
- Initiate the Integrated Broadcast Operational Test Suite subproject to provide a semi-automated test capability in static, flyaway, and distributed network configurations critical to operational testing of the Integrated Broadcast Service.
- Initiate the Radio Frequency Monitoring and Data Analysis System project to provide a modular, high-performance receiving system for monitoring all RF signals on an EW range, in order to satisfy the need for definitive ground truth of target signals and interfering signals during operational tests.

FY 2007 Plans:

JIM Projects:

- Complete systems development of the Contamination Avoidance Detector Test Suite project to provide test methodology, instrumentation, and test fixtures required to test and evaluate current and developmental CB detector systems over the entire range of expected use conditions.
- Complete development of the Infrared Sensor Stimulator product improvement and the Advanced Radar Environment Stimulator, under the Joint Installed Systems Test Facility Product Improvements project, to provide improved installed systems capabilities needed to support next generation aircraft testing.
- Complete systems development of the Soft Impact Location Capability project to provide the necessary instrumentation, signal processing, communication, and data processing capabilities to detect and locate the point and angle of impact of projectile and missile weapons within an 800m by 800m impact area.
- Complete systems development of the Enhanced Flight Termination System project to develop a UHF digital flight termination system for DoD unmanned flight vehicles.
- Complete systems development of the Advanced Instrumentation Data & Control System project to develop state-of-the-art instrumentation and control systems to meet DoD T&E requirements for propulsion systems, aerodynamic systems and space systems.
- Complete the Test Capability Workstation / Data Collection Automation Tool project to develop a software suite and tools that focus on Capabilities-Based Test methodology to support operational test planning and the automation of test data collection, analysis, and reporting.
- Complete proof-of-concept effort for a capability to test airborne infrared countermeasure systems in a dynamic threat environment, to include realistic clutter background.
- Complete validation of flight test procedures and unmanned aerial vehicle (UAV) operations in the U.S. National Airspace alongside manned aircraft, under the UAV Systems and Operations Validation Facility Program.
- Continue systems development of the Enhanced Range Applications Project to provide a state-of-the-art Airborne Range Data System that supports next generation data collection requirements.
- Continue systems development for the Interactive Electronic Attack project to provide an interactive electronic attack radio frequency capability to test electronic warfare and avionics systems against reactive air defenses in a secure, protected ground-based environment.
- Continue systems development for the Advanced Communications Environment –Faithful Timeslot Messaging project to adapt the current Joint Communications Simulator antenna pattern and propagation effects to provide timeslot dependent attenuation of Link-16 terminal output.

- Continue systems development for Directed Energy Test and Evaluation Capability project to provide improved test and evaluation capabilities for directed energy weapons.
- Continue systems development of the Joint C4ISR project to develop a capability to test increasingly complex multi-

discipline data fusion concepts.

- Continue systems development for the Integrated Network Enhanced Telemetry project to develop a network-enhanced telemetry capability for T&E ranges and facilities.
- Continue threat system simulator development efforts under the Threat Systems project 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 Tri-Service and CTEIP support projects.
- Continue systems development for the Hypersonic Propulsion Test Capability project to provide a variable Mach number test capability at the Arnold Engineering Development Center.
- Continue systems development for the Joint Information Assurance Test Suite / Web-Enabled Test project to provide a dynamic Information Assurance test tool suite with the ability to conduct extensive testing of web-based systems.
- Continue systems development of an improved airborne telemetry capability to support test and evaluation of future weapons systems requiring greater standoff distances and increased telemetry transmission ranges.
- Continue systems development of a warhead compatible, universal, subminiature, low-cost flight termination system.

Resource Enhancement Project:

- Complete the Advanced Capability Mobile Flight Simulator subproject to to provide more realistic Tactical Ballistic Missile (TBM) threat scenario simulations.
- Complete the Infrared (IR) Man-Portable Air Defense System (MANPADS) Real Time Casualty Assessment Simulator subproject to provide added realism to assess tactics, techniques and procedures to test the survivability of the Armed Reconnaissance Helicopter against MANPADS.
- Complete the Portable Underwater Tracking System subproject to provide real-time time/space/position information (TSPI) during operational testing of Systems Under Test operating in a shallow water minefield with various in-volume and bottom mines or in littoral regions.
- Complete the Integrated Broadcast Operational Test Suite subproject to provide a semi-automated test capability in static, flyaway, and distributed network configurations critical to operational testing of the Integrated Broadcast Service.
- Complete the Radio Frequency Monitoring and Data Analysis System project to provide a modular, high-performance receiving system for monitoring all RF signals on an EW range, in order to satisfy the need for definitive ground truth of target signals and interfering signals during operational tests.
- Complete the Air and Missile Defense Operational Test Suite subproject to provide data collection, transfer, and analyses capabilities required to conduct Combatant Commanders' Integrated Command and Control System and Ground-Based Midcourse Defense operational and interoperability testing.

- Complete the Shootable Remote Threat Ground Targets subproject to provide six low cost ground targets operating in a tactical formation and an integrated portable autopilot and remote control system.
- Initiate developments to address near term OT capability shortfalls in range interoperability and knowledge management.
- Initiate developments to address near term OT capability shortfalls in realistic test environments, to include open air test environments, tunnels, and chambers.
- Initiate developments to address near term OT capability shortfalls in the realistic representation of enemy threats and targets.
- Initiate developments to address near term OT capability shortfalls in installed systems and hardware-in-the-loop T&E facilities.

B. (U) PROGRAM CHANGE SUMMARY

	FY 2005	FY 2006	FY 2007
Previous President's Budget:	0.000	128.759	130.230
Current President's Budget:	0.000	138.918	130.290
Total Adjustments:		10.159	0.060
Congressional Program Adjustments:		(0.845)	
Congressional Rescissions:		(1.396)	
Congressional Increases:		12.400	
Other Program Adjustments:			0.060

C. (U) OTHER PROGRAM FUNDING NA

D. (U) ACQUISITION STRATEGY NA

E. (U) PERFORMANCE METRICS

Percentage of CTEIP projects that were developed and delivered to the DoD test community over the past five years.

BUDGET JUSTIFICATION
FOR PROGRAM ELEMENTS OF THE
OSD RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE-WIDE PROGRAM
FISCAL YEAR (FY) 2007 BUDGET ESTIMATES SUBMISSION

PE 0604943D8Z, Thermal Vicar, program is submitted separately as a Special Access Program.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605100D8Z - Joint Mission Environment Test Capability (JMETC)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	0.000	10.600	7.156	9.093	9.813	10.699
P100	Joint Mission Environment Test Capability (JMETC)	0.000	0.000	10.600	7.156	9.093	9.813	10.699

A. Mission Description and Budget Item Justification: Adequate Testing of joint system acquisitions and net-centric capabilities is required for successful milestone decisions for capabilities with joint mission requirements.(e.g. the F-35 Joint Strike Fighter, the Deployable Joint Command and Control System, the Joint Command and Control, the Network Centric Enterprise Services, the Distributed Ground Station family of systems, the Global Combat Service Support Family of Systems, the Future Combat System, the Joint Tactical Radio System family of systems, DDX)

The Testing in a Joint Environment Roadmap was provided to the Staff of four Congressional committees in April 2005 by the Director, Operational Test and Evaluation in response to a request during testimony. Testing in a joint environment is a Department Policy that requires all programs, regardless of Acquisition Category demonstrate their joint capability early and throughout their respective development cycles. The Joint Mission Environment Test Capability (JMETC) program will implement the infastructure capabilities defined in the Roadmap to provide testers and developers a robust nation-wide distributed engineering capability to "Test Like We Fight".

JMETC will create a common corporate networking capability to link live systems with virtual and constructive representations to generate a realistic joint mission test environment for the systems being tested. JMETC will be a widely applicable, persistent, service provider for Department acquisition and net-centric programs. A mature JMETC will provide the ability to lower the cost and speed development of major programs, and will provide significant added value to ACAT II/III/IV programs which typically cannot afford distributed testing alone, or compete for time with large programs. This common integration capability will ensure interoperability between JMETC and the Joint National Training Capability (JNTC), streamlining reuse of technical resources across test and training communities, and enabling combined test and training exercises. JMETC capabilities will eventually migrate to the Global Information Grid (GIG) as that capability matures.

JMETC will provide a readily available, repeatable, consistent, operationally realistic customer-defined joint mission test environemnt for systems engineering and testing, extensible to training and experimentation, in a timely and cost effective manner. JMETC's institutional funding will build, maintain, upgrade and operate the JMETC, and will pay for persistent availability of national connectivity for testing; data communications middleware, identification and enforcement of interface standards; common software tools and components; and a data archive and reuse repository. It will also fund JMETC program management, facilities, equipment, and operating costs. When the JMETC is established, customer funding will pay for the direct costs of the development, sustainmant, and operating costs for systems and net-centric capabilities under test, consistent with the proven Department approach for development and operational testing. Key attributes of the JMETC include: persistency; interoperability; reuse; composability of distributed capabilities (reconfigurable infrastructure to meet customer requirements); M&S linkage (live-virtual-constructive integration); common support to both Service and Joint needs(universal data transport solution set). System engineering, training, and experimentation will all benefit from a universal JMETC developed for T&E.

The Test Resource Management Center (TRMC) will be the Department's corporate lead for JMETC, and will program for and oversee both its development and its operations. The TRMC will establish and oversee the centralized JMETC program office. The JMETC Program Manager will report to Director, TRMC, who is accountable to the USD(AT&L) for JMETC.

B. Program Change Summary	FY 2005	FY 2006	FY 2007

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605100D8Z - Joint Mission Environment Test Capability (JMETC)**

Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	10.600
Total Adjustments	0.000	0.000	10.600
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			10.600

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605100D8Z - Joint Mission Environment Test Capability (JMETC)**	**P100**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P100	Joint Mission Environment Test Capability (JMETC)	0.000	0.000	10.600	7.156	9.093	9.813	10.699

A. Mission Description and Project Justification: Adequate Testing of joint system acquisitions and net-centric capabilities is required for successful milestone decisions for capabilities with joint mission requirements.(e.g. the F-35 Joint Strike Fighter, the Deployable Joint Command and Control System, the Joint Command and Control, the Network Centric Enterprise Services, the Distributed Ground Station family of systems, the Global Combat Service Support Family of Systems, the Future Combat System, the Joint Tactical Radio System family of systems, DDX)

The Testing in a Joint Environment Roadmap was provided to the Staff of four Congressional committees in April 2005 by the Director, Operational Test and Evaluation in response to a request during testimony. Testing in a joint environment is a Department Policy that requires all programs, regardless of Acquisition Category demonstrate their joint capability early and throughout their respective development cycles. The Joint Mission Environment Test Capability (JMETC) program will implement the infrastructure capabilities defined in the Roadmap to provide testers and developers a robust nation-wide distributed engineering capability to "Test Like We Fight".

JMETC will create a common corporate networking capability to link live systems with virtual and constructive representations to generate a realistic joint mission test environment for the systems being tested. JMETC will be a widely applicable, persistent, service provider for Department acquisition and net-centric programs. A mature JMETC will provide the ability to lower the cost and speed development of major programs, and will provide significant added value to ACAT II/III/IV programs which typically cannot afford distributed testing alone, or compete for time with large programs. This common integration capability will ensure interoperability between JMETC and the Joint National Training Capability (JNTC), streamlining reuse of technical resources across test and training communities, and enabling combined test and training exercises. JMETC capabilities will eventually migrate to the Global Information Grid (GIG) as that capability matures.

JMETC will provide a readily available, repeatable, consistent, operationally realistic 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 will build, maintain, upgrade and operate the JMETC, and will pay for persistent availability of national connectivity for testing; data communications middleware, identification and enforcement of interface standards; common software tools and components; and a data archive and reuse repository. It will also fund JMETC program management, facilities, equipment, and operating costs. When the JMETC is established, customer funding will pay for the direct costs of the development, sustainment, and operating costs for systems and net-centric capabilities under test, consistent with the proven Department approach for development and operational testing. Key attributes of the JMETC include: persistency; interoperability; reuse; compensability of distributed capabilities (reconfigurable infrastructure to meet customer requirements); M&S linkage (live-virtual-constructive integration); common support to both Service and Joint needs(universal data transport solution set). System engineering, training, and experimentation will all benefit from a universal JMETC developed for T&E.

The Test Resource Management Center (TRMC) will be the Department's corporate lead for JMETC, and will program for and oversee both its development and its operations. The TRMC will establish and oversee the centralized JMETC program office. The JMETC Program Manager will report to Director, TRMC, who is accountable to the USD(AT&L) for JMETC.

B. Accomplishments/Planned Program:

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605100D8Z - Joint Mission Environment Test Capability (JMETC)**	**P100**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
JMETC:	0.000	0.000	10.600

Initiate Phase 1 (FY2007-FY2011) which will begin development of the initial core technical capability and provide a provisional JMETC infrastructure foundation capable of supporting real-time test events in 2007 as follows:

- Initiate Development of Core Technical Infrastructure.

- Initiate Persistent Data Transport Capability. Establish persistent network connections on existing Department networks with applicable security agreements, and expend the needed communication bandwidth. Integrate initial test sites to the network in FY 2007. Connections will be determined on the basis of projected test schedules. Consolidate and optimize the Department's purchase of bandwidth for distributed testing, aligning the distributed testing network with the distributed training network to achieve economies of scale.

- Incorporate Middleware. Maintain and improve common integration software that was originally developed by the Central Test and Evaluation Investment Program (CTEIP). Optimized the common middleware for embedded instrumentation applications as an organic component of the weapons system or net-centric capability, to enable easier conduct of distributed testing throughout the acquisition process - from the laboratory, to the open-air range, and to the battlefield.

- Evolve Basic Interface Standards. Define common, open interface standards for testing laboratories, open-air ranges, system integration facilities, and simulations for specific test events, and enable alignment of the technical distributed laboratories, ranges, and simulations for specific test events, and enable alignment of the technical architecture for testing with the JNTC to promote interoperability and reusability among test and training assets.

- Begin acquisition/Development of software Tools. Provide functionality that allows the joint mission infrastructure to serve as a useful test environment and to operate efficiently and cleanly. Enable event planning, integration, and analysis. Include an assessment of commercially available software tools for utilization with the standard support tools, and development of new tools to satisfy shortfalls. Design analysis tools to assist evaluators in tracing the root cause of problems discovered to the individual causal system, during large system-of-systems test events.

-Initiate Data Archive. Store all of the persistent information associated with a test that takes place in the joint mission environment. Serve as a high-performance, distributed, temporally-organized database capable of supporting realtime queries.

- Initiate Reuse Repository. Store all the pertinent information regarding systems and net-centric capabilities that is either a part of the joint mission infrastructure, or interfaces with the joint mission infrastructure. Unify all the information necessary Defense and industry capabilities (virtual prototypes, threat simulations, Hardware-in-the-Loops laboratories, ranges, environment generators, etc.) so that it can be easily reused in future events.

- Establish Initial Customer Support. Provide single-face-to-the-customer support for use of JMETC. customer Support will be a central resource that provides customers with information about system capabilities and limitations; available nodes; models and simulations; and JNTC joint training events. Customer Support will assist acquisition program managers and operation Test Agencies (or other customers), as requested, in designing their test plans to exploit the joint mission infrastructure capabilities, and facilitate scheduling. It will maintain close liaison with the JNTC Joint Management Office to provide for coordination of the test community's participation in joint training events and exercised, as well as participation by the training and experimentation communities in test venues.

- Establish Management Office. Execute the development and enhancement of the technical infrastructure and coordinate its operations. Develop, operate, sustain, and modernize the technical infrastructure; provide configuration control; and provide program management services and customer support as required. Included a program manager, government labor travel and contractor support.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605100D8Z - Joint Mission Environment Test Capability (JMETC)**	PROJECT **P100**

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605104D8Z - Technical Studies, Support & Analysis**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	30.470	32.549	30.339	31.735	31.878	33.289	34.567
P421	Technical Studies, Support & Analysis	30.470	32.549	30.339	31.735	31.878	33.289	34.567

A. Mission Description and Budget Item Justification: This program is a primary source of funding for the Office of the Secretary of Defense and the Joint Staff for studies, analyses, management, and technical support efforts, to improve and support policy development, decision making, management and administration of DoD programs and activities. Studies and analyses will examine current and alternative policies, plans, operations, strategies and budgets, and are essential for understanding and gaining insight into the complex multifaceted international, political, technological, economic, military, and acquisition environments in which defense decisions and opportunities take place. With the persistently complex current security, threat, and economic environment, the need for objective analyses and forward looking planning for the middle and long-term is vital.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	30.894	31.075	31.836
Current BES/President's Budget (FY 2007)	30.470	32.549	30.339
Total Adjustments	-0.424	1.474	-1.497
Congressional Program Reductions	-0.276	-0.591	
Congressional Rescissions			
Congressional Increases	1.000	2.000	
Reprogrammings			
SBIR/STTR Transfer	-0.724	-0.765	
Other	-0.424	0.830	-1.497

This program generally conducts over one-hundred fifty actions per fiscal year to support a wide variety of dynamic goals of the Department and is designed to encourage a collaborative research approach among the components of OSD and the Joint Staff. The focus of studies varies across a wide spectrum including weapons systems cost analysis, strengthening alliances, human resource and military personnel management, examination of innovative technologies, application of technology to operational doctrine, and many other issues of timely importance. Most of the actions are long to intermediate-range in outlook, so directly quantifiable measurements are difficult to obtain. However the program allows high-level managers to steer their research toward their highest-priority goals and other high-level guidance such as the President's Management Agenda and the National Security Strategy of the United States of America.

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605104D8Z - Technical Studies, Support & Analysis**

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605104D8Z - Technical Studies, Support & Analysis**	**P421**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P421	Technical Studies, Support & Analysis	30.470	32.549	30.339	31.735	31.878	33.289	34.567

A. Mission Description and Project Justification: This program is a primary source of funding for the Office of the Secretary of Defense and the Joint Staff for studies, analyses, management, and technical support efforts, to improve and support policy development, decision making, management and administration of DoD programs and activities. Studies and analyses will examine current and alternative policies, plans, operations, strategies and budgets, and are essential for understanding and gaining insight into the complex multifaceted international political, technological, economic, military, and acquisition environments in which defense decisions and opportunities take place. With the persistently complex current security, threat, and economic environment, the need for objective analyses and forward looking planning for the mid and long-range is vital.
(This program is under Budget Activity 6, and there is only one project code).

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Technical Support to OSD and the Joint Staff: FY 2005 Program	29.470	0.000	0.000

Technical Support for USD(Acquisition, Technology & Logistics):
Studies and analyses of:
Aviation safety; tactical, strategic, and transport aircraft (including vertical lift capabilities); weapon systems acquisition; munitions requirements and technology development; munitions production industrial base capabilities; Unmanned Air Vehicle (UAVs) and Ground Vehicle technology development, employment, survivability, and integration; UAV electromagnetic spectrum requirements; laser weapons; land-attack weapons capabilities; Joint Battle Management Command and Control; Radio Frequency Tag capabilities, Time Sensitive Targeting analysis and precision engagement capabilities; capability area reviews of strike capabilities; high-energy weapons; directed energy weapons; minimally-manned vehicles; net-centric operations; common naval systems modular component development and outfitting; fuel cell propulsion systems; the naval systems resource base; scientific and engineering capabilities; Civil Reserve Air Fleet and third-party logistics providers' capabilities; inventory and repair cost modeling; numerous Defense Science Board Task Forces; various capability area industrial base assessments; developing means to integrate innovative technology solutions; global shipbuilding; semiconductors; space launch modernization; the solid rocket motor industry; merger and acquisition reviews; transformation and European defense industries; international cooperative R&D analysis and planning; NATO relations, logistical capabilities, and alliance management; acquisition management and cost assessments; improving technology development from small businesses ; software engineering best practices; reducing risks of foreign technology transfer and disclosure; various quality of life and environmental management issues for defense installations; and hazard reduction and strengthening of force protection for DoD installations

Technical Support for the Director, Program Analysis & Evaluation:
Studies and analyses regarding the following areas:
Optimizing resource allocation decisions; weapons system cost estimates and life cycle costs ; long-term trends, health, and affordability of the defense program; force and manpower issues; alternative weapons systems and system configurations; DoD Capabilities-Based Planning; integrated air and space architectures; the impact on US force structure of PERSTEMPO and OPTEMPO; integration of C4ISR persistence surveillance, intelligence collection, and rapid strike capabilities; space systems survivability; functioning in access-denial environments; Ground Moving Target Indicator (GMTI) and cruise missile defense sensor systems; naval expeditionary strike capabilities; airborne electronic attack capabilities; transport aircraft modernization requirements; pre-positioned equipment and mobility capabilities of forward-based forces; homeland defense capabilities; medical readiness; and global basing strategy and forward basing requirements

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605104D8Z - Technical Studies, Support & Analysis**	**P421**

Technical Support for the USD(Policy):
Studies and Analyses in the following areas:
Regional threat analyses; special operations forces; allied burdensharing; strategic planning; homeland defense and counterterrorism; WMD defense; regionally-focused studies; space policy and strategic force capabilities; and sponsorship of studies at regional centers concerning the war on terrorism

Technical Support for the USD(Personnel & Readiness):
Studies and analyses in the following areas:
Military and civil service positions mix; military advertising and recruiting; medical readiness; the military retirement system; educational and other military family issues; reserve retention; emerging language requirements; human resource management systems integration; distance-learning and training programs; and impact mitigation to employers of reservist mobilization

Technical Support for the ASD (Networks & Information Integration) and USD(Intelligence):
Studies and analyses of:
Net centric operations and communications architectures; Intelligence, Surveillance and Reconnaissance capabilities; Global Information Grid (GIG) core services in disadvantaged operating environments; mobile ad hoc networking technologies; MASINT capabilities; defense warning capabilities; improving intelligence support to post-major combat transition operations; and human intelligence and counterintelligence capabilities

Technical Support for the Joint Staff:
Studies and analyses supporting joint personnel management; operational analysis; joint communications and intelligence capabilities; and integration of defense acquisition with the Joint Capability Integration and Development System

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Technical Support to OSD and the Joint Staff: FY 2006 Plans	0.000	30.549	0.000

Technical Support for USD(Acquisition, Technology & Logistics):
Studies and analyses regarding the following issues:
Strategic and tactical aircraft capabilities; munitions capabilities and evolving requirements; Unmanned Aerial and Ground Systems; global surveillance capabilities; weapons systems development roadmaps; undersea warfare capabilities; net centric warfare; stealth capabilities; naval systems capabilities and fleet-wide technology implementation opportunities; the naval, land, air, and space engineering and industrial base; sustaining component suppliers for DoD; logistics, maintenance, and supply-chain operations; transatlantic industrial relations and cooperation; DoD war material reserves; chemical demilitarization; support to numerous Defense Science Board task forces; Allied defense initiatives and alliance management and interoperability; technology transfer risks; acquisition review support for weapons systems; use of earned value management; DoD environmental and installation management issues; reducing safety hazards to personnel and platforms; small business leadership and technology development; and transfer of technology from small businesses to Major Defense Acquisition Programs

Technical Support for the Director, Program Analysis & Evaluation:
Studies and analyses regarding the following areas:
Software development requirements; replacement options for strategic missile systems; joint air dominance including tanker requirements; weapons system cost estimates and life cycle costs ; long-term trends, health, and affordability of the defense program; army force and manpower issues; DoD Capabilities-Based Planning; integrated air and space architecture; the impact of PERSTEMPO and OPTEMPO; access-denial environments; electronic attack capabilities; mobility capabilities; homeland defense capabilities; integration of intelligence, surveillance, and reconnaissance capabilities; capabilities-based

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605104D8Z - Technical Studies, Support & Analysis**	**P421**

operational availability planning

Technical Support for the USD(Policy):
Studies and Analyses in the following areas among others:
Regional threat analyses; the Global War on Terrorism and WMD threats; alternative defense budgets and options; dealing with failed states and stabilization and counterinsurgency capabilities; global peace operations; ballistic missile defense; force structure and basing alternatives; security cooperation; and strategic and space capabilities

Technical Support for the USD(Personnel & Readiness):
Studies and analyses in the following areas:
Military and civil service positions mix; effects of the National Security Personnel System; civilian and military advertising and recruiting; medical readiness; the military retirement system; educational and other military family issues; the effects of OIF on reserve retention and recruiting; emerging language requirements; human resource management systems; distance-learning and training programs; and impact mitigation to employers of reservist mobilization

Technical Support for the ASD (Networks & Information Integration) and USD(Intelligence):
Studies and analyses of:
Net centric operations and communications architectures; SATCOM and imagery requirements; Intelligence, Surveillance and Reconnaissance capabilities; Global Information Grid (GIG) capability improvement; mobile ad hoc networking technologies; MASINT capabilities; defense warning capabilities; improving intelligence support to post-major combat transition operations; and counter-terrorism related intelligence collection capabilities

Technical Support for the Joint Staff:
Studies and analyses supporting joint personnel management; QDR-directed taskings regarding operational analysis; counter-terrorism and force protection; prevention and interdiction of acquisition of WMD by terrorist organizations; joint communications and intelligence capabilities; and Global Broadcast System broadcast capabilities

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Technical Support to OSD and the Joint Staff: FY 2007 Plans	0.000	0.000	30.339

Technical Support for USD(Acquisition, Technology & Logistics):
Studies and analyses regarding the following issues:
Strategic and tactical aircraft capabilities; munitions capabilities and evolving requirements; Unmanned Aerial and Ground Systems; global surveillance capabilities; weapons systems development roadmaps; undersea warfare capabilities; net centric warfare; stealth capabilities; naval systems capabilities and fleet-wide technology implementation opportunities; the naval, land, air, and space engineering and industrial base; sustaining component suppliers for DoD; logistics, maintenance, and supply-chain operations; transatlantic industrial relations and cooperation; DoD war material reserves; chemical demilitarization; support to numerous Defense Science Board task forces; Allied defense initiatives and alliance management and interoperability; technology transfer risks; acquisition review support for weapons systems; use of earned value management; DoD environmental and installation management issues; reducing safety hazards to personnel and platforms; small business leadership and technology development; and transfer of technology from small businesses to Major Defense Acquisition Programs

Technical Support for the Director, Program Analysis & Evaluation:
Studies and analyses regarding the following areas:
Software development requirements; replacement options for strategic missile systems; joint air dominance including tanker requirements; weapons system cost estimates and life cycle costs ; long-term

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605104D8Z - Technical Studies, Support & Analysis**	**P421**

trends, health, and affordability of the defense program; army force and manpower issues; DoD Capabilities-Based Planning; integrated air and space architecture; the impact of PERSTEMPO and OPTEMPO; access-denial environments; electronic attack capabilities; mobility capabilities; homeland defense capabilities; integration of intelligence, surveillance, and reconnaissance capabilities; capabilities-based operational availability planning

Technical Support for the USD(Policy):
Studies and Analyses in the following areas among others:
Regional threat analyses; the Global War on Terrorism and WMD threats; alternative defense budgets and options; dealing with failed states and stabilization and counterinsurgency capabilities; global peace operations; ballistic missile defense; force structure and basing alternatives; security cooperation; and strategic and space capabilities

Technical Support for the USD(Personnel & Readiness):
Studies and analyses in the following areas:
Military and civil service positions mix; effects of the National Security Personnel System; civilian and military advertising and recruiting; medical readiness; the military retirement system; educational and other military family issues; the effects of OIF on reserve retention and recruiting; emerging language requirements; human resource management systems; distance-learning and training programs; and impact mitigation to employers of reservist mobilization

Technical Support for the ASD (Networks & Information Integration) and USD(Intelligence):
Studies and analyses of:
Net centric operations and communications architectures; SATCOM and imagery requirements; Intelligence, Surveillance and Reconnaissance capabilities; Global Information Grid (GIG) capability improvement; mobile ad hoc networking technologies; MASINT capabilities; defense warning capabilities; improving intelligence support to post-major combat transition operations; and counter-terrorism related intelligence collection capabilities

Technical Support for the Joint Staff:
Studies and analyses supporting joint personnel management; QDR-directed taskings regarding operational analysis; counter-terrorism and force protection; prevention and interdiction of acquisition of WMD by terrorist organizations; joint communications and intelligence capabilities; and Global Broadcast System broadcast capabilities

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Congressional additions	1.000	2.000	0.000

Congressional addition for Capabilities Study for IED Detection ($1M in FY 2006) and Congressional addition for NDU technology Pilot Program ($1M in FY 2005 and FY 2006)

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605104D8Z - Technical Studies, Support & Analysis**	PROJECT **P421**

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605110D8Z - Militarily Critical Technology Program**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	0.000	1.967	2.029	2.144	2.126	2.121	2.119
P110	Militarily Critical Technology Program	0.000	1.967	2.029	2.144	2.126	2.121	2.119

A. Mission Description and Budget Item Justification: Military Critical Technology Support transferred from DTRA PE060511BR to AT&L Office of International Technology Security.

The Military Critical Technology Support Program (MCTP) entails multiple activities to include the development and publication of the Militarily Critical Technologies List (MCTL). The Congressionally-mandated MCTL is the fundamental source document for identification of leading edge and current technologies which must be monitored and assessed worldwide for national security and nonproliferation control of weapons of mass destruction and advanced conventional weapons. The main efforts which encompass the MCTL are:

- Continuous technical support to interdepartmental and international processes which develop multinational export control agreements on technologies of concern to DoD;
- Worldwide technology capabilities assessments for the MCTL and other USG International critical technologies efforts;
- Identification and determination of technical parameters for proposals for international control of weapons of mass destruction;
- Technical assessments to support decisions on foreign ownership of US industrial assets and treaty compliance inspections;
- Identification of foreign technologies of interest to the DoD and opportunities for international cooperative research and development;
- Identification of Homeland Defense and terrorism applications of militarily critical technologies.

MCTP activities include:

- Developing and publishing in electronic form (including Internet version, both restricted and public) various editions of the MCTL and Developing Critical Technologies/Science and Technology (DCT/S&T) documents that describe the military and proliferation significance of various technologies;
- Monitoring and assessing dual-use and military technologies worldwide;
- Assisting in the development of proposals for negotiation in various multilateral export control regimes;
- Providing technical support for the review/revision of the U.S. Munitions List under the Defense Trade Security Initiative;
- Providing analytical support for Congressional reports.
- This program includes funding for travel by DOD personnel in support of management and technical objectives.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	1.999	1.998
Current BES/President's Budget (FY 2007)	0.000	1.967	2.029
Total Adjustments	0.000	-0.032	0.031
Congressional Program Reductions		-0.032	

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605110D8Z - Militarily Critical Technology Program**

Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			0.031

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: The Militarily Critical Technology Program (MCTP) protects Critical Technologies and Denies Critical Information to Adversaries the more dollars the more efficiency and topicality of effect.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605110D8Z - Militarily Critical Technology Program**	**P110**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P110	Militarily Critical Technology Program	0.000	1.967	2.029	2.144	2.126	2.121	2.119

A. Mission Description and Project Justification: The RDT&E program was transferred from the Defense Threat Reduction Agency in December 2004 to continue support for the Military Critical Technology Support Program that is managed under a Task Order by the Institute for Defense Analyses. The MCTP was identified in the Export Administration Act of 1979 and extended by Presidential Directive to review militarily critical goods and technologies and to consider worldwide technology capabilities.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2006 Plans	0.000	1.967	0.000

Establish a mechanism to review and update at least one half of the categories of technologies on the MCT and on the DS&T Lists annually.
Expand ability to provide technical experts for the Wassenaar Arrangement negotiations during proposal development and to support the negotiations.
Increase ability to visit industrial facilities in the US and abroad to access technologies and foreign availability. Create and administer new technology working groups to respond to new categories of evolving technologies.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY2007 Plans	0.000	0.000	2.029

Improve the ability to expand the review and reporting on the status of critical technologies, in a more timely and effective manner.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

BUDGET JUSTIFICATION
FOR PROGRAM ELEMENTS OF THE
OSD RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE-WIDE PROGRAM
FISCAL YEAR (FY) 2007 BUDGET ESTIMATES SUBMISSION

PE 0605114D8Z, Black Light, program is submitted separately as a Special Access Program.

Exhibit R-2, RDT&E Budget Item Justification						Date: February 2006	
Appropriation/Budget Activity RDT&E Defense-Wide, BA 6	R-1 Item Nomenclature: Foreign Materiel Acquisition and Exploitation PE 0605117D8Z						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	34.694	55.989	38.253	39.974	39.978	41.166	42.070

A. Mission Description and Budget Item Justification:

Program Accomplishments and Plans:

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.

FY 2005 Accomplishments:

- Mission Support $34.694

FY 2006 Accomplishments:

- Mission Support $55.989

FY 2007 Plans:

- Mission Support $38.253

B. Program Change Summary: (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY2007
Previous President's Budget	34.741	36.895	37.553
Current President's Budget	34.694	55.989	38.253
Total Adjustments	-.047	+19.094	+.700
Congressional program reductions		-.340	

Congressional rescissions		-.566	
Congressional increases		+20.000	
Internal reprogramming			
Other Adjustments	-.047		+.700

Change Summary Explanation:

FY 2005: $.047 Department adjustments (Previous President's Budget included $1.000 in Congressional adds and $.831 Undistributed congressional reduction)
FY 2006: $.340 Congressional program reductions; $.566 Congressional rescissions; $20.000 in Congressional add
FY 2007: Department increase

C. Other Program Funding Summary: Not Applicable

D. Acquisition Strategy: Not Applicable

E. Performance Metrics: Classified

Exhibit R-2 RDT&E Budget Item Justification						Date: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E - Defense Wide/Budget Activity: 6			R-1 ITEM NOMENCLATURE Export License Control – PE:0605123D8Z				
COST $ In Millions	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Total Program Element PE Cost	5.426	0	0	0	0	0	0

(U) **A. Mission Description and Budget Item Justification**

(U) **BRIEF DESCRIPTION OF ELEMENT:** The program element supports the research design and acquisition of an automated system by the Director Policy Automation Services (PAS), Office of the Under Secretary of Defense for Policy (OUSD(P)) , for export license processing and analysis. This program is a new start effort. The system will be integrated among all export license regulatory and reviewing agencies (Departments of Defense, Commerce, State and other agencies) and incorporate connectivity to industry license applicants. The system will improve the quality of the reviews that protect critical military capabilities and support defense cooperation with allies and friends and reduce review times to meet global marketplace demands.

(U) FY 2005 Accomplishments:

- Completed system upgrade to include Dual Use functionality and fielded USXPORTS V2.0
- Completed one point release of USXPORTS to optimize functionality and fielded USXPORTS V2.1
- Completed update of documentation and training
- Completed system enhancements to include auto staffing and assessment capability associated with Policy Assessment Repository. Released USXPORTS V3.0
- Completed one point release to expand Tiger Team functionality and fielded USXPORTS V3.1
- Completed system improvements to include an array of new and enhanced features and released USXPORTS V4.0

Exhibit R-2 RDT&E Budget Item justification	Date: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E - Defense Wide/Budget Activity: 6	R-1 ITEM NOMENCLATURE Export License Control - PE: 0605123D8Z

(U) B. Program Change Summary	FY2005	FY2006	FY2007
Previous President's Budget	5.433	0	0
Current BES/President's Budget	5.426	0	0
Total Adjustments			
Other Program Reductions	-0.007	0	0

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

(U) C. Other Program Funding Summary: None.

(U) D. Acquisition Strategy: FY2001 funds-Contract award 29 Dec 2000 to SRA International via NIH CIO-SP contract # 263-96-D-0327 delivery order # DASW01-01F-0390 for program management and system integration services. FY 2002 funds-Contract award December 20, 2001 to SRA International via NIH CIO-SP contract # 263-01-D 0050 delivery order # DASW01-02-F-0412 for continued program management and system integration services. FY2005 funds: contract award July 28, 2004 to SRA International via NIH CIO-SP contract #263-01-D-0050. Task order authorization # DoD-OS-2004-C-2322 for continued program management and enhancing USXPORTS.

(U) E. Performance Metrics: Protect National Security Interests, Facilitate the Export Licensing Process, Speed overall application to decision process, protect industry proprietary information and comply with CCA & GPEA.

Exhibit R-2, RDT&E Budget Item Justification			Date: February 2006					
APPROPRIATION/BUDGET ACTIVITY RDT&E – Defense Wide/Budget Activity: 6			R-1 ITEM NOMENCLATURE Defense Travel System – PE: 0605124D8Z					
COST ($ in Millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	Total Cost
Total Program Element (PE) Cost	25.701	20.116	0.000	0.000	0.000	0.000	0.000	45.817
Defense Travel System	25.701	20.116	0.000	0.000	0.000	0.000	0.000	45.817

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION

BRIEF DESCRIPTION OF ELEMENT:

The Project Management Office (PMO) for the Defense Travel System (DTS) was established to provide procurement management and system fielding support of DTS worldwide. The Defense Travel System is the standard DoD business travel services system that combines reengineered travel policies and procedures with the best industry practices and technology. The Defense Travel System provides full travel management support from arranging for travel and approving travel authorizations, to processing reimbursement vouchers following travel and maintaining appropriate government records. The Defense Travel System is an end-to-end fully electronic process that leverages technology to speed the coordination of travel, incorporates digital signature capability, and embraces standard industry Electronic Commerce procedures. DTS was designated as an ACAT IAM Program on May 28, 2002 and is fully compliant with all statutes and regulations for a DoD Major Automated Information System.

Exhibit R-2, RDT&E Budget Item Justification	Date: : February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E – Defense Wide/Budget Activity: 6	R-1 ITEM NOMENCLATURE Defense Travel System – PE: 0605124D8Z

PROGRAM ACCOMPLISHMENTS AND PLANS: ($ in Millions)

1. (U) FY 2005 ACCOMPLISHMENTS: $25.701

- $ 8.855 Continued development, test, and integration of Defense Accounting and Disbursement Systems (DADS) interfaces and software releases, DADS system changes, development of Interface Control Document and Memorandums of Agreement (MOA).
- $13.449 Completed Madison software release development and testing. Began Monroe and Q. Adams software release development.
- $ 1.897 Engineering Support
- $ 1.500 Partner System Interfaces

2. (U) FY2006 PLANS: $20.116

- $ 6.854 Continue development, test, and integration of Defense Accounting and Disbursement Systems (DADS) interfaces and software releases, DADS system changes, development of Interface Control Document and Memorandums of Agreement (MOA).
- $ 8.797 Continue Monroe and Q. Adams software release development and testing.
- $ 2.173 Engineering Support
- $ .237 DTS ST&E
- $ 1.551 Partner System Interfaces
- $ .504 SBIR/STTR Reductions

Exhibit R-2, RDT&E Budget Item Justification	Date: : February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E – Defense Wide/Budget Activity: 6	R-1 ITEM NOMENCLATURE Defense Travel System – PE: 0605124D8Z

3. (U) FY2007 PLANS $0.000:

- $ 0.000 The Business Transformation Agency (BTA) was established on October 7, 2005. PBD 721 dated December 20, 2005 transfers the Defense Travel System program and its FY 2007-2011 resources to the BTA.

B. PROGRAM CHANGE SUMMARY:

	FY2005	FY2006	FY2007	FY2008	Cost to Complete
(U) FY 2006 President's Budget:	26.332	20.441	12.251	21.037	Continuing
(U) FY 2007 President's Budget:	25.701	20.116	0.000*	0.000*	Tf to BTA*
(U) Total Adjustments:	(.631)	(.325)	(12.251)	(21.037)	
SBIR/STTR Transfer	(.610)	0.000	0.000	0.000	
Other Program Adjustments	0.000	(.237)	0.000	0.000	
Congressional Adjustments	(.021)	(.088)	0.000	0.000	
Transfer to BTA	0.000	0.000	(12.251)	(21.037)	

* As directed, the management and oversight of the Defense Travel System Program Management Office and its appropriated FY07-11 resources have been transferred to the BTA in this budget submission.

BUDGET JUSTIFICATION
FOR PROGRAM ELEMENTS OF THE
OSD RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE-WIDE PROGRAM
FISCAL YEAR (FY) 2007 BUDGET EXTIMATES SUBMISSION

PE 0605128D8Z, Classified Program USD(POLICY), is justified in the classified annex.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	36.268	37.260	31.995	33.924	35.954	36.733	35.600
P130	Foreign Comparative Testing (FCT)	36.268	37.260	31.995	33.924	35.954	36.733	35.600

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 Deputy Under Secretary of Defense (Advanced Systems & Concepts), Comparative Testing 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 30-day Congressional notification of the intent to fund the most meritorious projects is required, prior to the issuance of funds to the Services/SOCOM for execution.

Since the program's inception in 1980, OSD has initiated 546 projects; 473 projects have been completed to date. Of the 249 evaluations that met the sponsors' requirements, 169 led to procurements worth approximately $7.500 billion in FY 2006 constant year dollars. With an OSD investment of about $980.000 million, the FCT Program has realized an estimated RDT&E cost avoidance of $6.500 billion in FY 2006 constant year dollars.

The FCT program is frequently a catalyst for teaming or other business relationships between foreign and U.S. industries; many successful FCT projects result in arrangements for the licensed production of the qualified foreign item in the U.S. Other nations recognize the long-term value of such practices for competing in the U.S. defense market and the resultant strengthening of the "two-way street" in defense procurement. For the U.S., the result often means the creation of jobs and contributions to local economies. To date, companies across 31 states have benefited from FCT projects.

This Research Category 6.5 is assigned and identified in this descriptive summary in accordance with existing DoD policy.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	36.833	35.738	36.419
Current BES/President's Budget (FY 2007)	36.268	37.260	31.995
Total Adjustments	-0.565	1.522	-4.424
Congressional Program Reductions		-0.603	
Congressional Rescissions			
Congressional Increases		2.125	
Reprogrammings			

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**

SBIR/STTR Transfer	-0.515		
Other	-0.050		-4.424

Major Performers: The majority of funding from this Program Element is forwarded directly to the Services and US Special Operations Command (USSOCOM) who manage all contracting and support requirements for the FCT projects identified in this budget exhibit (i.e., R-2a).

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: In FY 2005 - FY 2011, initiate the new start of approximately 15-20 projects and conclude activities on many continuing projects.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P130	Foreign Comparative Testing (FCT)	36.268	37.260	31.995	33.924	35.954	36.733	35.600

A. Mission Description and Project 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 Deputy Under Secretary of Defense (Advanced Systems & Concepts), Comparative Testing 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 30-day Congressional notification of the intent to fund the most meritorious projects is required, prior to the issuance of funds to the Services/SOCOM for execution.

Since the program's inception in 1980, OSD has initiated 546 projects; 473 projects have been completed to date. Of the 249 evaluations that met the sponsors' requirements, 169 led to procurements worth approximately $7.500 billion in FY 2006 constant year dollars. With an OSD investment of about $980.000 million, the FCT Program has realized an estimated RDT&E cost avoidance of $6.500 billion in FY 2006 constant year dollars.

The FCT program is frequently a catalyst for teaming or other business relationships between foreign and U.S. industries; many successful FCT projects result in arrangements for the licensed production of the qualified foreign item in the U.S. Other nations recognize the long-term value of such practices for competing in the U.S. defense market and the resultant strengthening of the "two-way street" in defense procurement. For the U.S., the result often means the creation of jobs and contributions to local economies. To date, companies across 31 states have benefited from FCT projects.

This Research Category 6.5 is assigned and identified in this descriptive summary in accordance with existing DoD policy.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
120mm Mortar Propellant: (Army)	0.739	0.865	0.000

This project is evaluating a high-performance Extruded-Impregnated (EI) propellant for long-range mortar systems developed by Rheinmetall/Nitrochemie Wimmis AG of Switzerland. Qualification of EI propellant will support the Army's Future Combat System requirements for a 15% increased range over current 120mm mortar systems, will eliminate use of a hazardous/toxic stabilizer, reduce blast overpressure, increase rate of fire, decrease gun tube wear, and increase propellant shelf life.

FY 2005 Accomplishments: Manufactured downselected EI main charge propellant for qualification testing at YPG. Project scope expanded to also evaluate EI propellant for use in the mortar igniter. Awarded contract mod to procure EI igniter propellant. Started initial evaluation testing of main charge propellant at YPG. Charge assessment and uniformity tests were conducted.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

FY 2006 Plans: Load, assemble and pack (LAP) mortar increment containers and ignition cartridges with EI propellant and conduct qualification testing at YPG.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
20 MM Replacement Round: (Air Force)	0.989	0.000	0.000

This project corrects a safety hazard in current 20MM rounds. The PGU-28B inventory has been declared "For Emergency Use Only" even though the rounds meet the USAF requirements for employment ranges and target damage. This was a result of twenty-five in-barrel detonations that caused aircraft damage and could have resulted in pilot death and loss of the aircraft. Air Combat Command through Hill AFB is evaluating 20mm ammunition developed by Diehl Munitionssyteme of Germany and Oerlikon of Switzerland to replace current 20mm combat rounds. FY 2005 Accomplishments: Acquire sufficient USAF funding to procure live-fire targets and accomplish live-fire testing. Completed DOT&E. Awarded contract for 25,000 rounds to conduct OT&E. FY 2005 Plans: Complete OT&E testing and transition to procurement. ROI: $88.000 million over 4 years.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
3rd Generation Focal Plane Arrays for Future Combat and Apache Weapon Systems: (Army)	1.598	1.269	0.000

This Project will decrease the cost per focal plane array (FPA) by 75% resulting in acquisition savings of $572.000 million and increases reliability of the FPA by 200% which reduces operating costs by $75.000 milliom. This project is evaluating high-performance low-cost Third Generation Focal Plane Arrays (FPAs) developed by Qinetiq and BAE of England. Qualification of Third Gen FPA will support the Army's Future Combat requirements to see first, understand first, act first and finish decisively. FY 2005 Accomplishments: Test documents and interface requirements have been established for each contractor. Delivery of the first focal plane arrays (FPAs) received end of FY 2005. FY 2006 Accomplishments: FPAs and integrated dewar cooler assemblies have been received. FY 2006 Plans: Testing will begin of the first imagers from each contractor. A downselect to one contractor will be performed by end of second quarter FY 2006 . Delivery and testing of larger format FPA and camera from the selected company will take place later in the year.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
40 mm Tactical Marking & 40 mm Day/Night Training Cartridges: (USSOCOM)	0.540	2.349	0.000

The 40mm Day/Night training cartridges allow soldiers to train as they fight, at night using their night vision goggles, a capability not currently available. This inert training ammunition is less toxic and will reduce range clean up costs by 10-20%, prevents range fires in the impact areas of bases in Southern California and will save over $1.000 million a year in base operations and maintenance funds (one fire alone burned 8,592 acres aboard the base and surrounding community, required 1,300 firefighters, numerous fire trucks, and a dozen aircraft from various agencies to extinguish) as well as save lives and prevent injuries caused by unexploded ordnances. FY 2005 Accomplishments: Project funds received. Contracted for and received test articles. Begin Phase I Performance Test. FY 2006 Plans: Complete Phase I Performance Test. Conduct Phase II Safety Test and environmental impact study. Conduct Phase III Operational User Assessment. Receive WSESRB approval. Milestone C Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
40mm High Explosive Dual Purpose (HEDP) Improvement : (Marine Corps (joint w/USSOCOM))	1.739	0.000	0.000

This project is testing a more lethal and accurate 40mm High Velocity (HV), High Explosive Dual Purpose (HEDP) round that integrates a commercially available Insensitive Munition for an increase in safety during operation and transportation. By integrating NDI components to produce a certified round, the USMC will avoid RDT&E costs of $8.800 million, O&S costs of $50.000 million, and provide an ROI of 80:1. FY 2005 Accomplishments: Procured the PAX-2A from Holston Army Ammunition Plant and transferred it to Norway for loading into the candidate cartridge. Completed baseline Insensitive Munitions (IM) and lethality testing of the US M430A1 cartridge. On 20 June, 2005, conducted a Milestone B Review of the Program. Based on this review, the Milestone Decision Authority (MDA) provided authority to continue to Milestone C. On 30 June, 2005, exercised the contract option to conduct the integration test of cartridges. The Swiss propellant that will be used in the candidate cartridge was

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

qualified by NSWC, Crane in conjunction with the USSOCOM effort to field the Mk285 cartridge. FY 2005 Plans: Complete Engineering Phase of the integration effort at NAMMO, deliver test articles, complete Safety and Environmental Tests at NSWC, Dalgren, and User Testing of Marine Corps cartridge and Government Integration at Marine Corps Base Quantico. Prepare and submit WSESRB Certification and provide Technical Test Report. Obtain WSESRB Certification. Procurement decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
40mm Low Velocity HEDP Ammunition: (Marine Corps (joint w/USSOCOM))	0.560	0.472	0.000

This project is testing a 50% more accurate 40mm Low Velocity (LV), HEDP round that features greater lethality, new Insensitive Munitions for greater safety, and a new fuze to avoid remediation costs of $50.000 million for unexploded ordnance. The fielded cartridge will feature a high penetration capability against light armored targets and a high fragmentation effect against enemy personnel while integrating a self-destruct mechanism to eliminate instances of unexploded ordnance. By successfully qualifying an existing commercial round, the USMC will avoid RDT&E costs of $8.800 million and provide a ROI of 85:1. FY 2005 Accomplishments: Foreign Test Data received and reviewed. Contract Award and Test Planning complete. Received Test Articles. Contract Awarded to both Rheinmatall and ARGES for the test samples evaluation in April 2005. The Marine Corps Single Acquisition Management Plan was approved on 2 May 2005. FY 2006 Plans: Conduct Qualification of Energetics at the Vendor's Facility. Perform Safety & Environmental Tests in Germany. User Evaluation to be performed at Marine Corps Base Quantico. Prepare WSESRB Briefing and receive Certification. Procurement Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
70mm (2.75 inch) Rocket Warhead: (USSOCOM)	0.609	3.644	0.000

This project is qualifying an improved 70mm "bunker buster" warhead for use by Special Operations Aviation Regiment (SOAR) (Task Force 160) aircraft (AH/MH-6J). This warhead will provide special operations forces (SOF) with a significant new capability to defeat hardened targets such as bunkers, buildings, or other structures consisting of up to 24 inches reinforced concrete or 4 feet of timber and earth. Total cost avoidance and savings exceed $43.000 million. FY 2005 Accomplishments: Project funds received. Contract preparation. Test planning conducted. FY 2006 Plans: Receive additional project funds. Receive test articles. Interim hazard classifications, conduct Phase I technical and safety testing. Insensistive munitions (IM) testing. Obtain WSESRB approvals. Obtain air worthiness certification. Conduct Phase II Operational and User Assessment. Milestone C decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
84 mm Multi- Target Warhead: (USSOCOM)	1.417	1.033	1.398

This project is evaluating an 84 mm Multi-Target (MT) Warhead for use in the Multi-Role Anti-Armor, Anti-Personnel System (MAAWS), the primary Special Operations Forces (SOF) crew served shoulder fired weapon. This munition will greatly enhance SOF capabilities to blast through wall-structures and targets urban/built up areas using a tandem warhead with a follow-through charge. This project will accelerate the weapons into the hands of the warfighter by 5 years sooner and save $45.000 million in RDT&E and life-cyle costs. FY 2005 Accomplishments: Project funds received. Contract preparation and award of test articles. Test planning. Initiated hardware integration and delivery. Initiated technical and safety testing. FY 2006 Plans: Continue hardware integration. Continue technical and safety testing. FY 2007 Plans: Complete technical and safety testing. Perform limited user testing. Navy WSESRB approval. Milestone C Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Launch Tethered Balloon ISR Platform: (USSOCOM)	0.652	0.000	0.000

This project is evaluating a means of employing a unique Intelligence, Surveillance, and Reconnaissance (ISR) Sensor/Communications Package (802.11) using a tethered balloon platform concept. Well suited for use in poor weather or at night, this cost effective material solution will provide Special Operations Forces (SOF) a new capability that will significantly improve tactical situation awareness in the

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

conduct of USSOCOM's mission objective to find, fix and destroy the enemy, and simultaneously provide friendly force protection. Cost avoidance and life-cyle savings are over $7.000 million. FY 2005 Accomplishments: Project funds received. Complete project planning. Contract for and receive test articles. Conduct analysis of vendor data and conduct initial technical testing. Conduct operational and user assessments. Procurement decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Assault Breacher Vehicle Remote Control System: (Marine Corps)	1.468	0.000	0.000

This project will enable the force protection of all soldiers and vehicles traveling within the Marine Air Ground Task Force by a single Warfighter possessing the capability to clear buried mines and mark a safe lane across the battlefield. The ABV will meet the requirement for in-stride breaching of minefields and complex obstacles in a cost effective, survivable platform with Main Battle Tank speed and mobility, which does not currently exist in the USMC inventory. The Marine Corps can avoid RDT&E costs of over $10.000 million and provide an ROI of 18:1. FY 2005 Accomplishments: Foreign Test Data Received. Received initial test articles for preliminary user evaluations. Contract Preparation and Award. Test Planning Completed. Receive FCT Test Articles. Initiate system integration and system software test. FY 2005 Plans: Complete system integration and System Software tests by Remote Systems Joint Program Office. Conduct Technical Testing at Aberdeen Test Center to determine if the RCS can effectively and safely maneuver the ABV through various operational scenarios. The Operational Tests will be performed at Ft. A.P. Hill and 29 Palms, CA to confirm that the remote control system can accomplish the mission, as specified in the ORD. Data Analysis & Evaluation provided by MCOTEA and MCSC. Procurement Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Celluloid Mortar Increment Containers: (Army)	0.511	0.000	0.000

This project is evaluating and qualifying a second source for nitrocellulose-based belted-fiber Mortar Increment Containers (MICs) for use with 60mm, 81mm and 120mm mortars. Qualification of the celluloid MICs developed by Kaufman & Gottwald Gmbh (KAGO), of Austria, will significantly reduce procurement cost, thereby reducing overall program production costs (>50% per MIC)., and will improve the robustness of the propulsion charge systems for semi- and auto- loading capabilities required for the Army's Future Combat System. These containers are more "environmentally friendly" and safer than the current domestic product. FY 2005 Accomplishments: Completed manufacture of celluloid MIC tooling. Conducted dimensional analysis and laboratory testing of celluloid MICs. Produced celluloid MICs and initiated evaluation testing at Yuma Proving Ground (YPG). 120mm mortar test rounds with celluloid MICs were prepared for sequential rough handling testing. FY 2005 Plans: Conduct final qualification testing with celluloid MICs at YPG. Total Procurement Savings: $32.800 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Close Quarter Battle (CQB) Pistol: (USSOCOM)	0.250	0.191	0.000

This project is testing and evaluating CQB pistols from foreign vendors that have demonstrated the ability of firing multiple caliber rounds from a single pistol. Non-developmental multi-caliber (9mm and .45 cal) pistols with a weight less than 40 ounces and improved accuracy, reliability and ergonomics will be tested to replace the legacy SIG226 battle pistol used by Special Operations Forces (SOF) for the past 15 years. FY 2005 Accomplishments: Project funds received. Conduct project planning. Held Pistol Industry Conference. Draft Performance Specifications submitted to Industry. Revised Specifications. Received proposals and product samples. Contracted and received test articles. Initiated technical and safety testing. FY 2006 Plans: Award IDIQ contract; receive initial low rate production articles, Complete technical and safety testing. Conduct operational and user assessment. Milestone C Decision. Initate full production. RDT&E, O&S, and procurement savings are projected at $13.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Composite Shroud for LCAC: (Navy)	0.978	1.572	0.112

This project will provide more easily repairable, and 30% more reliable shrouds; thus, reducing life cycle maintenance costs and increasing craft mission availability. Potential US Navy savings of $500.000

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

thousand specification development, $13.500 million in material/labor and R&D costs plus an estimated additional reliability savings of $1.200 million over the life of the LCAC Program. FY 2005 Accomplishments: The RFP for the test shroud procurement, and the RFQ for the demonstration pieces and proposals were issued. Analysis is being performed to evaluate and quantify aerodynamic performance enhancements. FY 2006 Plans: Award the demonstration piece and proposal development contracts in the first quarter of FY 2006. Receive and evaluate proposals via a Contract Award Review Panel (CARP) and Technical Evaluation Review Panel (TERP) in late December or January. Award large construction contract in January or February to one or two of the vendors depending on available resources. Participate in the first Critical Design Review (CDR) with the vendor/s by the end of the quarter. Outfitting of 2 different Craft (one at each ACU) will allow for real-world evaluation of Test Articles during certification and training evolutions. FY 2007 Plans: Perform engineering labor and Logistics support which will be extensive on this effort.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Deployable Instrumentation for Marine Air Ground Task Force: (MAGTF)	0.924	0.000	0.000

This project will enable the USMC to employ realistic training to improve the probability of tactical success and correspondingly, a reduction of losses in terms of resources and personnel. The USMC is evaluating mobile Range Instrumentation Systems developed by Saab Training Systems of Sweden and RUAG of Switzerland to meet Marine Corps requirements to integrate training devices that provide deployable force-on-force training for the MAGTF. The project will integrate this capability into current training systems such as the Multiple Integrated Laser Engagement System (MILES) 2000 and enhance interoperability in the Joint-Coalition environment. The USMC will avoid RDT&E costs of $33.000 million, Procurement costs of $7.000 million, O&S costs of $5.000 million, and provide a ROI of 26:1. FY 2005 Accomplishments: Completed Phase II Operational Tests with Saab in Sweden on a Swedish Army post and initiated Phase III Field Evaluation. MILES 2000 vehicle kits provided to RUAG. Complete Phase II Operational Tests with RUAG and Phase III Field Evaluation with both vendors. Procurement decision to be made early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Deployable GSM Cellular Network: (USSOCOM)	1.952	0.000	0.000

This project is evaluating a commercially available transportable cellular network developed by Ericsson Systems of Sweden that can be deployed worldwide (stand-alone) in support of mission requirements in austere environments for USSOCOM and US Army. The Swedish equipment will satisfy critical requirements of the Special Operations Forces Tactical Assured Connectivity System and the Joint Threat Warning System. FY 2005 Accomplishments: Training of Program Manager U.S. Army Warfighter Information Network - Tactical (WIN-T) engineers and technicians completed at CECOM. Operational testing continues and test data being analyzed. User test and evaluation is ongoing. Additional funds were provided to test third generation Wideband Code Division Multiple Access Network upgrades to the DC Net that potentially merge internet with cellular, and enable secure voice/data communication with high-speed data based services. This potential capability would allow SOF to transmit images from video phones any where in the world. FY 2005 Plans: Obtain procurement decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Deployable Multi-Purpose Moving Target System (DTS):	0.359	0.000	0.000

This project will enable Marines to train on a deployable, automated, targeting system to train as they fight and enhance proficiency with anti-armor and infantry engagement tactics. DTS will enable Marines to utilize anti-armor weapons, SESAMS, and armored vehicles, equipped with MILES 2000 equipment, for realistic training at any deployment location. The USMC will avoid RDT&E costs of $4.000 million, Procurement costs of $240.000 million, O&S costs of $6.000 million and provide a ROI of 334:1. FY 2005 Accomplishments: Completed Phase I System Integration at Theissen in Germany. Initiated Phase II Operational Test at Camp Pendleton, CA and Camp Lejuene, NC. Complete Phase II Testing. Procurement decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Diver Hull Inspection and Navigation System: (Navy)	0.272	0.393	0.000

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This project will determine suitability for use by U.S. Naval forces conducting Explosive Ordnance Disposal (EOD) diving operations, including searching and inspections of ship hulls and berthing areas. It is an open architecture system that combines video streams from multiple sensors, underwater positioning data and the ship's hull schematics to accurately track and record the diver's underwater movements. FY 2005 Accomplishments: Completed integration work of DVIS, Mk 48 Mask, and DHINS Simulator. Completed construction and integration of Diver Electronic Unit (DEU). DHINS FCT Test #1 executed in August at the Australian Maritime Museum in Sydney, AUS with support from local police divers. All software enhancements were successfully demonstrated. Enhance Marking 100% completed. Enhanced Diver Position Modification 100% completed. OMA Evaluated two different navigation systems during August test. Exit criteria assessment: Conducted DHINS system integration test in Dec 2005 Del Monte Pier, Little Creek, VA. FY 2006 Plans: Searching Multiple Ships in the same harbor. Integrate and stream sensor data and navigational data via acoustic communications to a topside display. Interoperability with other fleet Navy assets: such as unmanned underwater vehicles (UUVs), fleet divers, etc.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Engine Air Particle Separator (EAPS): (Army)	1.087	0.562	0.000

This project is buying additional EAPS in support of desert operations and the need for flexibility in operating tempo. Current configuration of EAPS does not facilitate performing maintenance on the aircraft. The Engine Air Particle Separator (EAPS) swirls engine inlet air at a high velocity separating particulate matter via centrifugal force. EAPS is used as mission equipment in dusty/sandy environments and can significantly increase engine life due to decreased erosion of engine components. EAPS currently used by the U.S. Army is the long can design and requires that EAPS be moved forward on its mounting rails to open the engine cowling when performing maintenance or inspections. The U.K design is a short can that will allow maintenance to be performed without unfastening and moving EAPS. A cost savings to a unit to buy a new engine at $1.100 million with a turn in credit of $800.000 thousand hence a unit spends a net of $300.000 thousand. Assuming 400 hours of operation a year, each aircraft will save 2 engines each. Fifty-one aircraft in country (28 OIF, 23 OEF) would yield $600.000 thousand per aircraft. This savings would be roughly $30.600 million for the units in theater. FY 2005 Accomplishments: Awarded EAPS production contract for 38 new sets of current configuration. Awarded EAPS Short Cans ECP for Short Can configuration and redesign of the Cross Shaft Fairing Cover. FY 2006 Plans: After approval of EAPS Short Can ECP, will cut in to the new production contract to start producing Short Can EAPS. Start retrofitting our fielded EAPS with new Cross Shaft Fairing Covers and Shorten to facilitate maintenance. Establish new performance standard for T55-GA714A Engine with the Short Can EAPS in the operators manual for the CH47 aircraft.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Eye-Safe Laser Rangefinder (ESLR) for M1A1 Main Battle Tank: (Marine Corps)	0.054	0.000	0.000

This project will enable the M1A1 tank crew to increase their range to targets by 2,000 meters while reducing the risk of blinding soldiers during training exercises. The ESLR will enable the tank crew to provide accurate target coordinate information at extended ranges for target-handoff and provide ordnance downrange before the M1A1 can be targeted by the enemy. This enhancement will contribute significantly to the mission of winning decisively on the battlefield, improving survivability and lethality. By successfully fielding an NDI solution, the USMC will avoid RDT&E costs of $2.000 million, Procurement costs of $3.000 million, O&S costs of $0.500 million, and provide a ROI of 7:1. FY 2005 Accomplishments: System Testing and User Evaluations completed at Fort AP Hill, VA. Extinction Requirements Testing performed at Aberdeen Proving Ground and White Sands Missile Range. Only the Zeiss laser has met requirements. Complete Long Distance Testing. Procurement decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Guidance Components for Missiles: (Air Force)	0.174	0.000	0.000

This project enhances the performance of U.S. non-strategic missile systems. Improvements to basic guidance and control (G&C) technology and miniaturization of G&C components have application to U.S. system. Advanced components are being used by foreign suppliers and are candidates for easy integration into U.S. programs. The Space and Missile Command at Kirtland AFB has evaluated the performance of missile guidance components developed by Radstone Technology of the United Kingdom, DY4/Force Computers of Canada, Aitech Defense of Israel, Saab Ericsson Space of Sweden, SBS (OR) Technologies of Germany, and Thales Computers of France. FY 2005 Accomplishments: Developed baseline schedule, finalized environmental test procedures, developed performance and flight

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simulation test plan with detailed schedule. Received hardware and completed integration of hardware and software into the test facility. Evaluated candidates and down selected to the Radstone Technology. FY 2005 Plans: Complete the evaluation of the Radstone Technology, write and distribute the test report. Total procurement for 14 flights is $1.040 million/year over the projected 10 years Contract is $10.400 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Highly Mobile Oxygen Supplementation System (HMO2SS): (Marine Corps)	0.652	0.000	0.000

This project is testing a highly mobile oxygen-breathing mask that can provide increased oxygen therapy in mass casualty medical care 8 to 12 times longer than current masks, reducing the need for heavy, high pressure oxygen bottles. When deployed, the HMO2SS will reduce the logistical footprint by 400% without negatively impacting the current mission for mass casualty medical care. If successful, the USMC will avoid RDT&E costs of $2.00 million and provide a ROI of 5:1. FY 2005 Accomplishments: Initiated contract preparation and test planning. Award test article contract. Receive foreign test data. Receive test articles. FY 2005 Plans: Complete test planning. Technical tests performed at Aberdeen Proving Ground. Operational tests performed at Naval Medical Research Center, San Diego and overseen by MCOTEA. Data analysis & evaluation and the technical test report provided by the Naval Medical Research Center, San Diego. Initiate FDA approval. Procurement decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
HT Protective Coating for Gas Turbine Engines: (Navy)	0.713	0.000	0.000

This project will result in significant increases to the readiness and reliability of AV-8B Harrier aircraft thus providing the Marine Corps with the assets necessary to prosecute its missions successfully. Annual savings in procurement costs for the Harrier is estimated to be $18.000 million with additional operations and support life-cycle cost savings totaling $36.000 million. FY 2005 Accomplishments: MPT under contract to provide coated coupons for testing at NASA-Glenn and NAVSEA Carderock. Test coupons have been procured and prepared for coating application. The F402 Component Improvement Program (CIP) has tasked Rolls-Royce with providing support for testing of coated engine parts in FY 2006/2007. NRL web-based microscope capability has been activated to exchange component metallurgical data with MPT Russian scientists. 1st Quarter FY 2006 Accomplishments: Test coupons have been shipped to MPT for coating application. Rolls-Royce has been contracted to support engine-level testing of the coatings. FY 2005 Plans: Complete comparative testing of coupons. Conduct component level comparative testing using F402 parts coated with MPT and comparative coatings. Coordinate with F402 Accelerated Mission Endurance Test (ASMET) Program. Test program to include MPT-coated turbine hardware in ASMET.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Laser Marksmanship Training System (LMTS), Environmentally Enhanced (LMTS, E2) - Scoring Device (Hummerbook): (Army)	0.163	0.000	0.000

This project is evaluating a COTS, fully ruggedized LMTS Scoring Device known as the Hummerbook 50,000. The LMTS, E2 will provide an additional capability to a proven training device which will now enable the Army National Guard (ARNG) to add an additional training dimension for ARNG Soldiers by enabling them to conduct marksmanship training, more realistically, outdoors. The LMTS is a validated ARNG training requirement and the device is scheduled to be fielded to all 3,000+ ARNG Armories and Facilities. The ARNG's experiences with using the LMTS as an outdoor individual and collective marksmanship trainer will benefit the overall US Army's objective of "Making every Soldier a Rifleman." FY 2005 Accomplishments: Preliminary testing with a production Hummerbook revealed some deficiencies in the waterproofing of the screen. FY 2005 Plans: Purchase Order for 15 Hummerbooks with spare battery and battery charger will be provided to International Trade & Technologies, Inc. (IT&T). Procurement to be finalized early in FYDP. Procurement Potential: $6.620 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Hydraulic Regenerative Drive System: (Army)	0.145	0.000	0.000

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This project will reduce fuel consumption (Logistics footprint) by 50% by 2010. The hydraulic Regenerative Drive System (RDS) uses mature hydraulic propulsion technology and has the potential for reducing the Army Family of Medium Tactical Vehicles (FMTV) fuel consumption by 25% to 30% or increase acceleration and hill climbing performance by 40% while reducing brake component wear by over 50% (O&S costs). RDS captures vehicle braking energy in pressurized hydraulic fluid and reuses it to assist the vehicle drive shaft, reducing the main engine burden (reduced fuel usage, and emissions). This project procures FMTV specific RDS hardware, retrofits 3 prototype vehicles and conducts performance and durability testing at Aberdeen Test Center. Peace time savings over the life of the vehicle is estimated at 10-15,000 which considering the size of the fleet will be considerable. FY 2005 Accomplishments: Procured necessary hardware, and software. Retrofitted 6 vehicles (3 engineering and 3 test articles) Conducted performance and durability testing (about to be completed). FY 2005 Plans: Testing will be completed and project closed out.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Individual Serviceman Non Lethal System: (Army)	0.409	0.689	0.000

This project is qualifying a compressed air non-lethal system that extends the engagement range out to 100 meters. This system has been urgently released by the Army to Iraq and Afghanistan in support of the GWOT. This system provides the soldier with the capability to disperse crowds and/or mark individuals at ranges up to 100 meters with increased accuracy and rate of fire than existing non-lethal capabilities. The launcher can also be used in an under barrel configuration for the M4/M16 weapon. FY 2006 Plans: Testing to support Milestone S C is scheduled for second quarter FY 2006 and the system will achieve Milestone C during fourth quarter FY 2006. Upon reaching Milestone C, the system will be included in the Non Lethal Capabilities Set (NLCS) and will augment the existing capabilities of the soldier in the field. RDT&E Cost avoidance: $2.100 million. Engineering Estimate based on historical ACAT III R&D. Based on 1 per squad and 6 per non-lethal capability set; LCC of ~$2400 per system; Procurement potential up to 6624 systems (Active and NG infantry components); Rule-of-Thumb of 10% RDTE, 30% Procurement, 60% Operations & Maintenance.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
JSLIST Block II Glove Upgrade (JB2GU): (Marine Corps)	0.471	0.000	0.000

This project will provide the Warfighter with a nuclear, biological, and chemical (NBC) glove that can perform a full range of missions in NBC environments, worldwide, up to 30 days without performance degradation. The JB2GU will provide NBC protective gloves for the Army, Marine Corps, Navy and Air Force military personnel and will increase the tactility, dexterity, and durability beyond that found in the currently fielded butyl glove. This project will realize an RDT&E costs avoidance of $2.275 million and provide a ROI of 15:1. FY 2005 Accomplishments: Completed Phase II, Human Factors Wear Test and Chemical Agent Testing. Phase II down-selection completed by JPMO-IP. AirBoss-Defense was selected for Phase III Testing. All services have signed the JPMO-IP TEMP. Receive Phase III Test Articles. Start Phase III FD Testing and Chemical Protection Testing. FY 2005 Plans: Complete Phase III Testing. Procurement Decision. Produce Technical Test Report.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
LCAC Lube Oil Cooler: (Navy)	0.811	0.337	0.000

This project is evaluating improved corrosion resistant hovercraft Lube Oil Coolers, which will reduce life cycle maintenance costs; procurement costs and increases Craft Mission Availability. Potential US Navy savings of $7.600 million in material costs plus an estimated additional maintenance labor savings of $3.000 million over the life of the LCAC program are anticipated. PIP RDT&E cost avoidance of $4.000 milliom. Total Cost Savings $14.600 million. FY 2005 Accomplishments: A formal Request-for-Quote was issued by NSWC-PC contracts office to TTC Norge. Quotes were received from TTC Norge for two different design options. The LOC purchase specification has been completed in order to define all performance and interface requirements that the LOC must meet. Included in this effort was production of an interface/envelope drawing. A test chamber was fabricated, and a test was performed, in order to evaluate the potential for sand fouling of the LOC heat exchanger as a function of fin orientation. A decision to procure the design option with horizontal fins instead of the vertical fins was made as a result of this test. A test report documenting the results was completed. A delivery order for engineering support for the LOC effort was awarded. FY 2006 Plans: Issue delivery order for development of laboratory performance and on-craft testing of the evaluation units. Development of test plans for the laboratory performance and on-craft testing.

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Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Lightweight Prime Mover: (Marine Corps)	2.174	0.899	0.000

This project will provide the USMC with the capability to tow the M777 LW155 howitzer for artillery batteries in support of the Marine Expeditionary Units while meeting the requirements for external transportation via the MV-22 Osprey. The USMC will avoid RDT&E costs of $20.000 milliom, Procurement Costs of $4.000 million, and provide an ROI of 15:1. FY 2005 Accomplishments: Contract prep and award completed for test articles. Completed test plan. Test articles received. Surrogate howitzers built and delivered. Initiated comparative assessment at NATC for towing capability and operational suitability. Complete comparative assessment of Automotive Technik Ltd of United Kingdom and Supacat Ltd of United Kingdom, and Krauss-Maffei-Wegman of Germany. Lockheed Martin/Supacat Ltd was selected for the final test phase. FY 2006 Plans: Execute flight certification tests for external transport via MV-22 Osprey. MCOTEA performs User Evaluation. Live fire test execution at Aberdeen Test Center. Provide Final Test Report. Procurement Decision. Complete technical Test Report.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Lightweight Smoke Generator: (Army)	0.250	0.000	0.000

The U.S. Army is evaluating a visual/infrared liquid obscurant used by the Polish Army as a potential replacement for fog oil and graphite used by the U.S. Army. A "two-in-one" obscurant would have produced significant weight savings needed to meet Future Combat Systems needs for a smaller/lighter obscuration system. FY 2005 Accomplishments: Completed field performance testing of the Polish visual/infrared obscuration liquid field testing using a modified M56 Smoke Generating System (SGS). Completed test report summarizing the results of the field and chamber tests where the performance of the Polish visual/infrared obscuration liquid versus the U.S. fog oil/graphite system was tested.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Link-16, 11B Management Integrator: (Navy)	0.533	0.539	0.000

This project will assist in the implementation of Link-16/Link-11 capability in Special Projects Aircraft (SPA). It will provide situational awareness of friendly Blue Forces and enemy threats, assist in the prevention of fratricide, and improve the timeliness of enemy targeting solutions in support of the Global War on Terrorism (GWOT). Successful execution will result in a cost savings/avoidance of $3.000 million for Initial Operational Capability (IOC) implementation (avoids requirement to develop a new processor). Additional, estimated savings of $1.300 million will be realized during Full Operating Capabilities (FOC) MIP development and integration due to the Joint development ventures currently underway on other APC ADSI programs. FY 2005 Accomplishments: Procured two 1/2 ATR Air Defense Systems Integrators and associated NRE to facilitate integration into the SPA platform. Units are entering final integration and test phase. These integrators will allow for a parallel developmental paradigm that will expedite the development and integration of the Datalink requirements and eventually provide FOC Datalink transfer capability to the SPA platform. FY 2006 Plans: Conduct IOC NCTSI Certification/Test and JITC Certification/Test. Commence Datalink Requirements (DLR) and FOC Integration and Test at APC with complete Zephyr Link system. Commence aircraft integration of first IOC production baseline system. Commence interface development for Sea Vue Radar integration, Time Of Arrival/Time Differential Of Arrival (TOA/TDOA), IFF and TDDS replacement.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Li-Ion Batteries: (Army)	2.174	0.000	0.000

This project is evaluating the potential for Advanced chemistries Li-Ion cells and integration to batteries to satisfy user requirements for a high energy density (125 Wh/kg), high cell potential (3.6-3.7V) fuel source. Based on initial successes of a previous FCT (using Li-Ion cylindrical cells), this FCT will evaluate various cells with advancement in chemistries for application to: X90, X500 X600, X847, X388, X557, X516, X599 and X598 type batteries - satisfying requirements for both all military users of these batteries (will be transitioned to DLA). FY 2005 Accomplishments: Completed performance testing of BB-2600 and BB-2800 batteries manufactured with AGM (UK) cylindrical Li-Ion cells. Completed performance testing of BB-2590 batteries manufactured by SKC (Korea) utilizing their flat Li-Ion cells. Developed prototypes batteries for X847, X388, and X557 utilizing SKC Li-Ion cells. FY 2005 Plans: Field testing of the SKC BB-2590 batteries. Complete development of X516, X599, and X598 prototype

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batteries. RDT&E Cost avoidance estimated at $10.000 million over three years for development/testing of a new battery chemistry and associated application. O&S savings estimated at $10.000 million over 5 years after full implementation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Low Probability of Intercept (LPI) Communications Intelligence Direction Finding: (USSOCOM)	0.065	0.000	0.000

This project originally planned to evaluate commercially available equipment developed by Elta Electronics, Ltd. of Israel that will detect sideband, spread spectrum/broadband, and other types of low probability of intercept communication signals from potential adversaries to provide threat warning to meet the requirements of the Joint Threat Warning System. However during the contract period Elta increased prices well beyond budget constraints, and proved unresponsive to project management communications. Elta was subsequently eliminated as a viable candidate. The Program Manager discovered that TRL Technology of the United Kingdom had comparable equipment and was procured for testing. FY 2005 Accomplishments: Due to reselection of vendor, project experienced a 3 month schedule slip. Training and system familiarization was conducted on-site in Tewkesbury, England. Test articles were procured and delivered to Space and Aviation Warfare Center (SPAWAR) Charleston. Completed technical testing. Operational testing is ongoing at Penn State University. FY 2005 Plans: Complete operational testing; compile test data, prepare decision packet, and obtain production decision. RDT&E, O&S, and procurement savings are projected at $8.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
M16A2/M4 Training Replacement Bolt : (Marine Corps)	0.429	0.000	0.000

This project will allow the USMC to safely train Warfighters for Military Operations in Urban Terrain (MOUT) by firing, at short range, the Special Effects Small Arms Marking System (SESAMS) training cartridge and preventing the accidental chambering and firing of lethal ammunition. The Training Bolt will replace the currently existing SESAMS Upper Receiver for the M16A2 and M4 Service Rifles, increasing safety by reducing the ability to fire live rounds and minimizing the logistical footprint for equipment storage. The USMC will avoid RDT&E costs of $0.650 million, Procurement Costs of $3.000 million, and provide a ROI of 13:1. FY 2005 Accomplishments: Received foreign test data. Completed contract preparation and award. Complete test planning. Receive test articles. Commence laboratory testing for Phase I technical testing at Naval Surface Warfare Center, Crane to safely determine that live 5.56 ammunition cannot be fired with the bolt. FY 2005 Plans: Complete lab testing. Perform Phase 2 Operational Testing at MARCORSYSCOM's Ordnance Test Facility, Quantico, VA by PM TRASYS with operational M16A2. Data analysis & evaluation and technical test report provided by PM TRASYS. Procurement Decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
MARIA: CONGRESSIONAL ADD (Navy)	1.141	0.000	0.000

This project is evaluating a software-based high performance map application from Teleplan AS that provides a superior tool to collect, present and filter position dependent information for planning and analysis. The Navy Readiness Reporting Systems initiative is a dynamic, on-going evolutionary development aimed at providing the Navy, Afloat, Type Commander (TYCOM) and Fleet Commanders-in Chief (FLTCINs) the highest level of readiness reporting, collection, display and analysis for readiness assessment and planning. MARIA will be used to graphically present these data and also provide a point-and-click interface for data collection and reporting. FY 2005 Accomplishments: Conducted Initial Planning Team meeting. Held technical meeting and produced a roadmap to integrate MARIA in three developmental Spirals. Conducted MARIA user and development training. Installed and configured MARIA developmental server. Completed contract negotiations with NAID for purchase of MARIA Licenses and technical support for Spiral 1. Currently developing application module and interface to display readiness data on MARIA map client. Testing to be performed at end of FY2005, completing Spiral 1.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Micro Electro Mechanical System (MEMS) Inertial Measurement Units (IMUs): (Air Force)	1.359	0.000	0.000

This project is qualifying a $12.000 thousand unit whose weight is measured in ounces that will replace units costing $100.000 thousand and weighing pounds. Many U.S. weapons require an IMU to make them intelligent/precision assets that can strike targets accurately. IMU costs have always been a major contributor to the high overall guidance system cost. Additionally, the IMU's relatively large "payload mass" reduces the available mass for lethal portion of the payload. FY 2005 Accomplishments: Finalized the selection of SiIMU02 interface type and finalized Purchase Order (and delivery schedule) for BAE SiIMU02. SMC/Det12 modified the NG Task Order to include provisions to procure the four fully functional units and the engineering test unit (ETU). Purchase Order (86330JY15C) was issued on June 22 2005 by Northrop Grumman to BAE systems. FY 2005 Plans: A Test Readiness Meeting to coincide with the fully functional unit arrival. The team will meet at Holloman AFB to assess the 46TG readiness for SiIMU02 lab, flight, and sled tests. An additional Test Readiness Meeting will be scheduled at Coleman Aerospace. Execute MEMS IMU program activities and Test Plans. The total IMUs purchased are 2,700 per year, which equals $8.100 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Mine Countermeasures Small UUV: (Navy)	0.196	0.000	0.000

This project is evaluating small UUV capabilities in Mine Countermeasures (MCM) Operations in the Very Shallow Water Zone (VSW) (10 feet - 40 feet) in preparation for amphibious assault, force protections and harbor security operations. The US Navy is currently incorporating small UUVs into Navy Special Warfare, VSW MCM operations, and Anti-terrorism Force Protection tactics. FY 2005 Acomplishments: Issues were noted on vehicle from AUV Fest (6-17 June) addressed by Hafmynd in early July. Actual Gavia UUV delivery to San Diego occurred on 26 July. Training course was put on by Hafmynd for U.S. Navy personnel from Naval Special Clearance Team One and Government engineers from SPAWAR System Center. Hafmynd personnel remained on-site for the subsequent 3 weeks. The training and test program started and stopped numerous times, awaiting the on-site technicians to troubleshoot problems, which were exposed during various attempted vehicle operations. During the nineteen work day window of 26 July to 19 August, five days of missions were accomplished. During those five days, 20 missions were run. The remainder of the days was non-operational due to vehicle technical issues, which Hafmynd technical representatives worked very hard to address. Some of those days were troubleshooting, and others were awaiting arrival of parts. Testing was stopped on 19 August when Hafmynd personnel decided to take the vehicle back to Iceland to conduct more extensive diagnostics and repairs at their facility. Inputs on specific improvements were provided to Hafmynd by the U.S. team. The system that is intended for delivery to the U.S. Navy is still at Hafmynd being repaired. Re-delivery is anticipated for November 2005. An Initial Engineering Evaluation Report was written on test results. RDT&E Cost avoidance: $1.000 million Savings in Procurement costs: $4.500 million Operations and Support Life-Cycle savings: $144.000 thousand

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Miniature Synthetic Aperture Radar: (Army)	0.239	0.000	0.000

This project is testing a miniaturized Synthetic Aperture Radar (SAR) sensor system which produces radar images in near-photographic quality in day and night conditions. PM Robotic and Unmanned Sensors (PM RUS), with the support of RDECOM CERDEC I2WD, will integrate and test the Mini SAR for use on the Army Shadow 200 TUAV. This project was cancelled in FY 2005 due to lack of a firm transition/procurement path. The FY 2005 funding was used for pre testing activities.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Mobile Acoustic Support System (MASS) : (Navy)	0.163	0.000	0.000

The MASS is a system that performs Post Flight Analysis (PFA) of recorded sonobuoy (underwater microphones) information from all Anti-Submarine Warfare (ASW) platforms (fixed and rotary wing, surface and subsurface). The MASS would replace the current Fast Time Analysis System (FTAS) system fielded in the fleet, which has been in service for at least 10 years and has reached the end of its projected life cycle. It will provide operational commanders with post-mission acoustic intelligence and provide a scalable system that will keep pace with emerging technology. FY 2005 Accomplishments: Completed testing on one foreign system against the current specification and assessed the following suitability areas: Reliability, Maintainability, Availability, Logistic Supportability, Compatibility, Interoperability, Training, Human Factors, and Safety Documentation. Completed analysis of test data and Finalized Test Reports. De-briefed test results to the Canadian Government. Projected procurement:

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15 units @ $1 million each = $15 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Mounted Cooperative Target Identification System (MCTIS):	0.457	0.000	0.000

This project will provide a non-existent Combat Identification capability to the USMC to acquire, train, and fight on the Joint/Coalition battlefield, significantly reducing incidents of fratricide. This system will provide a positive encrypted identification of friend or unknown, bore sighted through the gunner's primary sight on Marine Corps M1A1 Tanks, Light Armored Vehicles (LAVs), and Advanced Amphibious Assault Vehicles (AAAVs). As a result, the range at which threat targets may be engaged without fear of misidentification regardless of battlefield obscurants will increase significantly and related incidents of fratricide will decline significantly. If successful, the USMC will avoid RDT&E costs of $15.000 million, Procurement Costs of $90.000 million, and provide a ROI of 69:1. FY 2005 Accomplishments: Received and accepted remaining test articles. Completed M1A1 System Integration on II MARDIV tank platoon. Complete remaining lab and range testing. Conduct user evaluation with II MARDIV tank platoon during CCID ACTD Urgent Quest exercise. Complete field and user evaluation. Complete data analysis & evaluation and provide technical test report. Procurement decision to occur early in FYDP.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Multi-Spectral Camouflage Netting: (Marine Corps)	0.870	0.562	0.000

This project will enable the Marine Corps to employ ground forces with a two sided, multi-spectral, camouflage net in a single system that protects against night vision and radar detection, while reducing the logistics burden and avoiding Procurement costs of $69.000 million. These nets will provide two camouflage patterns on opposing sides of one net, resulting in significant reductions for purchase quantity, cost, logistical transportation, and storage requirements while fielding the full camouflage capability in a much shorter time. The successful outcome of this FCT will allow the USMC to avoid RDT&E costs of $4.800 million and provide a ROI of 157:1. FY 2005 Accomplishments: Received foreign test data. Contract awarded and test planning complete. Received test articles. Complete field image collection testing at Ft. Deven, 29 Palms, White Sands Missile Test Range, and Imperial Dune. Completed radar field testing at Eglin AFB. Commence Laboratory testing at the Naval Research Lab. FY 2006 Plans: Complete field testing and lab testing. Perform material/physical properties testing at Aberdeen Proving Ground. Conduct user evaluation at Marine Corps Base Quantico. Test report provided by the Night Vision Lab, Ft. Belvoir. Close out report furnished by PM NBCS, MARCORSYSCOM. Procurement Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Naval Active Intercept and Collision Avoidance: (Navy)	1.087	0.000	0.000

This project is evaluating a system developed by Sonartech, to support the submarine force's number one priority of collision avoidance and situational awareness. FY 2005 Accomplishments: Working with NUWCNPT and MIKEL, reviewed four NAIRCAS planning options and have selected one (Virginia option) for the final testing of the NAIRCAS program. Held planning meeting with MIKEL, NUWC, and Sonartech-Atlas to revise the road map for NAIRCAS. Awarded final contract vehicle between NAVSEA and MIKEL (this will also allowing funding to move to Sonartech-Atlas). FY 2005 Plans: Finalize Technical Assistance Agreement (TAA). Brief Virginia Program Office (PMS 450) of revised NAIRCAS plan and develop schedule accordingly. Operations and Support Life-Cycle savings: $5.100 million; RDT&E Cost avoidance: $13.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Next Generation Underwater Breathing Device: (Navy)	0.489	0.505	0.000

This project will allow test and evaluation of mature state of the art diver life support equipment to determine suitability of use by U.S. Naval Forces in Underwater Explosive Ordnance Disposal (EOD) Mine Counter Measures (MCM)/Unexploded Ordnance (UXO), Naval Special Warfare (NSW) missions, battle space preparation for Amphibious Assault, Force Protection and Harbor Security operations. FY 2005

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Accomplishments: Received all 5 systems from 3 manufacturers, Jul 2005. Completed second round of initial unmanned testing of the Viper E and Mk16 Mod 2 (Carleton Technologies Inc), Sep 2005. The Viper E experienced one anomaly that involved the primary electronics shutting down. NUBA was reset and worked fine, but this was a failure criteria set for the program, Sep 2005. Mk16 Mod 2 was cleared to move to Phase II (manned) testing. Viper E was not recommended for further testing. Divex re-engineered the scrubbers for the Stealth EOD-M. This solved the leak problem that we experienced on one of our systems. Divex has addressed an issue discovered during initial environmental tests, however a full fix may not be possible with current design. FY 2006 Plans: Conduct manned testing of the Mk16 Mod 2 UBA, Oct 2005. Conduct a user evaluation of the two (2) remaining NUBA candidate UBAs, Nov-Dec 2005. Issue and receive responses from Carleton and Divex for request for proposals for fleet fill quantities of NUBAs. Technical Evaluation Review of the NUBA responses. RDT&E Cost avoidance: $2.658 million; Savings in Procurement costs: $2.500-5.000 million over production cycle with an inventory objective of 500 UBAs Operations and Support Life-Cycle savings: $3.000 million over a 15 year service life.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Pitch Adapting Composite Marine Propeller: (Navy)	1.087	1.741	0.000

These propeller blades are designed to flex in a controlled manner under certain operating conditions. This flexing causes a pitch modification that is claimed to improve vehicle stealth, speed, and propulsion efficiency. In addition, the pitch modification causes a reduction in maintenance costs by reducing cavitation damage, reducing marine growth fouling, and permitting in-water blade replacement. RDT&E cost avoidance estimate is derived from the known programs that have attempted to develop composite propellers for submarine applications: Design and evaluation of blade-hub junctions will typically cost $5.000-8.000 million. Development of numerical tools to design carbon fiber orientation will require development and validation, at an approximate cost of $1 million. FY 2005 Accomplishments: Re-fabricated the 1st series of the small-scale flex propeller using different material. Conducted the re-fabricated hardware inspection for the 1st series of the small-scale flex propeller. Conducted the test for the re-fabricated flex propeller in the NSWCCD 36-in water tunnel to validate the prediction tools. Preliminary results confirm hydrodynamic, acoustic, and efficiency performance improvements. Completed the test analysis for the 1st series. FY 2006 Plans: Conduct the design and fabrication for the unconstrained flex propeller (2nd series) to maximize the flex propeller potentials. Conduct the design and fabrication for the unconstrained rigid propeller (2nd series) to have a fair comparison with the flex prop. Perform the unconstrained hardware inspection for the 2nd series of the small-scale rigid and the flex propellers. Conduct experiments for the unconstrained rigid and flex propellers in the NSWCCD 36-in water tunnel. (2nd phase). Complete the test analysis for the re-fabricated prop. Conduct the fabrication of a two bladed flex prop with the new embedded sensors. Conduct a piggyback test with the unconstrained prop tests. Perform the ASDS parametric study.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Radarsat II Commercial High Resolution SAR: (Air Force)	0.428	0.000	0.000

This project will provide all-weather imaging capability at 3 meter resolution for support of target detection, ocean surveillance, homeland defense, moving target indicators, and disaster response, as an upgrade when integrated with the Air Force's Eagle Vision. Eagle Vision is an open architecture satellite ground station that will support the interface to Radarsat II with the existing hardware architecture. The project will include field operations to collect and process the data received from Radarsat II to evaluate operational effectiveness and performance. The Canadian Radarsat II satellite is the first commercially available high-resolution synthetic aperture radar imaging capability. The Eagle Vision office at Hanscom AFB is evaluating the ability of the Canadian Radarsat II upgrade, developed by MacDonald-Dettwiler, to interface with the Eagle Vision system. FY 2005 plans: Project was on hold due to the delay in launching the satellite. Future plans are to complete integration, launch the satellite and continue testing and data analysis. Publish final report. 3 units will be procured at $2.050 million each for a total of $6.200 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Replacement Structures for Aircraft: (Navy)	0.314	0.000	0.000

This project will produce a lightweight, hybrid/composite structure for the AH-1W Cobra aircraft that integrates a ballistics shielding capable of protecting our aviators from the current threat in the Iraqi and Afghan theaters of operation. This is a form, fit and function structure that replaces the current non-protected panel flying on Cobra aircraft. This project makes optimum use of new advances in materials technologies and various process improvements to produce a high-quality replacement component at a reasonable price. This project also created unique teaming agreements between US and Polish

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companies, and encourages mutual cooperation to promote future business partnerships between the US and Poland. FY 2005 Accomplishments: The Polish vendor was successfully established by the US Navy/F-14 Program as a preferred source for the F-14D transmitter bay access panel assembly (A51B18007-39). Qualification included the controlled destruction and analysis of the first flight worthy panel at the US Navy Materials Laboratory in Jacksonville, FL. Results were conclusive in proving that the Polish product exceeded the qualification criteria required to meet the US Navy's performance requirements. The last remaining F-14 fleet squadrons were retrofitted with the hardware and are in the final stages of performing a seven-month in-service reliability test. Initial estimates indicate that the one-for-one replacement cost to retrofit the new AH-1 panel will be 25% to 30% higher when compared to the cost for the original non-protected panel. It is anticipated that the new panel will save approximately $250.000 thousand per Cobra, per combat mission, during a combat tour in the two theaters of operation.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Resilient Abrasive-Resistant Skirt for LCAC: (Navy)	0.011	0.410	0.000

Improved HoverCraft Skirt Materials will reduce life cycle maintenance costs; procurement costs and increase Craft Mission Availability. Potential US Navy savings of $41.400 million in material costs plus an estimated additional maintenance labor savings of $30.000 million over the life of the LCAC program are anticipated. RDT&E cost avoidance of $8.000 million. Total Cost Savings $79.400 million. FY 2005 Accomplishments: The various phase 1 test materials remain installed on LCAC 055 at Assault Craft Unit Four (ACU4) and LCAC 059 at ACU5. The extra-wide test material remains installed on LCAC 044 at ACU5 and LCAC 089 at ACU4. The crafts are accumulating operating hours. An inspection was performed of LCAC 044, and an inspection report completed and forwarded to the vendor. LCAC 089 recently participated in the hurricane relief efforts. A purchase order for fabrication of two full craft-sets of test fingers for the phase 2 materials was issued to Bell Avon In Picayune Mississippi. This was a limited competitive procurement between the two approved skirt component suppliers- Bell Avon and SMR. A purchase order for installation of the phase 2 test finger sets at the Assault Craft Units was issued to Gryphon Technologies. Efforts to schedule the craft installations are ongoing- LCAC 071 has been identified as a candidate at ACU4 and LCAC 044 at ACU5. Funding was received from NAVSEA PMS377 for purchase of domestic skirt test material Reeves Brothers US for evaluation along with the foreign materials. A purchase order was issued for two different types of material from Reeves. A purchase order was issued to Akron rubber Development Labs for some limited laboratory testing of the phase 2 materials. This will be done as a check for the results from Smithers Scientific, and also will include a couple of lab tests that Smithers is not capable of performing. A purchase order was issued to GKN Westland Aerospace for flagellation testing of the phase 2 materials. FY 2006 Plans: Commence fabrication and craft installation of Phase II materials.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Ship's Mast Surveillance Pod (SMSP): (Navy)	0.288	0.873	0.537

This project is evaluating the threat warning effectiveness of combined miniature beam forming technologies developed by Sundance DSP of Great Britain and WinRadio Communications of Australia. Besides being smaller than other conventional beam forming systems, it costs less than 1/5th (< $100.000 K) and works over LANs so we can afford to outfit more warfighters (land, sea or air) with the capability and network them together which enhances the probability of finding terrorists and enemy forces. FY 2005 Accomplishments: Met with Navy DF Calibration group to discuss test criteria required for shipboard radio direction finding systems and brief capabilities of Sundance and WinRadio products. Briefed NSA on preliminary tests of WinRadio tuners and requested operational test criteria for Navy and UAV surveillance systems. Contracted WinRadio to create more generic based COTS based interface software for use by many DOD systems. Negotiated with Sundance a one time cost for IP rights to beam forming software for royalty free runtime licenses. FY 2006 Plans: Purchase rapid prototyping COTS software tools to support the test fixture to accommodate the various test criteria from different surveillance program offices. Purchase equipment to create 2-3 SMSP systems, to be field tested by more organizations. Due to the harsh military environment, Sundance and WinRadio will provide ruggedized enclosures for their equipment. The products will be tested against existing surveillance technologies located at the Charleston test facility. Work towards small business contracts with both vendors. FY 2007 Plans: Based on successful testing at the Charleston site, SPAWAR PMW-180, NSA, NAVAIR PMA-290 and PMA-263, and MARCORPSYSCOM, will be briefed on the SMSP technology and asked to provide test platforms and test criteria. Contact efforts will be made to brief USSOCOM/SOF, the Army Guardrail and Prophet Program Offices, the USAF RIVETJOINT and UAV BATTLELAB on the results. Under the HLS program, the USCG will be contacted about the results.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

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Special Operations Forces (SOF) Combat Rifle: (USSOCOM)	0.330	0.000	0.000

This project is evaluating advanced 5.56mm and 7.62mm rifles developed by FN Herstal of Belgium, Heckler and Koch GmbH of Germany, Beretta of Italy, and IMI from Israel, along with domestic sources, to meet requirements for highly reliable and modular light and heavy combat rifles for Special Operations Forces as a replacement for the aging M4A1 carbine. FY 2005 Accomplishments: A technical down select was made and a final design review held. HQ USSOCOM selected the FN Herstal rifle as their Combat Assault Rifle weapon of choice. An initial IDIQ contract was awarded to FN Herstal, which included the Enhanced Grenade Launcher Module feature. Operational assessments of both the light and heavy SCAR (5.56mm and 7.62mm respectively) with the integrated EGLM are continuing. Milestone C decision for minimum IDIQ. FY 2005 Plans: Complete operational assessment; Obtain Milestone C full production decision. RDT&E, O&S, and procurement savings are projected at $9.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Telemetry Buoy for Underwater Communications (TBUCS): (Navy)	0.513	1.204	0.674

TBUCS will provide an underwater communications link between various different US Navy platforms. By providing underwater communications, TBUCS will be a valuable asset as a contributor to Network Centric Warfare (NCW). TBUCS will utilize air dropped expendable sonobouys to establish a two way underwater communications link between US Navy submerged platforms and aircraft using a Hydro Acoustic Communications Link (HAIL) system. Estimated $15.000 M RDT&E cost avoidance for this system. FY2005 Accomplishments: Held initial discussion with Sonobuoy program office and Naval Surface Warfare Center, Crane with regards to TBUCS design. Held planning discussions with Nautronix Maripro to prepare for contract completion. FY 2006 Plans: Requested two SSQ 62 sonobuoys for Nautronix preliminary development. Meet with sonobuoy vendors, NAVAIR Sonobuoy Program Office, SPAWAR Submarine Communications Program Office, NAVSEA Submarine Acoustic Systems Program Office and others to gather more complete data on current sonobuoy interfaces and concept of operations for system use. FY 2007 Plans: Finalize the Systems Requirement Review (SRR). The contractor and US Government shall review the objectives of the preliminary Statement of Work and adopt as requirements, modify, or delete. SRR will review the Statement of Work (per the Contracts Data Requirements List) for Phase II which will be agreed upon between the contractor and US Government.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Traveling Wave Tube Amplifier (TWTA): (USSOCOM)	0.348	0.000	0.000

This project is evaluating alternative traveling wave tube amplifiers developed by ELTA Electronics, Inc. of Israel, Dornier Satellitensysteme/ND SATCOM GmbH of Germany, E2V of United Kingdom, and Thomson Tubes Electroniques (Thales) of France for use within the Joint Threat Warning System and Deployable Multi-Channels Satellite Communications (SATCOM) Systems. The objective of this project is to qualify additional sources of amplifiers in order to reduce SATCOM terminal cost and reduce program risk due to reliance on a single source. FY 2005 Accomplishments: Completed technical evaluation of test articles from ELTA and Thomson Tubes; initiated operational testing of both as a stand alone unit and integrated into the SATCOM terminal. FY 2005 Plans: Award contract and procure test articles from remaining two vendors (E2V and ND Satcom); Conduct technical testing both as a stand alone unit and integrated into the SATCOM terminal; Prepare procurement decision package. RDT&E, O&S, and procurement savings are projected at $8.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Weather Scout UAV *Congressionally directed concept investigation (Air Force)	1.087	0.000	0.000

This project will provide the capability to forecast tropical cyclones and target area weather and provide decision-quality weather information. Current weather observation capabilities are limited in providing situational and resultant predictive battle space awareness weather information required for commanders' operational risk management decisions, as well as for weapons selection and tactics. The Small Unmanned Aerial Systems Office at Wright Patterson AFB is evaluating the employment of a weather-sensing UAV developed by Aerosonde Pty Ltd of Australia for tropical cyclone and target area weather reconnaissance. FY 2005 Accomplishments: Tested the Aerosonde UAV in the climatic chamber at Eglin AFB to validate the ability of the weather sensors to accurately measure weather conditions and transmit the data in a format compatible with USAF weather modeling systems. Flight testing at Wallops Island, VA, to compare data collected by Aerosonde UAV with data collected by normal weather systems in a weather data dense area. Flight-testing in Guam to collect tropical weather data to compare with Weather data collected via satellite and other normal means. $10.000 million saved in R&D costs

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and a $1.800 million per year return on the investment.

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	0.000	0.000	0.000

FY 2006 FCT New Start Projects

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
1760 Umbilical and Connector: (Air Force)	0.000	0.449	0.000

This project will increase the reliability of the 1760 umbilical by 10 fold above the one time use and throw away of the current connector and cord. The current Air Force 1760 connecter, which transfers guidance information to weapons, is of a "screw on/pop off" design which is experiencing damage weapon release. The British "smart bomb" umbilical uses a collar that screws onto the weapon's 1760 connector and an umbilical cable that snaps onto the collar and is repairable. The umbilical snaps off of the collar when the weapon is released, preventing damage to the umbilical connector. The 508th Fighter Support Group at Hill AFB, Utah will evaluate this advanced umbilical connector developed by EDO MBM Technology, Ltd. of the United Kingdom. FY2006 Plans: Ensure that the connector mates with Mil DTL-38999/20 and /24 and that the connectors accept SAE-AS85049 self-locking accessories. Connectors will be tested to ensure that they will disengage without damage from any coupled connector including partially mated. The connector will be tested to ensure that it incorporates a swivel action for the lanyard attachment to prevent twisting of the cable and that the degree of rotation be restricted to prevent the lanyard going under the cable. USAF could save roughly $315 thousand per year on cables for the F-16. Considering that the F-16 is projected to be in use until 2026, the overall life-cycle savings could reach as much as $6.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
30mm Programmable Air Burst Munition: (Navy)	0.000	0.562	2.246

This project will test the 30MM ABM for lethality and effectiveness across the full spectrum of combat operations than currently available combat munitions. This capability provides US combat forces greater survivability thru increased lethality to four to six times. This increase in lethality will afford DoD war fighters the capability to engage and defeat 4 to 6 times the number of enemy forces per unit load of ammunition. FY 2006 Plans: IPT Meeting at Hawthorne Nevada Test Facility to finalize ABM evaluation plans; Receive NDI candidate 30MM Programmable ABM Cartridges; Start lethality testing/evaluation at Hawthorne Test Facility; Complete lethality testing at Hawthorne and Aberdeen Proving Grounds; Analyze data and compile results and final reports; Prepare RFP for procurement contract with lethality primary evaluation factor; Receive and review RFP responses. Down-select to a single ABM vendor/design; Prepare short-of-award contract documentation and prepare for qualification testing. FY 2007 Plans: Award contract for qualification ABM rounds with follow-on procurement options; Conduct ABM round qualification testing.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Air Flotation Platform: (Air Force)	0.000	0.505	0.281

This evaluation will reduce the number of work flow days per aircraft (A/C) by ten and save $25.000 thousand per A/C in rigging costs resulting in annual savings of $3.600 million for lean moving structural production lines. Currently, during Air Force maintenance operations aircraft airframes are disassembled for repair and/or replacement of major structural components and the inability to move the aircraft requires all tooling and labor to be transported to the airframe, resulting in added wait-time and degraded lean-moving production lines. The 309th Air Maintenance Group at Hill AFB, Utah will evaluate air flotation platforms developed by Solving of Finland that are used to reposition aircraft and airframe structures as integral units during depot level maintenance operations, while maintaining structural alignment. The Air Flotation Platforms are being used by Airbus in France and by the Dutch Royal Air Force. FY 2006 Plans: Conduct static airframe alignment measurements and generate support requirements. FY 2007 Plans: Demonstrate successful motion over shop floors and confirm via initial production use in structural modification line.

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Aluminum 5059 for Armor Applications: (Army)	0.000	0.483	0.000

This project is evaluating and qualifying an improved aluminum developed by Corus of Germany for armored ground systems used in PEO Ground Combat Systems as well as for possible use in Future Combat Systems (FCS) applications. Preliminary data indicate excellent performance among aluminum materials in ballistics, particularly against frag based threats. In addition, the alloy possesses a lower density versus other aluminum alloys imparting good potential for reducing the overall weight of weapon systems while simultaneously increasing or maintaining current armor performance levels. FY 2006 Accomplishments: The armor plate material has been received by ARL from Corus. The overall test plan and an IPT has been established. The prime contractor British Aerospace and Engineering (BAE) has submitted a quote for an upcoming contract for work in evaluating weld performance of the 5059 armor. Preparations for MIPRs disbursing funds to US Navy laboratories NAVAIR and NAVSEA for evaluation of 5059 corrosion resistance are underway and will commence upon receipt of funds. ARL maintains its target for project completion by the end of FY 2006. RDT&E Cost Savings: $2.500 million over 4 years (minimum). O&S Cost Savings: $1.200 billion. Procurement Cost Savings: Recouped from simplified welds. Procurement Potential: (448) M2 IFVs $ breakout TBD by PEO Other Benefits: Use on other armored platforms and structures.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Amphibious Reconnaissance Insertion Vehicle (ARIV) : (USSOCOM)	0.000	0.571	0.000

The ARIV will improve reconnaissance and surveillance (R&S) capabilities by extending the operational range, endurance and increased payload for Special Operations Forces. This will be accomplished by using the same vehicle to insert over the water and continue to the target on land. FY2006 Plans: Receive funds, contract for and receive test article. Perform Phase I and Phase II technical and operational testing. Milestone C decision. Savings of approximately $7.000 million in RDT&E cost avoidance and $6.000 million in Procurement savings are expected.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Area Mine Clearing System (AMCS): (Army)	0.000	2.668	1.258

This project is evaluating and qualifying the area mine clearing capability for the Army's new Combat Engineer Clearance Companies in the Future Engineer Force. The current techniques for clearing large areas of mines are Soldiers using handheld mine detectors and mine probes or explosive breachers and line charges. These methods are problematic because they are time consuming, they leave Soldiers unprotected and they do not neutralize anti-tank mines. The AMCS candidate systems are large mechanical mine clearing flails predominantly used for humanitarian demining operations around the world. They clear large areas by detonating or destroying the mines and they are blast hardened to withstand multiple AT mine blasts. The Army's performance testing will include flailing operations against live anti-tank mines. FY 2006 Plans: Market research and candidate selection will be completed in February 2006. The full spectrum of DT/OT testing is planned for 1st and second quarter FY 2007. Cost avoidance in R&D is estimated to be $20.000-40.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
AT4CS Enhanced Blast Tandem Warhead *Congressional Add (FY 2006 only) (Army)	0.000	2.125	1.971

This project is an enhanced blast tandem warhead and will be tested and qualified in order to verify its capability of incapacitating enemy soldiers positioned behind urban walls and structures made of 8 inch double reinforced concrete and 12 inch triple brick. The AT4CS is currently the only shoulder launched munition fielded in DoD inventory able to be fired from enclosures found in MOUT environments. This enhanced blast tandem warhead is needed in MOUT to complement the US Army and US Special Operations Forces' (USSOCOM) current suite of shoulder launched munitions. The AT4CS weapon is the primary shoulder launched munition for both US Army and USSOCOM capable of being fired from an enclosure. The current AT4CS warhead provides high lethality and incendiary effects against armor (defeats 16 inches of armor) but lacks overmatching penetration against masonry walls made of brick and concrete and other urban targets/structures. With increased deployment of US Army and US Special

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Operations Forces (SOF) around the world in urban warfare environments a new warhead with the ability to penetrate brick and concrete walls and incapacitate enemy forces behind urban structures is required. FY 2006 Plans: Complete the TEMP and place test hardware requirements on contract. FY 2007 Plans: Funding to support these activities to be provided through the FCT Program. Accept and deliver test assets and initiate conduct of developmental and operational tests. Complete full system evaluation per the TEMP, a final FCT report and type classification documentation in support of a production decision. The procurement cost savings of this project is estimated at 40-50% of the unit cost of each weapon by leveraging ammunition and fuzing components from other similar 84mm family weapons . Assuming $3.000 thousand per round savings x 20,000 rounds over 5 years = $60.000 million. By analogy, there is significant cost impact associated with other shoulder launched weapons which do not have equivalent economies of scale or sufficient commonality to rounds already in production.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Emergency Battery System: (Marine Corps (joint w/USSOCOM))	0.000	0.309	0.000

This project will provide the Warfighter with a lightweight, renewable, emergency power source capable of operating computers and communications equipment while minimizing the warfighters' battery load and ensuring adequate power resources throughout a mission. During OIF and OEF, world production limitations of the BA5590 lithium battery have driven the requirement for supplemental sources of expeditionary power. The USMC will test the Metal Cell from MEET of South Korea and the Magnesium-Air Power Cell from MagPower Systems Inc. of Canada to meet the requirement for alternative power sources. Based on experiences in the field with lithium batteries, multiple/redundant sources of emergency battery power are a mission critical need. Upon completion of successful testing, the USMC will avoid RDT&E costs of $2.000 million and Operational costs of nearly $0.500 million per year, providing a ROI of 27:1. FY 2006 Plans: Complete contract preparation and award. Receive Foreign Test Data. Complete Test Plan. Receive Test Articles. Complete Performance Test and Field/User Evaluation. Provide Technical Final Report. Procurement Decision.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Expeditionary Assault Bridge (EAB) Launcher : (Marine Corps)	0.000	1.499	0.410

This project will provide a river and canyon crossing system, capable of spanning natural and manmade obstacles up to 60 feet for 70-ton class tracked vehicles while moving at the speed of the Marine Air Ground Task Force (MAGTF). Lessons learned during OIF have driven the requirement to increase the mobility of the USMC Armored Vehicle Launched Bridge (AVLB). To meet this need, the USMC will test the BR90 EAB Launcher from BAE Systems of the United Kingdom to integrate the AVLB with an M1A1 Tank chassis. By replacing the M60 with an M1A1, the AVLB will be capable of maneuvering with USMC armored and mechanized vehicles on the joint/coalition battlefield and share a common M1A1 platform to decrease operation and support costs by $0.500 million per year. By integrating a commercially available launching system, the USMC will avoid RDT&E costs of $20.000 million and Procurement costs of $18.000 million to achieve a ROI of 40:1. FY 2006 Plans: Complete Contract preparation and award. Draft the Test Plan. Receive Test Articles. Complete Integration and Acceptance Testing. Complete Technical Testing. FY 2007 Plans: Complete User Evaluation, Data Analysis & Evaluation. Provide Technical Test Report. Milestone C decision third quarter FY 2007.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Extended 1553 Databus: (Air Force)	0.000	0.225	0.225

Deployment of the extended 1553 data bus could save the Air Force approximately $1.600 million per aircraft in lieu of the installation of fiber optic cable. DoD platform data bus networks are based upon MIL-STD 1553B information exchange protocols that are constrained to 1 mega bit per second (Mb/sec) throughput rates. The integration of extended 1553B interface performance into high-bandwidth demand avionics will enable increased throughput rates, in excess of 200 Mb/sec, over existing cable. The Extremely High Frequency (EHF) Satellite Communications (SatCom) Program establishes B-2 connectivity with the global information grid; however, existing avionics network bandwidth headroom constrains the B-2's ability to leverage this critical force structure multiplier capability. The goal is to cost-effectively enable the upgrading of legacy Air Force and Department of Defense mobile warfighting support platforms with the additional capabilities required in a network-centric environment. FY 2006 plans: Testing of 1553 performance compliance, and B-2 SIL integration to validate that the technology is capable of supporting B-2 avionics requirements. The identified efforts involve verification of basic functionality on all B-2 Mux bus lengths with analysis of signal characteristics in a Mux lab environment, followed by validation that the Edgewater solution performs as advertised and that it complies with

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

established MIL-STD 1553C protocols. FY 2007 plans: Testing will exercise selected elements of the B-2 avionics architecture to determine overall system stability while hosting high bandwidth, peak demand, multiline drop traffic supported with extended 1553B interfaces.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
High Frequency Combat Net Radio: (Army)	0.000	0.544	0.000

This project will enhance the Joint Tactical Radio System with a higher speed High Frequency data modem that will increase the effectiveness and capabilities of the Joint Tactical Radio System. The project involves the evaluation of the software based Italian HF Combat Radio (CNR 2000) produced by Selex Communications. Evaluation will include interoperability aspects, yet focus on data modem performance is of more concern. If the data modem is found to be superior then current High Frequency modems, the radio software will then be procured from Selex Communications. The software can then be inserted or utilized by the High Frequency modem to provide a more capable Joint Tactical Radio System while avoiding $2.700 million in software development. FY 2006 Plans: Project is working towards procurement of High Frequency radios from Selex Communications while setting up a laboratory and field test bed. Once radios are obtained, interoperability and a data performance evaluation will be performed with the test results funneled into a final test report.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Improved Crew Served Weapon Mounts (ICSWM) : (USSOCOM)	0.000	1.516	0.000

The ICSWM will provide Special Operations Forces with an improved, un-stabilized gun mount for crew served weapons. These mounts will improve accuracy when firing on the move, resulting in less dispersion and reducing the amount of ammunition required to defeat targets. FY 2006 Plans: Receive project funding. Submit solicitation notice. Conduct demonstration of any additional vendors. Down select to one vendor. Contract for and receive test articles. Conduct technical tests. WSERB Approval and Safety Release. Conduct operational tests. Milestone C Decision. The estimated savings in RDT&E, procurement and Operations and Support Life Cycle is over $41.000 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Improved Limpet Mine (ILM) : (USSOCOM)	0.000	1.011	0.000

This project will determine if the Improved Limpet Mine developed by Royal Ordnance of the United Kingdom can destroy or incapacitate enemy vessels and maritime structures with a device that is 50 percent smaller, lighter and 2 to 3 times more effective than the current legacy Limpet Assembly Module. FY 2006 Plans: Receive project funding. Contract for and receive test articles. Perform safety and technical validity tests. At sea trials in Virginia Capes and scale Testing at Aberdeen Proving Grounds. Review and modify Improved Limpet Assembly Module Requirement Document as necessary. By leveraging on the R&D successes of Royal Ordnance, the US will save approximately $10.000 million and 5 years of R&D.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
MK13 Muzzle Break Sound Suppressor (MBSS) : (USSOCOM)	0.000	0.140	0.000

The ability of a sniper to remain concealed when firing his weapon is paramount to the safety of the shooter. This muzzle break suppressor project will comparatively evaluate muzzle break suppressors to determine which can best meet the requirements of SOF snipers. FY 2006 Plans: Receive project funding. Contract for and receive test articles. Conduct technical and operational tests. Milestone C Decision. The cost avoidance associated with this project is estimated at $1.300 million.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

Multipurpose Tank Blade (MTB) System: (Marine Corps)	0.000	1.112	0.000

This project will meet an urgent requirement for the M1A1 Main Battle Tank (MBT) to remove roadblocks, create hasty fighting positions, and impose non-kinetic destruction of enemy obstacles in Urban Combat. During Operation Iraqi Freedom (OIF), the USMC identified an urgent M1A1 MBT requirement to meet mobility, counter-mobility and vulnerability deficiencies for the Marine Air Ground Task Force (MAGTF). The MTB System is a force multiplier that will allow the M1A1 MBT assume the roles of slower moving engineer assets while reducing the use of the main gun ammunition to reduce the risk of costly damage to equipment and unnecessary collateral damage. By integrating a NDI solution, the USMC will avoid RDT&E costs of $3.000 million, Procurement Costs of $1.8400 million, and provide a ROI of 14:1. FY 2006 Plans: Complete Contract preparation and award. Draft Initiate Test Plan. Complete Test Article Fabrication/Integration. Complete RAM Testing and field Test. Complete Technical Test Report and Closeout Report.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Ninjo Weather Analysis and Forecasting System: (Air Force)	0.000	0.125	0.000

This project will replace an antiquated expensive system with a more economical and robust system allowing forecasters to generate significantly improved pinpoint military forecasts and provide timely weather watches and warnings for U.S. European Command operations. The USAFE Weather Plans and Programs Office, Ramstein AFB, Germany will evaluate the NinJo software developed by the consortium of Ernst Basler and Partners GmbH. FY2006 Plans: Test to verify that the system will display current and last 6 hours of satellite, radar, lightning, and observation data, display current UK MetOffice (UKMO) model data, ability to automatically generate graphical weather charts and that it is comparable to USAFE Operational Weather Squadron (OWS) current software. Additional testing will be conducted to determine the capability for forecasters to easily generate weather graphic charts using the Ninjo system. The ROI is $220.000 thousand per year with a 7 year projected use.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Noise Robust Voice Recognition System: (Army)	0.000	0.618	0.477

This project is evaluating the performance of foreign off the shelf Voice Recognition Systems. The emphasis will be analysis of the performance based on various inputs (speakers with different dialects, accents, stress levels, etc) in a simulated battlefield noise environment (with high impulsive noise such as gunfire). Based on successful testing, this system will be incorporated to POR systems to use voice control of systems vs (or in addition to) keyboards, input screen, etc. FY 2006 Plans: Collect initial evaluation database, Perform baseline testing on technology FY 2007 Plans: Collect Large-evaluation database, perform comprehensive testing on optimized technology. $5.000 million RDT&E Cost avoidance.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Portable Undersea Training Range (Navy)	0.000	1.370	0.913

This project will satisfy a critical need for shallow water and forward-deployed Anti-Submarine Warfare (ASW) training as defined in the PACOM Integrated Priority List (IPL) for FY 2005-2009 and supported by COMLANTCOM. This project consists of two, closely-linked efforts that will occur concurrently. The first effort is to acquire and test one Station Keeping Buoy (SKB) developed in France that could be used to deploy instrumentation to enable ASW training in shallow littoral waters. The second effort is to acquire and test a commercial transponder system developed in Australia that could be used to deploy instrumentation to enable ASW training in shallow littoral waters. Successful execution will result in a RDT&E cost savings/avoidance of $2.000 million for Initial Operational Capability (IOC) implementation (avoids necessity to develop a new system). Additionally, estimated savings of $1.000 million will be realized in Procurement Cost Savings. FY 2006 Plans: Procure SKB test item from ACSA, France. Procure one transponder system including 7 transponders from Nautronix, Australia. During Phase I testing, the units will be tested in Narragansett Bay under calm conditions by Navy Undersea Warfare Center Division, Newport (NUWCDIVNPT) to verify basic performance parameters and to gain operational experience. FY 2007 Plans: Continue testing of SKB and transponders during Phase II. The units will be tested under environmental conditions approximating the specified operational conditions. This testing will examine antenna stability, endurance as a function of environmental conditions, and overall reliability. Pre-installed test instrumentation will independently measure, store, and telemeter critical performance data for post-test analysis. Submit final test report.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605130D8Z - Foreign Comparative Testing (FCT)**	**P130**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Unit of Employment (UE) Battle Command (BC) : (Army)	0.000	0.477	0.000

This project is evaluating BC systems that are Command and Control Information Exchange Data Model (C2IEDM) compliant for application at TRADOC Battle Command Battle Labs. The international community has adopted C2IEDM as the structure for transfer of information between BC systems. To perform experiments with Army BC systems in a relation to a C2IEDM environment, TRADOC requires a surrogate C2IEDM compliant BC system. Based on successful test, TRADOC will incorporate the FCT system to there BC Experimentation Lab and TRADOC experiments. FY2006 Plans: This is a one year effort, procurement, installation and testing and evaluation will occur at TRADOC with potential applications by TRADOC in FY06. RDT&E Cost Savings: over $1.000-2.000 million. Procurement Potential: over $300.000 thousand per TRADOC Experiment location - potential to $ millions. Implementation Plan/Other Benefits: TRADOC surrogate UE BC system. Potential integration to Army UE BCS.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Void-Sensing Fuse: (Air Force)	0.000	0.842	0.000

This project will give the warfighter the capability to defeat hard and deeply buried targets. The Program Director, Cruise Missile Product Group at Tinker AFB, Oklahoma will evaluate a programmable void sensing and layer-counting fuse currently in production by TDW of Germany. The German fuse has potential for employment in the penetrating warhead of the Air Force's Conventional Air-launched Cruise Missile (CALCM) and/or the Navy's Tomahawk Cruise Missile. This capability will satisfy a long-standing and urgent requirement. FY 2006 Plans: Integrate the Programmable Intelligent Multi-Purpose Fuse (PIMPF) into the AUP-3M Warhead and to then prove functionality via sled tests at both china Lake and Eglin AFB. The initial procurement for the CALCM is $2.700 million. Additional procurement by the Navy Tomahawk is $12.000 million. This fuse will also have application with JSOW.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
FY 2007 Plans	0.000	0.000	21.493

FY 2007 funding totaling approximately $21 million will support the FY 2007 new start projects as well as the second year funding commitments for the FY 2006 new start projects. The FY 2007 proposal submission process is scheduled to commence in December 2005.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605161D8Z - Nuclear Matters - Physical Security**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	12.244	4.285	4.749	4.726	4.782	16.273
P161	Nuclear Matters - Physical Security	0.000	12.244	4.285	4.749	4.726	4.782	16.273

A. Mission Description and Budget Item Justification: (U) Effective October 1, 2005, funding for this program moved from PE 0605160D8Z (Counterproliferation Support) Budget Activity 3, to PE 0605161D8Z (Nuclear Matters-Physical Security) in Budget Activity 6. The purpose of the Counterproliferation Support program, commonly called Nuclear Matters, is to sustain the U.S. nuclear deterrent posture. 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. 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 manage international programs of nuclear cooperation, particularly with respect to enhancing international nuclear safety and security and office management. In fiscal year 2004, this program incorporated additional responsibility for policy development and implementation, and operations and oversight of nuclear weapons physical security and Personnel Reliability Programs for the protection of tactical, fixed and nuclear weapons systems, DoD personnel and DoD facilities.)

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	12.442	13.079
Current BES/President's Budget (FY 2007)	0.000	12.244	4.285
Total Adjustments	0.000	-0.198	-8.794
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other		-0.198	-8.794

FY07 - FY11 funds were moved to PE 0603161D and 0604161D still under Nuclear Matters Perview.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605161D8Z - Nuclear Matters - Physical Security**

E. Performance Metrics: Not Applicable.

Schedule Detail (R4a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605161D8Z - Nuclear Matters - Physical Security**	PROJECT **0605161D8Z**

Schedule Detail: Not applicable for this item.

Termination Liability Funding For Major Defense Acquisition Programs, RDT&E Funding (R5)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605161D8Z - Nuclear Matters - Physical Security**	PROJECT **0605161D8Z**

Funding in $000

Program	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Termination Liability Funding:							

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605161D8Z - Nuclear Matters - Physical Security**	**P161**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P161	Nuclear Matters - Physical Security	0.000	12.244	4.285	4.749	4.726	4.782	16.273

A. Mission Description and Project Justification: Effective October 1, 2005 funding for this program moved from PE 0605160D8Z (Counterproliferation Support) in Budget Activity 3 to PE 0605161D8Z (Nuclear Matters-Physical Security) in Budget Activity 6. The purpose of the program is to sustain the U.S. nuclear deterrent posture. The funds for this program are used to support studies and analyses for research, development, test and evaluation efforts for nuclear weapons security, use control, nuclear weapons stockpile safety, survivability and performance and office management. Funds are also used to develop and implement plans for stockpile transformation; infrastructure analyses and assessments for nuclear matters office.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Project Number and Title: Nuclear Matters	0.000	12.244	0.000

FY 2006 Plan:

- Conduct OSD oversight and provide directions for actions conducted under DoDD 3150.2 , DoDD 3150.2-M, "DoD Nuclear Weapons Safety Program, DoDD 4540.5 "Transportation of Nuclear Weapons"and DoDI S-5210.82, "Protection of Nuclear Coding Equipment," DoDD 5210.41 and 5210.41-M, "Physical Security of Nuclear Weapons.
- Complete the updating and documentation of DoD policy, responsibilities, and procedures in DoD publications to include DoDD S-3150.7, "Controlling the Use of Nuclear Weapons", DoDD 3150.3, "Nuclear Forces Security & Surety" and "DoDD 5210.42, "Nuclear Weapons PRP."
- Continue to conduct implementation activities stemming from approved recommendations of the assessment on Nuclear Force Protection.
- Continue to manage the protection of classified nuclear weapons information including access to and dissemination of Restricted Data, as mandated by Enclosure 5, DoDD 5210.2, "Access to and Dissemination of Restricted Data".
- Continue as DoD Sigma 14/15 Approval Authority (Interface with DOE/NNSA).
- Action Freedom of Information Act and Mandatory Declassification Requests.
- As OSD sponsor, support the operations of the Joint Advisory Committee on Nuclear Weapons Surety (JAC).
- Continue the development of a Physical security equipment RDT&E program that supports the protection of tactical and fixed nuclear weapons, DoD personnel and their facilities.
- Continue the development of physical security equipment/systems that meet Services nuclear security requirements in the areas of Interior and Exterior Detection/Surveillance, Delay/Denial, Entry Control, Common Operating Picture, Tactical Systems and Airborne Intrusion.
- Initiate physical security equipment RDT&E projects that support the nuclear security requirements articulated in the Nuclear Weapons Physical Security Master Plan.

(U) Stockpile Performance and Survivability ($0.747 million)

- Conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities
- Continue to manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W62, W80(0,1), W88 Weapons
- Implement DoD policy, responsibilities, and procedures in DoDD 3150.3. "Nuclear Weapons Security and Survivability" to include the actions of the Nuclear Forces Security and Survivability Steering Group.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605161D8Z - Nuclear Matters - Physical Security**	PROJECT **P161**

- Support follow-up actions of the Defense Science Board (DSB) Task Force on Clandestine Nuclear Attack and the Task Force on Nuclear Weapons Effects Simulators/Simulation.
- Continue to support the DoD executive agency role for nuclear detectors for the Department of Homeland Security.

(U) Nuclear Weapons Council ($0.373 million)

- Manage the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group.
- Prepare, staff, and submit annual reports to the President and the Congress to include the FY 2006-2014 Nuclear Weapons Stockpile Memorandum and Requirements Planning Document, FY 2006 report on Stockpile Assessment, FY 2006 Joint Surety Report and the FY 2006 NWC Report to Congress.
- Conduct a week-long trip to several nuclear weapons complex sites for over sixty individuals within the nuclear weapons community including senior DoD/DOE officials.

(U) Stockpile Transformation and Infrastructure ($0.747 million)

- Supports the conduct of the next nuclear posture review.
- Continue programs to assess the future of the nuclear weapon stockpile
- Continue to support follow-on actions of the DSB Task Force on Strategic Strike Skills. Support new Task Forces in this functional area.
- Continue to develop and implement a Nuclear Matters knowledge system to help preserve nuclear weapons information for operational improvements and continuity.

(U) Radiological and Nuclear Emergency Response ($0.498 million)

- Conduct DoD oversight and provided direction for DoD preparations to train for response actions in the event of a nuclear weapon accident under DoDD 3150.8, "DoD Response to Radiological Accidents. Prepare and participate in exercise Diamond Knight, Dingo King and various interagency tabletop exercises.
- Participate in actions to update DoDD 3150.8, "DoD Response to Radiological Accidents"; DoD3150.8-M, Nuclear Accident Response Procedures" and DoDD 5110.63, "Security of Nuclear Reactors and Special Nuclear Material" to make them consistent with the National Response Plan.
- Maintain classified website to enhance coordination in the event of a nuclear weapon accident.
- Improve nuclear weapon accident planning through activities of the Nuclear Weapon Accident Response Steering Group.

(U) International Programs ($0.124 million)

- Support and participated in NATO nuclear weapon policy and oversight groups to include the High Level Group (HLG) and the Joint Theatre Surety Management Group (JTSMG).
- Continue to implement DoDD 5030.14, "Disclosure of Atomic Information to Foreign Governments and Regional Defense Organizations."
- Continue to support and participate with the UK under 1957 Mutual Defense Agreement.
- Continue to support US-Russia Nuclear Warhead Safety and Security bilateral activities.
- Continued to support US-France Nuclear Warhead Safety and Security bilateral activities.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Neclear Matters	0.000	0.000	4.285

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605161D8Z - Nuclear Matters - Physical Security**	**P161**

FY 2007 Plann:

- Conduct OSD oversight and provide directions for actions conducted under DoDD 3150.2 , DoDD 3150.2-M, "DoD Nuclear Weapons Safety Program, DoDD 4540.5, "Transportation of Nuclear Weapons" and DoDI S-5210.82, "Protection of Nuclear Coding Equipment," DoDD 5210.41 and 5210.41-M, "Physical Security of Nuclear Weapons DoDD S-3150.7, "Controlling the Use of Nuclear Weapons", DoDD 3150.3, "Nuclear Forces Security & Surety" and "DoDD 5210.42, "Nuclear Weapons PRP."
- Initiate the updating and documentation of DoD nuclear weapon policy, responsibilities, and procedures in DoD publications.
- Continue to manage the protection of classified nuclear weapons information including access to and dissemination of Restricted Data, as mandated by Enclosure 5, DoDD 5210.2, "Access to and Dissemination of Restricted Data".
- Continue as DoD Sigma 14/15 Approval Authority (Interface with DOE/NNSA).
- Action Freedom of Information Act and Mandatory Declassification Requests.
- As OSD sponsor, support the operations of the Joint Advisory Committee on Nuclear Weapons Surety (JAC).
- Continue the development of a Physical security equipment RDT&E program that supports the protection of tactical and fixed nuclear weapons, DoD personnel and their facilities.
- Continue the development of physical security equipment/systems that meet Service's nuclear security requirements in the areas of Interior and Exterior Detection/Surveillance, Delay/Denial, Entry Control, Common Operating Picture, Tactical Systems and Airborne Intrusion.
- Continue physical security equipment RDT&E projects that support the nuclear security requirements articulated in the Nuclear Weapons Physical Security Master Plan.

(U) Stockpile Performance and Survivability ($1.000 million)

- Conduct life cycle activities in support of the nuclear weapons stockpile under DoDD 3150.1, "Nuclear Weapons Life Cycle" and DODI 5030.55, "DoD Procedures for Joint DoD-DOE Nuclear Weapons Life Cycle Activities
- Continue to manage DoD RDT&E activities for nuclear warheads to include B61, W76, W78, W62, W80(0,1), W88 Weapons
- Implement DoD policy, responsibilities, and procedures in DoDD 3150.3. "Nuclear Weapons Security and Survivability" to include the actions of the Nuclear Forces Security and Survivability Steering Group.
- Continue to support the executive agency role of the DoD for nuclear detectors for the Department of Homeland Security.

(U) Nuclear Weapons Council ($1.000 million)

- Manage the activities on the Congressionally mandated Joint DoD-DOE Nuclear Weapons Council and its support committees to include the Nuclear Weapons Council Standing and Safety Committee, the Compartmented Advisory Committee and the Action Officer group.
- Prepare, staff, and submit annual reports to the President and the Congress to include the FY 2006-2014 Nuclear Weapons Stockpile Memorandum and Requirements Planning Document, FY 2006 report on Stockpile Assessment, FY 2006 Joint Surety Report and the FY 2006 NWC Report to Congress
- Conduct a week-long trip to several nuclear weapons complex sites for over sixty individuals within the nuclear weapons community including senior DoD/DOE officials.

(U) Stockpile Transformation and Infrastructure ($1.000 million)

- Support studies for warhead replacement.
- Continue programs to assess the future of the nuclear weapon stockpile
- Continue to develop and implement a Nuclear Matters knowledge system to help preserve nuclear weapons information for operational improvements and continuity.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605161D8Z - Nuclear Matters - Physical Security**	PROJECT **P161**

(U) Radiological and Nuclear Emergency Response ($.500 million)

- Conduct DoD oversight and provided direction for DoD preparations to train for response actions in the event of a nuclear weapon accident under DoDD 3150.8, "DoD Response to Radiological Accidents. Prepare and participate in exercise Diligent Warrior 07 and various interagency exercises.
- Maintain classified website to enhance coordination in the event of a nuclear weapon accident.
- Improve nuclear weapon accident planning through activities of the Nuclear Weapon Accident Response Steering Group

(U) International Programs ($0.500million)

- Support and participated in NATO nuclear weapon policy and oversight groups to include the High Level Group (HLG) and the Joint Theatre Surety Management Group (JTSMG)
- Continue to implement DoDD 5030.14, "Disclosure of Atomic Information to Foreign Governments and Regional Defense Organizations"
- Continue to support and participate with the UK under 1957 Mutual Defense Agreement
- Continue to support US-Russia Nuclear Warhead Safety and Security bilateral activities
- Continued to support US-France Nuclear Warhead Safety and Security bilateral activities

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification				Date: February 2006				
Appropriation/Budget Activity RDT&E Defense-Wide, BA 6				R-1 Item Nomenclature: Support to Networks and Information Integration PE 0605170D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		36.185	16.539	10.990	11.524	11.550	11.874	12.064
Command Information Superiority Architecture		5.668	6.214	5.497	5.756	5.751	5.895	6.027
Defense Architecture Repository		1.049	1.190	1.249	1.307	1.308	1.340	1.370
Integrated Planning and Management		1.807	1.935	2.034	2.131	2.128	2.180	2.231
Support to NII Mission Requirements		27.661	7.200	2.210	2.330	2.363	2.459	2.436

A. Mission Description and Budget Item Justification:

This program element supports studies 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.

Program Accomplishments and Plans:

FY 2005 Accomplishments: ($36.185 million)

- Pursued research on new approaches to command and control suitable for 21st Century operations.
- Continued to fund the Edge Institute at the Navy Post Graduate School (NPS) and expand this virtual institute to other universities.
- Began research on implications of coalition and civil-military operations for command and control, military operations, and organizations.
- Continued development of metrics and conceptual framework suitable for assessing network-centric operations.
- Continued to work with the DoD community and international partners to improve the understanding of Information Age command and control related concepts, technologies, and experiments.
- Conducted 10th International Command and Control Research and Technology Symposia.
- Conducted workshops to explore command and control related issues.
- Continued C2 publications and outreach program.

- Completed a study of advanced shipboard Acoustical Communications.
- Conducted research to improve voice and speech clarity in noisy environments, specifically, target the chaotic climate found within a Combat Operations Center (COC) and Unit Operations Centers (UOC) with operators wearing headsets for voice communications.
- Studied the potential capability to augment existing and planned IED detection devices with new technology that would improve the operators' ability to detect, analyze, identify, and localize IED devices more quickly and efficiently.
- Investigated, researched, and analyzed the high impulse noise operating environment existing on aircraft carrier (CV/N) flight decks. Document the factors which impede effective transmitted human speech communications which contribute to unsafe flight deck operations and define those critical elements for which Perfect Wave Independent Component Analysis (ICA) technology would benefit.
- Developed an improved flight deck communications system which incorporates the Independent Component Analysis (ICA) technology in order to mitigate ambient and machinery induced environmental noises introduced into human speech processing communications systems. Test, evaluate, demonstrate and validate the effectiveness of ICA in improved operation of flight deck voice communication systems.

Pacific Disaster Center

- The tragic events of the Great Sumatra Earthquake and Indian Ocean Tsunami of December 26, 2004 in Southeast Asia and the Indian Ocean basin demonstrated how valuable PDC is to the region because it: (a) is the only all-hazards (natural, technological, and human-induced) disaster center in the region; (b) is concerned with all levels of disaster management—from first responders to senior policy makers; and (c) provides assistance through all phases of comprehensive disaster management—preparedness, mitigation, response, and recovery. To effectively deliver the needed support to emergency managers, the PDC's activities (central to achieving its core mission and supporting its diverse stakeholders) focused on the innovative use of science, information, technology, and applied research to:
    - Promote proactive, rather than reactive, planning that includes hazard mitigation as a key element of sustainable development;
    - Foster partnerships to raise awareness among widespread segments of the disaster management and regional planning communities; and
    - Increase efficiency of operational organizations by introducing innovative and appropriately scaled information resources, tools, and analyses.

- The PDC expanded the capabilities and development of an integrated distributed information network in the Asian-Pacific Region. The Asia Pacific Natural Hazards Information Network (APNHIN), which was established by PDC, directly supports disaster and resource managers, planners, governments, and nongovernmental organizations with a suite of applications and information services designed to search for, evaluate, and access high-quality geospatial data for natural hazard applications within the Asia Pacific region. The introduction of the network received wide praise from data providers and users alike. APNHIN comprises a rapidly growing community of organizations who create and share disaster and hazards-related information.

- The PDC, in cooperation with the Association of Southeast Asian Nations (ASEAN) Committee on Disaster management (ACDM), (which is comprised of National Disaster Management Organizations (NDMOs) for 10 Southeast Asian Nations) defined and initiated a program of 4 tasks that would result in the development of a regional Disaster Information Sharing and Communication Network (DISCNet) to:
    - promote and facilitate collaboration and information sharing;
    - strengthen national disaster management capacities;
    - provide a framework for regional integrated decision support promoting enhanced disaster readiness and mitigation, and,
    - produce an assessment of ICT capabilities in each of the 10 ASEAN member countries.

- To promote safe and sustainable communities in the Asia Pacific region, PDC established a cost-sharing partnership with the Earthquakes and Megacities Initiative (EMI) to apply PDC research and methodology development in the Risk and Vulnerability program area to the world's most complex urban environments that are subject to major earthquakes. The focus of the program is to facilitate earthquake disaster preparedness and mitigation by promoting the integration of disaster risk management and risk reduction, in selected Asian megacities.

- PDC continued to work with the State of Hawaii, as part of the Hawaii Industry Partnership, and acts as an incubator for emerging, high technology firms in Hawaii.

- PDC supported the Commander, US Pacific Command in exercises and information products for training and decision-making.

FY 2006 Plans: ($16.539 million)

- Pursue research on new approaches to command and control suitable for 21st Century operations.
- Continue support for the Edge Institute at the NPS and expand this virtual institute to other universities.
- Continue research on implications of coalition and civil-military operations for command and control, military operations and organizations.
- Assess metrics and conceptual framework suitable for assessing network-centric operations.
- Continue to work with the DoD community and international partners to improve the understanding of Information Age command and control related issues.
- Continue C2 publications and outreach programs.

Pacific Disaster Center

- The Indian Ocean Tsunami and Hurricane Katrina, coupled with ever-increasing "at risk" coastal populations and infrastructure, demonstrates the need for improved Risk and Vulnerability Assessments for coastal zones. To address these increasing needs, and to develop decision tools for emergency managers in the region, the PDC will focus on improving its overall capacity to simulate and assess the potential impacts of various forms of flooding and inundation associated with hazards such as hurricanes, tsunamis, storm surge, dam breaks and river and urban flooding.
- The PDC will actively seek to expand its partnership with NOAA to capitalize on combined existing capabilities and synergies.
- Continue to expand the PDC presence in the Asia-Pacific Region capitalizing on the existing efforts being undertaken by the East-West Center, US State Department and other international entities concerned with the rising cost, both in human lives and property, of natural and man-made disasters.
- Continue to support the US Military Commands, DOD Homeland Defense, State and Federal Agencies, and regional organizations with unique products critical to decision-makers in managing risks posed by, and emergencies caused by, nature and/or mankind. Work more closely with other stakeholders, including planners, to plan for and mitigate the effects of these events and make communities more resilient.

FY 2007 Plans: ($10.990 million)

- Continue research on new approaches to command and control suitable for 21st Century operations.
- Continue research on implications of coalition and civil-military operations for command and control, military operations,

and organizations.

- Assess metrics and conceptual framework suitable for assessing network-centric operations.
- 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 symposia and workshops to explore command and control related issues.
- Expand the C2 publications and outreach programs.

B. **Program Change Summary:** (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	37.304	10.706	10.819
Current President's Budget	36.185	16.539	10.990
Total Adjustments	-1.119	5.833	.171
Congressional program reductions			
Congressional rescissions, Inflation Adjustments	-1.119	-.267	.171
Congressional increases		6.100	
Reprogrammings			
Transfer			

Program Change Summary:
FY 2005: SBIR -.954 million; STTR -.115 million; Atomic Energy -.029 million; WHS reduction -.021million.
FY 2006: Congressional Increases 6.100 million; FFRDC -.027 million; Economic Assumptions -.073 million; rescission -.167 million.
FY 2007: Non-pay purchase inflation 171 million.

C. **Other Program Funding Summary: N/A**

D. **Acquisition Strategy. N/A**

E. **Performance Metrics:**

- Community participation in command and control research program (CCRP) events.
- Number of requests for CCRP publications.
- Number of international countries engaged in net centric discussions and collaborative efforts.
- Successfully sponsored symposia/workshops to discuss command and control research initiatives.

CISA Performance is based on the number of initiatives that transition to the net-centric environment to support operations. Measures include:

- Requirements: Business products identified in need of change
  Business products impacted or changed due to architecture analysis or products
- Acquisitions: Number of system(s) or system functions identified as duplicate
  Number an/or type of system identified as necessary to complete capability
  Number of system(s) and/or applications impacted by architecture analysis
- Portfolio Management:
  Number of systems included in portfolio
  Cost estimates provided for portfolio
  Number of duplicate systems identified in portfolio analysis
  Funds obtained as a result of portfolio analysis

DARS Performance Metrics:

- Getting key service program managers to use DARS to store and retrieve architecture data to include Future Combat System (FCS), Command and Control Constellation (C2C), FORCENET.
- Obtaining Intelligence Community Agencies such as National Security Agency (NSA), Defense Intelligence Agency (DIA), National Geospatial Agency (NGA) architects and program managers to store and retrieve architecture data from DARS
- Participation from leading COTS enterprise architecture vendors to use and maintain currency with CADM XML with their version releases
- Acceptance of CADM XML as the basis for an international data exchange standard

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						Date: February 2006		
Appropriation/Budget Activity RDT&E, Defense-Wide, BA 6				Project Name and Number: Command Information Superiority Architectures (CISA)/PE 0605170D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Name: Command Information Superiority Architectures		5.668	6.214	5.497	5.756	5.751	5.895	6.027

A. Mission Description and Budget Item Justification:

The CISA program continues to be a leader in the transformation of the Department of Defense (DoD). Using a common architecture planning process, CISA products have provided decision makers at all levels of the department with the knowledge and tools to make intelligent, cost effective decisions on key transformational elements and policies, to include Net-Centric Operations and Warfare (NCOW), and the Global War on Terrorism (GWOT). CISA is the prime catalyst for transforming the COCOMs to a net-centric environment. The program is focusing on architecture deliverables that focus on Net-Centric Transition Plans for the COCOMs and integrating Portfolio Management into the COCOMs information technology and capital planning processes. The CISA architecture products results will be used to determine the future DoD CIO IT issues and investment strategies for the COCOMs. In addition, the results will provide direct inputs into the COCOM Integrated Priorities Listings (IPLs), and provide rationale for Program Objective Memorandum (POM) decisions by identifying critical capability shortfalls. The CISA information technology (IT) architectures products; the tactics, techniques, and procedures (TTPs) documents; and the architecture reference models have earned an enviable reputation throughout DoD as the "ground truth". Several have resulted in directly impacting critical shifts in DoD policies which include the new capabilities process for Capital Planning and Investment under the Joint Staff Instruction 3170.01; the Unified Command Plan 2 (directs the standup of USNORTHCOM and the re-structuring of USSTRATCOM); expansion of the GWOT focusing on USSOCOM as the lead developer of a global two-tier net-centric approach; coalition interoperability through the use of USCENTCOM Combined Enterprise Regional Information Exchange System (CENTRIXS) world-wide architecture which links 60 nations in a unified effort; and lastly, Net-Centric Operations and Warfare (NCOW) through the Global Information Grid (GIG) architecture and the NCOW Reference Model (RM). CISA is a leader in supporting the DoD CIO focus on initiatives defined in the Information Technology Management Reform Act (ITMRA), (Clinger-Cohen Act) in the development of the GIG, the Department wide IT architecture. The GIG is considered the essential enabler of Information Superiority and Net-Centricity requirement expressed in the Department's Joint Vision 2020. The inputs include GIG Architecture V1.0 – the DoD baseline "as is" architecture; and GIG 2.0 approved by the DoD CIO on 9 Dec 2003 as the objective architecture for 20XX embedding NCOW transformational concepts. The NCOW RM represents the key compliance mechanism for evaluating IT-related capability, and mapping DoD acquisition programs to implement NCOW.

B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost		5.668	6.214	5.497
RDT&E Articles Quantity *(as applicable)				

FY 2005 Accomplishments: ($5.668 million)

- Continued to development of GIG NCOW Reference Models to include information assurance and data management strategies
- Continued to develop Net-Centric assessment checklists for DoD Program Managers
- Continued the net-centric implementation of GIG architecture.
- Continued the development of executable COCOM architectures impacting operations, budget and transitions
- Developed the COCOM Net-Centric Transition Plans and processes
- Linked COCOM Net-Centric Transition Plans with key initiatives such as GIG Bandwidth Expansion (BE), Joint Tactical Radio System (JTRS), Net-Centric Enterprise Services (NES), Information Assurance (IA)
- Continued to expand and integrate COCOM Net-Centric transition assessment criteria
- Continued to develop and implement Portfolio Management criteria based on architecture data
- Continued to develop POM assessment criteria for information technology based on architecture data
- Investigated new ways of integrating COCOM architecture data with Portfolio Management for POM inputs, and Integrated Priority Listings (IPLs)
- Provided COCOM Net-Centric Assistance to integrate DoD programs within COCOM enterprise environment and link to COCOM inputs with DoD Enterprise Architecture Reference Models (DODEA RM) for OMB form 300 preparation.

FY 2006 Plans: ($6.214 million)

- Investigate and expand COCOM Net-Centric Transition plans
- Expand the integration of COCOM Portfolio Management and Net-Centric Transition plans
- Continue expansion of Net-Centric compliance assessments of DoD Acquisitions
- Expand and refine COCOM Net-Centric transition assessments
- Fully integrate COCOM Net-Centric transition plans and assessments into IT capital planning and acquisitions for COCOMs and OMB form 300 preparation

FY 2007 Plans: ($5.497 million)

- Implement second round of COCOM Net-Centric transition plans and assessments integrated with other DoD Program Net Centric assessments to ensure smooth "plug and play" capabilities
- Develop and provide integrated set of COCOM Net-Centric assessment capabilities for implementing transition plans
- Expand Implementation executable architecture capabilities within COCOM architectures and assessments of alternatives (AOA)
- Expand interactive use of architecture data for dynamic assembly of COCOM architectures to meet mission demands and changes for Unified Command Plans (UCPs)
- Continue expansion and integration with COCOM IT Capital Planning and Investments, and acquisitions

C. Other Program Funding Summary:

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
O&M, DW (PE0902198D8Z)	5.769	4.770	4,462	4.434	4.952	4.939	4.663	33.989

D. Acquisition Strategy: N/A

F. Major Performers: USCENTCOM, USJFCOM, USEUCOM, USSOCOM, USSTRATCOM, USTRANSCOM, USNORTHCOM, USSOUTHCOM, USPACOM, USFK, US ARMY Architecture Integration Cell/G6.

Exhibit R-2a, RDT&E Project Justification							Date: February 2006	
Appropriation/Budget Activity RDT&E, Defense-Wide, BA 6				Project Name and Number: Defense Architecture Repository System (DARS)/PE 0605170D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Name: DARS		1.049	1.190	1.249	1.307	1.308	1.340	1.370

B. Mission Description and Budget Item Justification:

DARS is the enterprise wide repository to store, retrieve, and use DoD architecture data. DARS provides two different types of architecture data- unstructured and structured along with key reference data. The architecture data is available to all DoD users once they have registered. Currently versions exist on both the NIPRNET (unclassified) and SIPRNET (Collateral Classified). Plans are also underway to implement DARS on the Joint World Wide Intelligence Communications System (JWICS). Key features of the DARS program focus on: (1) reuse of common validated architecture data to build integrated architectures; (2) conducting architecture analysis; and, (3) integration architecture data into the DoD mainstream decision-making processes. The DARS data structure is based on the Core Architecture Data Model (CADM), and its data structure is fully CADM compliant. This data structure is under full configuration management, and has the goal of transporting architecture data between and among diverse enterprise architecture and other tools (tool agnostic capability), allowing collaboration among users. By using a standard universal applications process interface (API) CADM XML, DARS works with multiple tool vendors to achieve the collaborative tool agnostic environment. The FY 2005 DARS program will follow the results of the FY 2004 pilot effort to prove that the CADM XML XSD will be the standard Universal API, and allow COTS tool vendors to integrate this into their tool capabilities. DARS will additionally add additional architecture products to the structured capability which may include the OV 6 a,b,c products along with SV 4,5,6,9, and 10A,b,c. Also data exchange capabilities will include the Joint Resource Allocation Module (JRAM), and other executable or modeling and simulation tools. DARS goals for FY 2005 are aggressive and include implementing DARS 3.0 in Feb 2005. DARS will also support the transfer of CADM XML to the international data exchange standard AP 233 using the CADM XML XSLT as the core driver for the transformation. The Department of the Air Force, Army, and Navy CIO's are collaborating in the development of DARS to ensure the success of all. New DARS releases are scheduled for every six months during FY 2005 (DARS 5.0 and 4.0).

B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost		1.049	1.190	1.249
RDT&E Articles Quantity *(as applicable)				

FY 2005 Accomplishments: ($1.049 million)

- Continued the expansion of implementing architecture products for the structured capability using CADM XML
- Continued to explore the integration of CADM XML into an international data exchange standard by combining AP 233 (international data exchange standard for systems engineering and CADM XML)
- Expanded the data exchange capabilities between DARS and other data repositories
- Explored the capability to make architectures executable by providing data exchange capabilities with decision support and modeling and simulation systems such as Joint Resources Allocation Module (JRAM)
- Explored capabilities to authenticate authoritative data sources for architecture data
- Implement Net-Centric services within DARS and explore options for including DARS data as part of the Core Enterprise Services
- Implemented capability for DoD program managers and others to build OMB form 300s from DARS architecture data
- Integrated both NCOW Reference Models and the DoD Enterprise Architecture Reference Models into the DARS and CADM data structures
- Implemented two new DARS versions (4.0 and 5.0) based on new user requirements
- Implemented 'data harvesting" capabilities required to build integrated architecture packages, coupled with portfolio management and analytical capabilities for decision making regarding architecture data usage
- Explored and developed capabilities for architecture data reuse to dynamically assemble architectures or to build "tailorable" data sets based on architecture data to assist decision makers
- Initiated the exploration of a "Federated DARS" Capability for architecture data exchange
- Initiated the concept of "Earned Value" for architectures through establishment of a business rules model
- Initiate the exploration of integration of a "Core Architecture Data Model (CADM) Business Rules

FY 2006 Plans: ($1.190 million)

- Demonstrate capabilities to operations by supporting both in garrison and deployed forces to move and analyze architecture data
- Implement changes required to DARS from the new DoD Architecture Framework requirements to include executable architectures, Net-Centric impacts on architecture products, new executive formats, portfolio management requirements in DARS 6.0
- Complete ability for DoD Program managers to use DARS data to build OMB form 300s and 53s
- Implement new international data exchange architecture standard based on CADM XML
- Expand DARS data exchange capabilities to modeling and simulation systems, decision support systems and budgetary systems
- Continue the exploration and expansion DARS as part of a "Federated Net-Centric" environment for data exchange
- Continue exploration of DARS integration into the "Core Enterprise Services" of Net-Centric Enterprise Services (NCES)
- Continue expansion of the "rules based model" to establish "earned value" for architecture data and architectures
- Continue to expand "authoritative data sources" processes and policies

FY 2007 Plans: ($1.249 million)

- Continue to implement capabilities required to meet changes to the DoD Architecture Framework (DoDAF) that will include capabilities to expand the "dynamic" assembly of architectures based on mission or process requirements or "tailorable packages based on architecture data for assistance in decision making (DARS 7.0)
- Continue integration of DARS data services into "Core Enterprise Services"
- Fully integrate DARS data harvesting capabilities into a Federated Data-Centric environment

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: N/A

E. Major Performers: DIA, DISA, NGA, NSA, NRO, Army HQ/G6/CIO, Navy CEC program, SPAWAR SOCOM, PACOM, CENTCOM, USFK, EUCOM, SOUTHCOM, NORTHCOM, TRANSCSOM, USMC Quantico, JFCOM, STRATCOM, NATO, Hanscom AFB, CECOM, INSCOM

Exhibit R-2a, RDT&E Project Justification								Date: February 2006
Appropriation/Budget Activity RDT&E, Defense-Wide, BA 6				Project Name and Number: Integrated Planning and Management/PE 0605170D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Name: Integrated Planning & Management		1.807	1.935	2.034	2.131	2.128	2.180	2.231

A. Mission Description and Budget Item Justification:

Provide a single integrated C2 structure across the Department of Defense supporting every echelon of command from national to tactical. Transform the existing set of dedicated, single purpose command and control (C2) systems into an integrated framework to support the flow of information into the command structure and enhance decision. Assure policies and a strategy for a unified, flexible, and adaptable full-spectrum command and control capability for warfighters and senior leaders within a globally connected common information environment (CIE). Support the Joint Staff, JFCOM, and STRATCOM in development of an information integration and decision portfolio of services and applications that will decompose existing C2 programs of record into essential capabilities supporting Joint Operating Concepts and Joint Mission Essential Functions.

B. Accomplishments/Planned Program

	FY 2004	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost		1.807	1.935	2.034
RDT&E Articles Quantity *(as applicable)				

FY 2005 Accomplishments: ($1.807 million)

- Produced Converged C2 Capabilities, C2 Vision, DoD C2 Policy and C2 Operational Concept
- Developed, coordinated and implemented C2-related ontologies, taxnonomies, and registries.
- Developed, coordinated and implemented policy and directives necessary to achieve the converged C2 capabilities.
- Developed, evaluated the application of C2 metrics criteria to guide C2 convergence from national through Tactical levels of C2.
- Specified overarching system engineering process.
- Developed of Initial Capabilities Document (ICD)
- Developed global C2 applications and services information integration framework.

FY 2006 Plans: ($1.935 million)

- Continue all efforts initiated in FY 2005.
- Developing overarching policies to integrate or migrate C2 systems for senior leadership into a net-centric environment.
- Assist the COCOMS/Services in articulating C2 net-centric concepts and top level requirements that must be addressed by the JCIDS process.
- Work with Joint Staff, Services and COCOMs on the development of Net-centric C2 Functional Area Analysis (FAA/Functional Needs Analysis (FNA)/Functional SolutionAnalysis (FSA) as appropriate.

FY 2007 Plans: ($2.034 million)

- As the net-centric environment evolves, update published C2 policies and concepts.
- Build on all previous efforts to accomplish C2 capability gap, shortfall, and overlap assessments and institutionalize the process.
- Influence Programs of Record based on identified gaps and overlaps

C. Other Program Funding Summary:

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
O&M, DW (PE0902198D8Z)	2.695	2.775	2.858	2.945	3.000	3.000	3.000	20.273

D. Acquisition Strategy: N/A

E. Major Performers: N/A

Exhibit R-2, RDT&E Budget Item Justification						Date: February 2006	
Appropriation/Budget Activity RDT&E Defense-Wide, BA 6	R-1 Item Nomenclature: General Support to USD(Intelligence) PE 0605200D8Z						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	7.680	14.054	5.637	5.910	5.909	5.952	6.076
Intelligence Support	.728	.752	.874	.916	.916	.923	.942
Resource Database Support	.262	.278	.295	.297	.296	.299	.305
Information Operations	3.748	4.169	4.468	4.697	4.697	4.730	4.829
Foreign Supplier Assessment Center	2.942	8.855	0	0	0	0	0

A. Mission Description and Budget Item Justification:

Intelligence and Resource Database Support are technical and resource management activities that serve the OUSD(I) organization. Information Operations contains classified efforts. Foreign Supplier Assessment Center is an FY 2005 and FY 2006 Congressional add.

B. Program Change Summary: (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	7.690	5.282	5.445
Current President's Budget	7.680	14.054	5.637
Total Adjustments	-.010	+8.772	
Congressional program reductions		-.085	
Congressional rescissions		-.143	
Congressional increases		+9.000	
Other adjustment	-.010		+.192

Change Summary Explanation:
FY 2005: New program element. These efforts were previously funded in 0605710D8Z. Department adjustments
FY 2006: $.085 Congressional program reductions; $.143 Congressional rescissions; $9.000 Congressional add for Foreign Supplier Assessment Center;
FY 2007: $.192 Department increase

C. Other Program Funding Summary: Not Applicable

D. Acquisition Strategy: Not Applicable

E. Performance Metrics:
Intelligence Support: Classified
Resource Database Support: Accuracy and completeness of financial data capture for all Intelligence elements within the DoD in support of SecDef, OMB and Congress
Information Operations: Classified
Foreign Supplier Assessment Center: Accuracy of threat and vulnerability assessment tabulated on foreign service/product suppliers to protect critical United States warfighting technologies

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: Intelligence Support						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Intelligence Support	.728	.752	.874	.916	.916	.923	.942
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:

The program focuses on technologies and their applications on activities of the OUSD(I), and includes evaluations of concepts, technology development, and feasibility studies related to intelligence processes, shortfalls, and requirements, and affects intelligence policy, planning and operational guidance.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	.728	.752	.874
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments: Mission Support $ .728

FY 2006 Accomplishments: Mission Support $ .751

FY 2007 Plans: Mission Support $ .874

C. Other Program Funding Summary: Not Applicable

D. Acquisition Strategy: Not Applicable

E. Major Performers: Not applicable

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: Resource Database Support						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Resource Database Support	.262	.278	.295	.297	.296	.299	.305
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:

Provides on and offsite operational, technical and process support, to include development of major improvements to the existing mechanisms/applications used by OUSD(I) to meet PPBE requirements and the timely and accurate production of MIP Congressional Justification Book (CJB). Supports transition from current applications and databases to an integrated automated resource management system.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	.262	.278	.295
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments: Initiated design and development of a resource database for the purpose of capturing, tabulating, and reporting all elements of Intelligence funding within the DoD to meet PPBE and CJB requirements.

FY 2006 Accomplishments: Continued design and development of a resource database for the purpose of capturing, tabulating, and reporting all elements of Intelligence funding within the DoD to meet PPBE and CJB requirements.

FY 2007 Plans: Develop automated database functionality/capability to support PPBE, CPBS and MIP business processes and MIP CJB requirements.

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Major Performers: Not applicable

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: Information Operations						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Information Operations	3.748	4.169	4.468	4.697	4.697	4.730	4.829
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:
Information Operations contains classified programs.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	3.748	4.169	4.468
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments: Details are classified.

FY 2006 Accomplishments: Details are classified.

FY 2007 Plans: Details are classified.

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Major Performers: Details are classified.

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: Foreign Supplier Assessment Center (FSAC)						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Foreign Supplier Assessment Center	2.942	8.855	0	0	0	0	0
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:

The FSAC's goal is to ensure that the U.S. Government is fully aware of foreign involvement in DoD programs by conducting a counterintelligence and security due diligence in the review of foreign suppliers. The FSAC will assess current and prospective foreign suppliers of products and services, including components for weapons systems, automation hardware, and various forms of software, to the DoD. The number of foreign prime contractors identified in the WHS 350 database alone was over 6,900 in FY04, which does not include subcontractors. The FSAC effort is intended to provide a comprehensive look at the entire DoD supplier base – to eventually examine all tiers of suppliers, address the criticality of subsystems, components, piece-parts, and materials, identify linkages among transnational organizations, and to assess vulnerabilities and potential threats. The resulting product will include a company profile, threat assessment, and recommended countermeasures, which will be available in the FSAC database to U.S. Government decision-makers.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	2.942	8.855	0
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments:

- Conducted analysis of prime DoD contractors in order to identify foreign suppliers of services and products.
- Using open source data and commercially available services to include Dun & Bradstreet and LexisNexis, conducted a review of contractors claiming they provide supplies and services to DoD. Analyzed these suppliers and compared the results with the analysis of prime DoD contractors in an attempt to identify foreign content and assess vulnerabilities inherent in that content.
- Using collateral all-source intelligence sources determined if foreign suppliers or potential suppliers supporting DoD programs have attempted or will attempt to control, influence or illegally acquire technologies critical to U.S. war fighting

capabilities.
- Conducted threat assessments of specific foreign suppliers identified by DoD.
- Developed an analytical methodology and assessment template, which was vetted throughout the DoD CI Community.
- Developing a Quality Assurance Program to ensure analytical methodology and product deliverables remain consistent with Government-identified requirements.

FY 2006 Accomplishments:
- Develop/Maintain Repository and Database
  -- Document Requirements /Deploy; Test; Interface
- Provide Assessments
  -- Number of Assessments Dependent on Funding
  -- Vet Reassessment Methodology
  -- Develop Metrics
- Develop Policy to Support FSAC Initiative
  -- Obtain Support from AT&L and Others; Research/Document Existing Policies / Draft Policy
- Support Related DoD & National Strategy/Initiatives
  -- Continue Identifying & Researching, Sharing & Coordinating Development Plans
  -- Incorporate Related Initiatives
  -- Participate in Working Groups & Conferences

FY 2007 Plans: Not applicable

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Major Performers:
FY 2005: MZM, Inc.

FY 2006: To Be Competed

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605502D8Z - SBIR**

Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost	58.231	0.000	0.000	0.000	0.000	0.000	0.000
0605502D8Z Small Business Innovative Research (SBIR)	58.231	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification: Not Applicable.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	0.000	0.000	0.000
Current BES/President's Budget (FY 2007)	58.231	0.000	0.000
Total Adjustments	58.231	0.000	0.000
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer	58.231		
Other			

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605790D8Z - SBIR/Challenge Admin**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		3.338	6.970	2.073	2.231	2.234	2.279	2.291
P518	SBIR Administration	3.338	6.970	2.073	2.231	2.234	2.279	2.291

A. Mission Description and Budget Item Justification: (U) The Small Business Innovation Research (SBIR) Program and the Small Business Technology Transfer (STTR) Program fund approximately $1.100 billion annually in mission oriented research and development projects at small technology companies. The purpose of the program is to stimulate the development of new technologies to improve U.S. military and economic capabilities. The SBIR/STTR Program is mandated by public laws (PL) 97-219, PL 99-443, PL 102-564, PL 106-554, and PL 107-50 and is codified in 15 USC 638. The Department of Defense (DoD) SBIR/STTR Program strives to encourage scientific and technical innovation in areas specifically identified by participating DoD components.

(U) DoD components participating in the SBIR/STTR 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), Chemical-Biological Defense Program, National Geospatial-Intelligence Agency (NGA), and the Office of Secretary of Defense (OSD). DoD components participating in the STTR Program include the: Army, Navy, Air Force, DARPA, MDA, and OSD.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	3.440	1.983	2.041
Current BES/President's Budget (FY 2007)	3.338	6.970	2.073
Total Adjustments	-0.102	4.987	0.032
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases		5.100	
Reprogrammings		-0.117	0.032
SBIR/STTR Transfer	-0.102	-0.198	
Other		0.202	

These funds are the only source for the coordination, administration and execution of the Department's SBIR/STTR Program. These funds provide for (1) the administration of at least 3 SBIR and 1 STTR Solicitation in FY 2006, (2) Development and implementation of a DoD wide Commercialization Assistance Program, (3) Continual maintenance and upgrading of the information system and database of the DoD SBIR/STTR Program.

C. Other Program Funding Summary: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605790D8Z - SBIR/Challenge Admin**

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605790D8Z - SBIR/Challenge Admin**	**P518**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P518	SBIR Administration	3.338	6.970	2.073	2.231	2.234	2.279	2.291

A. Mission Description and Project 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 are not funded with SBIR/STTR funds and can be considered "follow-on" contracts to Phase II efforts. 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 Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Small Business Innovation Research Administration	3.338	6.970	2.073

(U) Since PL 102-564 prohibits the use of any of the SBIR budget to fund administrative costs of the program, program element (PE) 0605790D8Z is the only source of funds for the coordination, administration and execution of the Department's SBIR/STTR Program. 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 and maintenance of information systems and software required for the measurement, evaluation, and effective management of the Department's SBIR/STTR R&D Program; (b) outreach to small technology companies, potential investors in such companies, SDBs WOSBs HBCU/MIs and others, to encourage and facilitate their participation in the SBIR/STTR Programs (e.g. conferences, trade shows, etc.); (c) preparation of the SBIR/STTR R&D solicitations and related publications; (d) support efforts such as administration of the various SBIR/STTR process action teams; (e) development and promulgation of guidance and reference materials to DoD contracting officers, technical monitors, and other personnel involved in administering the SBIR/STTR Programs; and (f) responding to requests for information relative to DoD's SBIR/STTR Program that receives nearly 16,000 proposals yearly and issues over 3,000 contracts.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification							Date: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E: Defense Wide/Office of Force Transformation/BA 6				R-1 ITEM NOMENCLATURE PE: 0605799D8Z Force Transformation			
COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	37.645	60.448	20.404	21.272	21.307	22.012	22.488

(U) A. Mission Description and Budget Item Justification:

This funding request supports the activities of the Office, Force Transformation and its five organizational objectives detailed in the R2a. The request is intended to support transformational RDT&E activities. Within these activities the office is expecting to sponsor groundbreaking research and prototyping in selected areas that are considered vital to the advancement of transformation within the Department. Funding will be used to catalyze transformational activities such as experimentation and exploration of the ramifications of new concepts and technologies and their combination. Activities include; research, testing, studies, analysis and development of transformation articles ("prototype-like" system surrogates), which will enable advanced experimentation for the co-evolution of concepts and technologies. Examples of such activities include: 1) continued development and fielding of a prototype full-spectrum effects platform under "Project Sheriff" for use in urban operations that will have an integrated set of tactical capabilities that provide options to the ground warrior beyond those currently available in Iraq, giving the warrior the most effective means to engage across the mission spectrum. This concept/technology pairing attempts to create a new engagement model by shrinking the enemy's engagement zone in both time and space while expanding ours to create maximum advantage; 2) the development of a transformational capability to re-direct laser energy at the tactical level for tactical applications/effects. This initiative would pair a ground-based laser with a re-directed energy pod carried on a Predator B or other airborne platforms. If successful, it would provide ground commanders with a semi-persistent, ISR-strike platform that would perform all functions across the find-fix-track-target-engage (at the speed of light) - assess kill chain; 3) the development of the various functional pieces that support the operationally responsive space business model to include the critical design of a standardized bus for tactical satellite operations and the development of operationally responsive payloads; 4) the conduct of technical performance trials of "Stiletto", a high speed, composite watercraft with hydrodynamic lift; and 5) the creation of a concept development and experimentation (CD&E) program to promote joint warfighting capabilities. Finally, the funding would support the continued enhancement of the Virtual Missions Operation Center (VMOC) network which will allow SIPRNET users to task an array of distant censors.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E: Defense Wide/Office of Force Transformation/BA 6	R-1 ITEM NOMENCLATURE PE: 0605799D8Z Force Transformation

(U) B. Program Change Summary:

($ in Millions)	FY2005	FY2006	FY2007
Previous President's Budget	19.591	19.927	19.928
Current Budget Estimate Submission	37.645	60.448	20.404
Total Adjustments:	18.054	40.521	0.476
Congressional program reductions:	0.000	0.000	0.000
Congressional rescissions:	0.000	0.000	0.000
Congressional increases:	20.000	41.500	0.000
Reprogrammings:	0.000	0.000	0.000
SBIR/STTR Transfer:	0.000	0.000	0.000
Other Adjustments:	-1.946	-0.979	0.476

(U) C. Other Program Funding Summary: Not Applicable.

(U) D. Acquisition Strategy: Not Applicable.

(U) E. Performance Metrics: The Office of Force Transformation (OFT) applies funding to achieve potentially high payoff transformational capabilities to satisfy deficiencies highlighted during the 2006 Quadrennial Defense Review, Transformation Planning Guidance, and various transformation appraisals. These documents identify potential gaps and shortfalls in the overall DoD transformation effort thereby permitting a very focused application of RDT&E funding to help close those gaps. To determine the impact of those selectively applied funds, the OFT assesses the extent to which the outcome of each project is embraced and furthered by either the military services and/or joint organizations such as Combatant Commands. Therefore, as the catalyst for transformation, the OFT continues to investigate areas where major impact can be derived from a selective application of limited RDT&E funds based on assessments of the state of transformation within the Department and the gaps highlighted as a result of those assessments.

Exhibit R-2a, RDT&E Project Justification						Date: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide, Office of Force Transformation/BA 6			PROGRAM ELEMENT: 0605799D8Z		PROJECT NAME AND NUMBER Force Transformation/Project		
Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	37.645	60.448	20.404	21.272	21.307	22.012	22.488

(U) A. **Mission Description and Budget Item Justification.** The Office of Force Transformation (OFT) is the principal advisor to the SecDef on transformation within the DoD and is tasked to be the catalyst for transformation within the Department. This funding request supports the Director's five organizational objectives for this office, which are described below. This program is designed to provide general support to the overall DoD transformation effort through the implementation of a variety of focused RDT&E activities. Within these activities the office is sponsoring groundbreaking research and prototyping in selected areas that are considered vital to the advancement of and provide the greatest leverage for transformation within the Department. Funding will be used to catalyze transformational activities such as experimentation and exploration of new concepts and technologies. Activities include; research, testing, studies, analysis and development of transformation articles ("prototype-like" system surrogates), which will enable advanced experimentation for the co-evolution of concepts and technologies.

(U) B. **Accomplishments/Planned Program.** In FY 2006 this funding supported activities such as:

1) The development of an operationally responsive, tailorable, space capability, with two major and distinct parts – the launch vehicle, the payload and the initiation of a standardized bus module. Characteristics of the delivered launch vehicle included low-cost and the ability to launch on-demand. The payload seeks to be highly modular, contain highly automated micro-satellite buses, common interfaces, and tasking and data dissemination using SIPRNET protocols — a concept now known as Operationally Responsive and Experimental Adaptability for Space Based Systems;
2) The continued development and conduct of technical performance trials of "Stiletto", a high speed, composite watercraft (unveiled in January 2006) with hydrodynamic lift. Stiletto features high-speed with efficiency (flat power curves), smooth ride quality in high sea states (shock mitigation), high payload-fractions (ease of re-configurability), and stability at all speeds.
3) The production, operational testing and experimentation with the first prototype of an advanced technology ground platform titled "Project Sheriff" that integrates various support systems to include active defense systems, rapid fire denial systems, and non-lethal, projectile delivery systems to enable our forces in the new environments in which they operate today.
4) The examination of the feasibility of redirecting laser energy through an airborne relay mirror system to provide firepower/ signal affects beyond line of sight/ over the horizon. Initial testing completed with future marrying of the prototype with platforms such as the high altitude airship and the Predator UAV.

Through this program, the Office of Force Transformation assisted in furthering the U.S. military transformation efforts in support of the overall transformation goals of the Department. This support was guided by the following set of objectives to maximize these efforts with funding budgeted for and applied to each area:

FY 2005	FY2006	FY2007	Description
	($ in Millions)		
$0.979	$0.938	$0.800	Objective 1: To make force transformation an integral element of DoD corporate and national defense strategy effectively supporting the four strategic objectives of national defense strategy.
$5.881	$10.100	$5.744	Objective 2: To change the force and its culture from the bottom up through the use of experimentation, transformational articles (operational prototyping) and the creation and sharing of new knowledge and experiences.
$3.921	$4.180	$2.180	Objective 3: To implement Network Centric Warfare (NCW) as an emerging theory of war for the information age and the organizing principle for joint capabilities and systems.
$1.764	$1.800	$1.800	Objective 4: To get the decision rules and metrics right and cause them to be applied enterprise wide.
$25.100	$43.430	$9.880	Objective 5: To discover, create or cause to be created new military capabilities to broaden the capabilities base and to mitigate risk.
$37.645	$60.448	$20.404	TOTAL

In addition to the FY 2006 accomplishments described above, an important secondary output of these efforts was the establishment of new business models for DoD to further investigate, new concept/technology pairing that created large leaps in capabilities, and potential cultural changes within DoD as a result of understanding the impact of this R&D effort.

In FY 2007 and beyond, the office will continue the development and field Project Sheriff for use in urban operations that will have an integrated set of tactical capabilities that provide options to the ground warrior beyond those currently available. In addition, OFT will focus on the critical area of concept development and experimentation (CD&E) to promote joint warfighting capabilities and will exploit the Stiletto surrogate in exploring command and control of dispersed forces in partnership with USSOCOM. Other focus areas will include developing near-term paths to creating overmatching complexity with distributed adaptive operations and support the continued enhancement of the Virtual Missions Operation Center (VMOC) network which will allow SIPRNET users to task an array of distant censors.

(U) C. **Other Program Funding Summary**. N/A

(U) D. **Acquisition Strategy**: This program represents a continuing level of effort supporting the research, the study and analysis, and the development of a wide range of new concepts and technologies that directly support the transformation vision and goals of the Secretary of Defense and the Department. The deliverables from each project represent a keen understanding of the national and military strategies and the linkages with the transformation effort, and what new capabilities, if discovered and delivered, better support the execution of those strategies. In addition, this program will ensure the injection of OFT assessments and insights into the experimentation process in the early stages of concept development.

(U) E. **Major Performers:** The following government faculties received $10.000 million or more to support FY 2005 Office of Force Transformation projects: Naval Research Laboratory and Air Force Research Laboratory. We anticipate that the Naval Research Lab, the Air Force Research Lab, and the Naval Surface Warfare Center will each receive $10.000 million or more in funding to support FY2006 projects.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 6	**0605804D8Z - Development Test & Evaluation**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		8.615	8.733	9.203	9.632	9.667	9.861	10.076
P804	Developmental Test and Evaluation	8.615	8.733	9.203	9.632	9.667	9.861	10.076

A. Mission Description and Budget Item Justification: Transformation calls for top down, national security strategy driven, capabilities-based, planning. DoD Instruction (DoDI) 5000.2 and CJCSI 3170.01D promulgate capabilities-based requirements and acquisition processes. This program enables collaborative efforts to achieve these goals. These efforts include: systems support to conduct warfighting capability-based analyses; assessments of joint capability area and joint integrating concepts; development and support of needed sets of system and system-related data; development and application of systems engineering methodologies and tools, creating integrated roadmaps to support acquisition investment decisions; and assessment of major defense acquisition programs (MDAPs) and major automated information systems programs in a capability area context. Activities in this project are divided into three areas: capability based analyses, roadmaps, and support tools and guidance. Capability-based analyses consists of efforts that provide systems aspects (views) to analyze technology, functionality, and integration impacts on warfighting capability; this forms the front end of systems engineering. Roadmaps are proscribed by DoDI 5000.2, paragraph 3.2.2. Initiatives in this project enable roadmap development based on systems engineering and are used to guide systems acquisition decisions and associated investment plans. Support tools and guidance initiatives in this project will develop systems engineering methods, systems data, and tools, exploiting the value of modeling and simulation and architecture to improve effectiveness of Systems Engineering, to improve assessment capability, and to field and test integrated systems of systems to achieve joint mission capabilities. This Research Category 6.5 Program Element supports technical analysis and evaluation by Developmental Test & Evaluation (DT&E) of the Department's weapons systems to determine the adequacy of system test program structure and development plans, substantiation of technical performance requirements achievement, identification of weapon system cost performance trade-offs/design risks, system certification for Operational Test & Evaluation, and ensures DT&E Programs are sound, well-executed and sufficiently address system's ability to meet Warfighter's needs.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	8.676	8.873	9.060
Current BES/President's Budget (FY 2007)	8.615	8.733	9.203
Total Adjustments	-0.061	-0.140	0.143
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other	-0.061	-0.140	0.143

Performance in this program is monitored using instances of the incorporation of DT&E policies, best practices, procedures, methods, and tools for the conduct of sound, well-executed developmental test programs; completion of rebaselining DAU T&E certification courses; completion of a DoD Modeling & Simulation Master Plan for Acquisition; and development of

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)	Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605804D8Z - Developmental Test & Evaluation**

an Operational Test Readiness Review evaluation process.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 6	**0605804D8Z - Developmental Test & Evaluation**	**P804**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P804	Developmental Test and Evaluation	8.615	8.733	9.203	9.632	9.667	9.861	10.076

A. Mission Description and Project Justification: Transformation calls for top down, national security strategy driven, capabilities-based, planning. DoD Instruction (DoDI) 5000.2 and CJCSI 3170.01D promulgate capabilities-based requirements and acquisition processes. This program enables collaborative efforts to achieve these goals. These efforts include: systems support to conduct warfighting capability-based analyses; assessments of joint capability area and joint integrating concepts; development and support of needed sets of system and system-related data; development and application of systems engineering methodologies and tools, creating integrated roadmaps to support acquisition investment decisions; and assessment of major defense acquisition programs (MDAPs) and major automated information systems programs in a capability area context. Activities in this project are divided into three areas: capability based analyses, roadmaps, and support tools and guidance. Capability-based analyses consists of efforts that provide systems aspects (views) to analyze technology, functionality, and integration impacts on warfighting capability; this forms the front end of systems engineering. Roadmaps are proscribed by DoDI 5000.2, paragraph 3.2.2. Initiatives in this project enable roadmap development based on systems engineering and are used to guide systems acquisition decisions and associated investment plans. Support tools and guidance initiatives in this project will develop systems engineering methods, systems data, and tools, exploiting the value of modeling and simulation and architecture to improve effectiveness of Systems Engineering, to improve assessment capability, and to field and test integrated systems of systems to achieve joint mission capabilities. This Research Category 6.5 PE supports technical analysis and evaluation by Developmental Test and Evaluation (DT&E) of the Department's weapons systems to determine the adequacy of system test program structure and development plans, substantiation of technical performance requirements achievement, identification of weapon system cost performance trade-offs/design risks, system certification for Operational Test and Evaluation (OT&E), and ensures DT&E Programs are sound, well-executed and sufficiently address system's ability to meet Warfighter's needs.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
T&E Independent Activities:	8.615	8.733	9.203

FY 2005 Accomplishments: Review, coordination, and approval of 21 Test and Evaluation Master Plans (TEMPs) (Draft and Service Approved).

Review and coordination on all significant program documentation to include: Defense Acquisition Executive Summaries (DAES); Acquisition Decision Memoranda (ADM); and, other documents.

- Actively supporting 3 ongoing Mission Capability Roadmap activities (Integrated Air & Missile Defense (IAMD), Non-Lethal Weapons, and Joint Battle Management Command & Control (JBMC2). Provided T&E expertise and advice to them on how to structure their T&E approach.

- Working with ASD(NII), USD(I), and DOT&E, DT&E led AT&L's effort to implement an Information Operations initiative for Computer Network Attack in response to the FY 2004 Defense Planning Guidance. This will provide DoD with a significant IOT&E capability that includes an IO "test range" to assess IO technologies and tactics in a realistic threat environment.

- Provided recommendations to clarify and strengthen DT&E policy and practices in the Defense Acquisition Guidebook and DoDI 5000.2 that will assist CAEs, PEOs, and PMs to better plan for and conduct DT&E and prepare for successful OT&E. Initiated specific policy recommendations in DoDI 5000.2 to implement Modeling & Simulation planning as part of the systems engineering and test processes.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605804D8Z - Developmental Test & Evaluation**	PROJECT **P804**

- Reconstituted and expanded the T&E Functional Integrated Process Team (FIPT) to address the T&E skills and training needs of the T&E workforce.. Initiated cross-Service and DoD Agency work group that is conducting a complete update of the DAU T&E curriculum to ensure completeness and currency of T&E and associated skills necessary for today's T&E workforce.

- Worked closely with the Defense Test Resource Management Center (DTRMC) during preparation of the FY 2006 T&E Budget Certification and CY 2005 Strategic Plan. Ensured proposed budgets were adequate and provided balanced support for the Department.

- Identified issues with Services' aerial target capabilities and availability, resulting in USD(AT&L) direction to Air Force and Navy to develop plans to reduce shortfalls in these critical test assets.

- Led effort to identify actions necessary to move Joint Distributed Engineering Plant program forward. Enhanced likelihood that key capability needed to support Department joint mission capability will be accomplished. Co-sponsoring with ASD(NII) a one-year Decision Support Center study Joint Distributed Systems Engineering, and Test and Evaluation Strategy (JDSETES). Study will explore options and make recommendations in concert with the Services, Joint Staff and the OSD staff on a path forward to provide this urgent needed capability to support joint systems of systems testing in a net centric environment.

- Initiated and orchestrated the approval of the USD(AT&L) "Defense Acquisition System Safety Memorandum," which provides guidance to PMs on how to increase the emphasis on system safety within the acquisition process.

- Formally chartered Acquisition M&S Working Group (AMSWG). The AMSWG reviewed the past decade of studies addressing M&S use in acquisition; considered lessons learned from various acquisition systems and system-of-systems.

- Provided guidance and direction to the Threat-D Supersonic, Sea-skimming Target IPT to assure the target is threat representative and available for weapon system T&E requirements.

- As a member of the Joint Test & Evaluation (JT&E) Technical Advisory Board, reviewed and provided guidance to two Joint Feasibility Studies, Joint Fires Coordination Measures (JFCM) and Joint Urban Fire and Effects.

FY 2006/2007 Plans: Includes funding for technical analysis and evaluation of the developmental testing of the more than 220 major weapon acquisition programs. Specifically, the DT&E organization, within Defense Systems, is the USD(AT&L) focal point for all activities related to developmental test and evaluation as outlined in Section 133, Title 10, United States Code.

- Provide for a professional T&E workforce by re-baselining Defense Acquisition University T&E certification courses and updating DAU TST 301 course. Lead T&E FIPT.

- Participate in M&S/Executive Council in Modeling and Simulation (EXCIMS)/Working Groups. Review DoD M&S Master Plan for Acquisition.

- Develop Operational Test Readiness Review (OTRR)evaluation Process.
Improve and expand industry and professional association (ITEA/NDIA) interfaces.

- Address Congressional, GAO, IG Actions regarding general T&E/policy issues.

- As USD(AT&L) representative to the DOT&E-led IPT to develop Joint Test Transformation Roadmaps, assure DT&E infrastructure and capabilities support joint mission capability testing were included in

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2006
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 6	PE NUMBER AND TITLE **0605804D8Z - Developmental Test & Evaluation**	PROJECT **P804**

Strategic Planning Guidance action on what changes the DoD needs to make.

- Ensure Joint Test and Evaluation test programs are adequate, feasible, executable, and designed to accomplish chartered goals.

- Serve as interface to DTRMC, participate on Strategic Planning Working Group by conducting range and resource investment planning, participate in Range Commander's Council, and Defense Test and Training Steering Group. Make recommendations on range improvement and modernization requirements and funding.

- Develop effective DT&E policies, best practices, procedures, methods, and tools. Ensure DT&E policy is adequate for directing the conduct of sound, well-executed developmental test programs.

- Evaluate target requirements, status, shortfalls, and impact on weapon system testing adequacy. Oversee plans to reduce shortfalls in these critical test assets and assure these critical assets, necessary for adequate testing, are available.

- Participate in Systems Mission and Integration (SMI) Executive Working Group.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification								Date: February 2006
Appropriation/Budget Activity RDT&E Defense-Wide, BA 6				R-1 Item Nomenclature: IT Rapid Acquisition PE 0303169D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		4.510	5.491	5.090	5.370	5.408	4.845	5.340

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.

FY 2005 Accomplishments: ($4.510 million)

The requested FY 2005 funding will allow the Department to continue prototyping net centric initiatives within a controlled environment to fully assess emerging net centric technologies and tools. The RAI-NC process employed for FY 2005 places increased emphasis on Net Centricity and Domain oversight, as well as incorporation of lessons learned from the FY 2004 process. Selected initiatives are required to demonstrate net centric capabilities that will:

- Effectively merged the visions and goals of DoD transformation and net centricity into rapidly deployed, common solutions that will accelerate the transformation of DoD business Domains.
- Accelerated achieving the end-to-end net-centric operations/warfare through the timely, secure and coherent transition across DoD networks, applications and infrastructure to a common networking protocol, IPv6,
- Promoted Domain teaming and help overcome existing barriers to executing the Department's transformation goals and obtaining a net centric environment.
- Permitted more efficient DoD mission support by enabling quicker fielding of both net centric information systems and weapons systems
- Accelerated force transformation and enable DoD processes to be more timely and efficient (reduce cost of support), to include eBusiness solutions
- Permitted DoD to accelerate the rate of lowering the cost of doing business
- Reduced the information systems risks and costs, by speeding up proof of concept demonstrations and providing business case based implementation decisions.

FY 2006 Plans: ($5.491 million); FY 2007 Plans ($5.090 million)

Conduct proofs of concept early implementation that advance the transformation of DoD processes, further net centric operations and provide business case based enterprise solutions. RAI-NC efforts will focus on enabling a coherent and timely transition across DoD Enterprise networks and infrastructure to the next generation of the Internet Protocol, IP version 6 (IPv6) that will allow the business and warfighting mission areas to leverage the power of information through net-centric operations/warfare. While the base IPv6 standards are robust and provide rough parity with IPv4 capabilities; many of the advanced features of IPv6 needed to fully enable net-centricity are still being developed. A DoD-wide development, engineering, testing and evaluation effort provides an opportunity to drive DoD needs into those features and accelerate the availability of products with those needed features (such as quality of service, mobility, support of convergence). It is expected that these FY 2006 efforts will deliver significant improvements to the Domains and serve as change agents across DoD, thereby accelerating both the timeliness and quality of decision-making and

information flow. RAI-NC initiatives that accelerate DoD's net centric transformation in direct support of the warfighter will include:

- Identify and promote commodity-based software programmable radio technologies to rapidly respond to warfighter requirements and reduce costs
- Provide for rapid prototyping, test and demonstration of commodity-based software programmable radio solutions utilizing evolving technologies for near and long term solutions.
- Focus on incorporating solutions from outside programs of records:
  - Modular software programmable radio approach enables incorporation of new offerings such as high band transceiver modules into open architecture designs
  - Encourage and provide a mechanism for test of commercial module upgrade offerings or alternative techniques to enhance capability and reduce cost
  - Foster P3I technology improvements into spirals of programs of records
  - Rapid development and demonstration of specific capabilities
  - Utilize COTS, IRAD, NDI, and CRADA Products
  - Take advantage of exercises and demonstrations to test products
  - Industry, Academia, and Government Lab participation
- Provide migration path to warfighter systems

B. Program Change Summary: (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	4.639	5.580	4.909
Current President's Budget	4.510	5.491	5.090
Total Adjustments	-.129	-.089	.181
Congressional program reductions			
Congressional rescissions, Inflation adjustments	-.129	-.089	.181
Congressional increases			
SBIR/STTR Transfer			
Reprogrammings			

Change Summary Explanation:
FY 2005: SBIR -.110 million; STTR -.013 million; Atomic Energy -.004 million; WHS reduction -.002 million.
FY 2006: FFRDC -.009 million; Economic Assumptions -.024 million; Rescission -.056 million.
FY 2007: Non-pay Purchase Inflation .181 million.

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: N/A

E. Performance Metrics:

1. Effectively merge the visions and goals of DoD transformation and net centricity into rapidly deployed, common solutions that will accelerate the transformation of DoD business Domains.
2. Promote Domain teaming and help overcome existing barriers to executing the Department's transformation goals and obtaining a net centric environment.
3. Permit more efficient DoD mission support by enabling quicker fielding of both net centric information systems and weapons systems
4. Accelerate force transformation and enables business processes to be more timely and efficient (reduce cost of support), to include eBusiness solutions
5. Permit DoD to accelerate the rate of lowering the cost of doing business
6. Reduce information systems risks and costs, by speeding up proof of concept demonstrations and providing business case based implementation decisions

Exhibit R-2, RDT&E Budget Item Justification							Date: February 2006
Appropriation/Budget Activity RDT&E Defense-Wide, BA 6	R-1 Item Nomenclature: Intelligence Support to Information Operations PE 0305193D8Z						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	12.561	13.718	14.128	15.141	14.864	15.205	15.560
E-Space	.730	.755	.777	.833	.818	.836	.856
Human Factors and Intel Fusion	10.174	11.111	11.444	12.264	12.040	12.316	12.604
IO Indications and Warning	1.657	1.852	1.907	2.044	2.006	2.053	2.100

A. Mission Description and Budget Item Justification:
Intelligence Support to Information Operations contains classified programs. Details are provided in the classified Congressional Justification Book.

B. Program Change Summary: (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	12.578	13.940	13.908
Current President's Budget	12.561	13.718	14.128
Total Adjustments	-.017	-.222	+.220
Congressional program reductions		-.083	
Congressional rescissions		-.139	
Congressional increases			
Other Adjustments	-.017		+.220

Change Summary Explanation:

FY 2005: New program element; Department adjustments
FY 2006: $.083 Congressional program reductions; $.139 Congressional rescissions
FY 2007: Department increase

C. Other Program Funding Summary: Not Applicable

D. Acquisition Strategy: Not Applicable

E. Performance Metrics: Details are provided in the classified Congressional Justification Book.

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: E-Space						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
E-Space	.730	.755	.777	.833	.818	.836	.856
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:

Intelligence Support to Information Operations (E-Space) contains classified programs. Details are provided in the classified Congressional Justification Book.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	.730	.755	.777
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments: Details provided in the classified Congressional Justification Book.

FY 2006 Accomplishments: Details provided in the classified Congressional Justification Book.

FY 2007 Plans: Details provided in the classified Congressional Justification Book.

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Major Performers: Details provided in the classified Congressional Justification Book.

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: Human Factors and Intelligence Fusion						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Human Factors and Intelligence Fusion	10.174	11.111	11.444	12.264	12.040	12.316	12.604
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:
Intelligence Support to Information Operations (Human Factors and Intelligence Fusion) contains classified programs. Details are provided in the classified Congressional Justification Book.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	10.174	11.111	11.444
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments: Details provided in the classified Congressional Justification Book.

FY 2006 Accomplishments: Details provided in the classified Congressional Justification Book.

FY 2007 Plans: Details provided in the classified Congressional Justification Book.

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Major Performers: Details provided in the classified Congressional Justification Book.

Exhibit R-2a, RDT&E Project Justification							Date: February 2006
Appropriation/Budget Activity RDT&E,DW BA 6	Project Name and Number: Information Operations Indications and Warning						
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
IO Indications and Warning	1.657	1.852	1.907	2.044	2.006	2.053	2.100
RDT&E Articles Quantity	N/A	N/A	N/A	N/A	N/A	N/A	N/A

A. Mission Description and Budget Item Justification:
Intelligence Support to Information Operations (IO Indications and Warning) contains classified programs. Details are provided in the classified Congressional Justification Book.

B. Accomplishments/Planned Program

	FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost	1.657	1.852	1.907
RDT&E Articles Quantity	N/A	N/A	N/A

FY 2005 Accomplishments: Details provided in the classified Congressional Justification Book.

FY 2006 Accomplishments: Details provided in the classified Congressional Justification Book.

FY 2007 Plans: Details provided in the classified Congressional Justification Book.

C. Other Program Funding Summary: Not applicable

D. Acquisition Strategy: Not applicable

E. Major Performers: Details provided in the classified Congressional Justification Book.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 7	**0607828D8Z - Joint Integration and Interoperability**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total Program Element (PE) Cost		0.000	0.000	66.906	53.270	49.848	48.455	49.397
P818	Joint Integration and Interoperability	0.000	0.000	66.906	53.270	49.848	48.455	49.397

A. Mission Description and Budget Item Justification: The Unified Command Plan 2002 assigned Commander, U.S. Joint Forces Command (USJFCOM) with the mission as the Joint Force Integrator. Additionally, the Chairman Joint Chiefs of Staff (CJCS) designated Commander, USJFCOM as lead agent to transform the Armed Forces. In support of these two missions, USJFCOM Joint Interoperability and Integration (JI&I), located within Headquarters USJFCOM, is responsible for joint interoperability and integration of future and fielded capabilities critical to Joint, Multi-National, and Interagency warfighting operations. USJFCOM JI&I works closely with Combatant Commanders/Services/Agencies (C/S/A) to ensure warfighting deficiencies are identified, develops synchronized Doctrine, Organizational, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) capability plans to ensure the warfighter has interoperable capabilities.

In January 2003,USJFCOM's JI&I role was expanded to increase 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. In this role, USJFCOM will develop a repeatable Joint Mission Thread interoperability test and assessment methodology for use in evaluating Joint Battle Management Command and Control Roadmap execution and to demonstrate this methodology in Joint Close Air Support.

This program provides assessment of required Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) interoperability for rapid insertion of capabilities across the DOTMLPF spectrum to meet joint warfighters' needs. These capability solutions are achieved through modification of existing or emerging technologies in order to meet unique requirements of the warfighting force.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	0.000	0.000	66.906
Total Adjustments	0.000	0.000	66.906
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			
SBIR/STTR Transfer			
Other			66.906

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 7	**0607828D8Z - Joint Integration and Interoperability**

As directed by FY 2005 National Defense Authorization Act, JFCOM RDT&E funding for Joint Interoperability and Integration was transferred from Navy program element 0305188N to Defense-Wide program element 0607828D commencing in FY 2007.

FY 2007 funding for Training Transformation was placed in 0305188N BA-7 as a temporary measure until a new program element could be created. Program element 0603757D was subsequently created and funds transferred from 0305188N to 0603757D.

Funding ($10.000 million in FY 2006 (resident in 0305188N) and $6.000 million in FY 2007) was provided to develop a repeatable Joint Mission Thread interoperability test and assessment methodology for use in evaluating JBMC2 Roadmap execution. This methodology is to be demonstrated in a Joint Close Air Support pilot program. The FY 2007 funding level was increased by $4.000 million (from $6.000 million to $10.000 million) in order to maintain the FY 2006 level and begin analysis of the second Joint Mission Thread JT&A (JTF C2), to include developing JTF C2 DOTMLPF change requests resulting from the initial analysis. Within the funding provided, JFCOM is to complete the JCAS JMT assessment as a proof of concept of the JT&A methodology.

The $13.300 million increase in FY 2007 is not a true increase to funds, but a reinstatement to prior funding levels.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
07						

Comment: Performance of Joint Integration and Interoperable systems is measured by successful delivery of systems solutions to Combatant Commands by required delivery dates.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 7	**0607828D8Z - Joint Integration and Interoperability**	**P818**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P818	Joint Integration and Interoperability	0.000	0.000	66.906	53.270	49.848	48.455	49.397

A. Mission Description and Project Justification: The Unified Command Plan 2002 assigned Commander, U.S. Joint Forces Command (USJFCOM) with the mission as the Joint Force Integrator. Additionally, the Chairman Joint Chiefs of Staff (CJCS) designated Commander, USJFCOM as lead agent to transform the Armed Forces. In support of these two missions, USJFCOM Joint Interoperability and Integration (JI&I), located within Headquarters USJFCOM, is responsible for joint interoperability and integration of future and fielded capabilities critical to Joint, Multi-National, and Interagency warfighting operations. USJFCOM JI&I works closely with Combatant Commanders/Services/Agencies (C/S/A) to ensure warfighting deficiencies are identified, develops synchronized Doctrine, Organizational, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) capability plans to ensure the warfighter has interoperable capabilities.

In January 2003,USJFCOM's JI&I role was expanded to increase 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. In this role, USJFCOM will develop a repeatable Joint Mission Thread interoperability test and assessment methodology for use in evaluating Joint Battle Management Command and Control Roadmap execution and to demonstrate this methodology in Joint Close Air Support.

B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integrated Combat Identification and Situational Awareness Capabilities	0.000	0.000	17.928
FY 2007 Plans: Implementation of integrated joint forces capabilities through ongoing strategic to tactical situational awareness initiatives are required to eliminate blue force fratricide. USJFCOM JI&I continues efforts to integrate among joint forces efforts to enhance blue force situational awareness. USJFCOM JI&I is continuing to execute Secretary of Defense and Chairman Joint Chiefs of Staff efforts to provide Combatant Commanders with interoperable combat identification and situational awareness capabilities among United States Forces, Interagencies, and Allied and Coalition Forces in support to the Global War on Terrorism (GWOT) and in multiple theaters of operations.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Interoperable Joint Fires and Intel Capabilities	0.000	0.000	12.951
FY 2007 Plans: USJFCOM JI&I will continue to execute Secretary of Defense and Chairman Joint Chiefs of Staff efforts to provide Combatant Commanders with interoperable Joint Fires (Time Sensitive Targets, Precision Engagement, and Close Air Support) and intelligence capabilities among United States Forces, Interagencies, and Allied and Coalition Forces in support to the Global War on Terrorism (GWOT) and in multiple theaters of operations.			

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 7	**0607828D8Z - Joint Integration and Interoperability**	**P818**

Common Operational and Tactical Pictures Capabilities	0.000	0.000	2.000

FY 2007 Plans: USJFCOM JI&I will continue to execute Secretary of Defense and Chairman Joint Chiefs of Staff directives to provide Combatant Commanders with Common Operational and Tactical Pictures capabilities among United States Forces, Interagencies, and Allied and Coalition Forces in support to the Global War on Terrorism (GWOT) and in multiple theaters of operations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integrated Joint Battle Management C2 Capabilities	0.000	0.000	7.800

USJFCOM JI&I will continue to execute Secretary of Defense and Chairman Joint Chiefs of Staff efforts to provide Combatant Commanders with integrated Joint Battle Management Command and Control capabilities among United States Forces, Interagencies, and Allied and Coalition Forces in support to the Global War on Terrorism (GWOT) and in multiple theaters of operations. This effort includes mission thread analysis, testing and engineering support.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Joint Operational Concepts and Integrated Architectures	0.000	0.000	6.900

FY 2007 Plans: In support of Joint Battle Management Command and Control (JBMC2), USJFCOM JI&I is responsible to continue to develop, maintain, and update Joint Mission Area Joint Operational Concepts and Integrated Architectures which provides support to the warfighter across the "Range of Military Operations." This Joint Operational Concept will describe the doctrinally-based tasks and activities, operational elements, and the time-phased information flows required to accomplish joint military operations. The Joint Integrated Architecture efforts will be utilized to assess and analyze doctrine, Concept of Operations (CONOPS), Tactical Technical Procedures (TTPs), system and procedural interoperability, processes, and synchronization issues that impact Joint Forces. The Joint Operational Concepts and Integrated Architectures provide the baseline to identify warfighter requirements and were developed in close coordination with OSD, Joint Staff, Combatant Commands, and Services.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integrated Service and Agency Intelligence Capabilities	0.000	0.000	2.145

FY 2007 Plans: USJFCOM JI&I will continue to execute Secretary of Defense and Chairman Joint Chiefs of Staff directives to provide Combatant Commanders with Integrated Service and Agencies Intelligence capabilities among United States Forces, Interagencies, and Allied and Coalition Forces in support to the Global War on Terrorism (GWOT) and in multiple theaters of operations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Ability to Exchange Information Between Multiple Security Domains	0.000	0.000	3.452

FY 2007 Plans: USJFCOM JI&I will continue to execute Secretary of Defense and Chairman Joint Chiefs of Staff directives to provide Combatant Commanders the ability to exchange information between multiple security domains among United States Forces, Interagency, and Allied and Coalition Forces in support of the Global War on Terrorism (GWOT) and in multiple theaters of operations.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Define Operational Requirements and Functional Concepts	0.000	0.000	2.350

FY 2007 Plans: USJFCOM JI&I will continue to execute Secretary of Defense and Chairman Joint Chiefs of Staff directives to define operational requirements and functional concepts for Department of Navy Deployable Joint Command and Control which supports integration with Joint Battle Management and Control, Standing Joint Force Headquarters, and Service Battle Management Command and Control capabilities and goals.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 7	**0607828D8Z - Joint Integration and Interoperability**	**P818**

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Accelerated Combatant Commander Solutions	0.000	0.000	1.380

FY 2007 Plans: USJFCOM JI&I will continue to identify the Combatant Commanders' warfighting shortfalls and work with Services and Agencies to identify and define DOTMLPF capability solutions. USJFCOM JI&I will identify operational problems applicable from the Joint Task Force down to the Tactical Level and those areas where assistance is necessary to achieve operational enhancements with US, and Allied and Coalition forces.

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
Integrated Joint Command and Control Capabilities	0.000	0.000	10.000

FY 2007 Plans: USJFCOM JI&I will continue to integrate joint command and control capabilities.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers Not Applicable.

OSD RDT&E COST ANALYSIS (R3)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY
RDT&E/ Defense Wide BA# 7

PE NUMBER AND TITLE
0607828D8Z - Joint Integration and Interoperability

PROJECT
P818

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0									

Project Total Cost:			**0**									

Exhibit R-2, RDT&E Budget Item Justification							Date: February 2006
Appropriation/Budget Activity RDT&E Defense-Wide, BA 7				R-1 Item Nomenclature: Information Systems Security Program PE 0303140D8Z			
Cost ($ in millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	11.716	12.347	14.856	13.698	13.861	13.993	14.590

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.

FY 2005 Accomplishments ($11.716 million):

- Continued development of eMASS into a deployed enterprise information assurance management service. Baselined all DoD and IC IA policies and guidelines, and developed a mapping and translation service for jointly accredited information systems. Worked with other federal agencies, e.g., NIST or DHS, to baseline and map to other federal IA policies and guidelines. Developed a capability to map IA policies and architectures to IA metrics and reporting requirements (e.g., FISMA). Continued modular development and deployment of additional services to support core IA processes, e.g., investment and resource management, workforce management, ports and protocols management.

- Continued development of IA architecture, policy and identify IA capabilities necessary to support and "end-to-end" IA capability for the GIG – including Transformational Communications, GIG Bandwidth Expansion, JTRS, and GIG Enterprise Services (GES)/NetCentric Enterprise Service (NCES) capabilities such as discovery, collaboration, messaging, mediation, data tagging, etc. Pilot the initial capability to integrate CND Architecture designs with the

GIG IA Architecture development and the design of the Enterprise Sensor Grid.

- Continued development of the Commercial Innovation Integration (CII) process to leverage commercial research activities for DoD Information Assurance. Field prototype IA Portal.

- Completed the Software Assurance study and began implementation of recommendations.

- Insider Threat - CND/Information Assurance/Information Operations Attribution Capability Initiative. Leveraging work done in FY2003 and FY2004, prototyped and tested enterprise attribution and trace back tools. Demonstrated interoperable software solution across a joint Inter-Service/Agency networked environment to quickly and effectively identify anomalous network activities with centralized visibility and control at the JTF-GNO level; pilot & Assess tools within the JTF-GNO and JFCOM to facilitate the ability to attribute hostile action in cyber-space to the person or people involved - pilot efforts will assess the capabilities that can rapidly and legally attribute an attack to an attacker (traceback), and do so across multiple, disparate network technologies and infrastructures, including wireless networks; pilot and assess tools and techniques within the JTF-GNO and JFCOM that are effective at reconstructing cyber event histories.

- Developed and prototyped enterprise CND, vulnerability management and situational awareness tools identified in FY2003/FY2004. Integrated output of network scanner results into Enterprise Sensor Grid (ESG) and Situational Awareness/UDOP Databases to facilitate development of ESG engineering solutions; developed initial integrated view and pilot of sensor outputs for user level control at the JTF-GNO; enhanced NSA developed prototype passive network mapping product and pilot within the JTF-GNO; developed a "Federation of Sensors" across a Joint Inter-Service/Agency implementation with sensor outputs integrated into a central console for centralized intrusion detection and warning; integrated/developed interoperability between IA Vulnerability Management VMS DB and the DoD Ports & Protocols DB and NIPRNet/CAP DB's to provide integrated view of system and component vulnerabilities across the DoD Networks.

- Designed and tested prototype networks to improve information assurance and information sharing on coalition networks (CCEB, MIC, etc.); developed design criteria for improved "guards" for connection between differing security domains; selected prototype development of high priority guarding solutions; supported technology demonstrations of secure metadata tagging and cross-security domain transfer using metadata tags.

- Improved information assurance and information sharing on coalition networks through the design and development

of a prototype for improving "guards" for connection between differing security domains; researched data and metadata tagging in the cross-security domain; completed the system design and implemented a prototype and software distribution portal for the client-side anonymization system.

- Identified components necessary in establishing a virtualized security data center, developed an initial "Data Center XML" (DCXML) scheme for specifying the structure of a data center configuration, and demonstrated an initial capability to automatically create a rudimentary data center for a DCXML specification.

FY 2006 Plans ($12.347 million):

- Complete development of eMASS into a deployed enterprise information assurance management tool and provide as piloted IA Core Enterprise Service.

- Continue refinement of IA architecture, policy and IA capabilities necessary to support and "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.

- Leveraging work done in FY2004/05, continue experimentation, technology demonstration, prototype and test attribution, anomaly detection, trace-back, CND response action tools, with emphasis on DoD enterprise level application.

- Continue the testing, evaluation and focused piloting of various enterprise CND, vulnerability management and situational awareness tools as they evolve in capability.

- Continue technology demonstrations, piloting and selected research into cross-domain technologies to support information sharing between allies and coalition partners, concentrating on exploring on support of emerging protocols and services and solutions utilizing metadata tagging.

FY 2007 Plans: ($14.856 million)

- Convert eMASS into a Core Enterprise Service information assurance management tool.

- Continue refinement of IA architecture, policy and IA capabilities necessary to support and "end-to-end" IA capability for the GIG – including enterprise services such as discovery, collaboration, messaging, mediation, data tagging, etc. Support technology demonstration, development and pilots focusing functions required in mid-term (2009-2012) increment of the IA Component of the GIG Architecture.

- Continue experimentation, technology demonstration, prototype and test evolving CND/situational awareness, vulnerability management, attribution, anomaly detection, trace back and response tools.

- The DoD Software Assurance Strategy is composed of five elements: prioritization of systems, engineering-in-depth, supplier assurance, science and technology for vulnerability detection and industry outreach. The Engineering-in-depth oversight effort will allow the Defense Information Assurance Program (DIAP) to embed System Assurance Working Integrated Product Team (WIPT) within the most important acquisition programs of the Department to:

  - Assist the program manager in performing EID (review principal Systems Engineering Documents, Designs, etc.);
  - Ensure that Critical Subsystems are identified for supplier assurance and enhanced vulnerability detection;
  - Assist the program manager and Milestone Decision Authority in making risk management decisions involving Supplier threat and vulnerability mitigation.

B. **Program Change Summary:** (Show total funding, schedule, and technical changes for the program element that have occurred
since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	10.495	12.546	12.853
Current President's Budget	11.716	12.347	14.856
Total Adjustments	1.221	-.199	2.003
Congressional program reductions			
Congressional rescissions, Inflation adjustments	-.279	-.199	2.003
Congressional increases			
SBIR/STTR Transfer			
Reprogrammings	1.500		

Change Summary Explanation:
FY 2005: Reprogramming from NSA 1.500 million; SBIR -.237 million; STTR -.028; Atomic Energy -.008 million; WHS reduction -.006 million.
FY 2006: FFRDC -.020 million; Economic Assumptions -.054 million; Rescission -.125 million.
FY 2007: Non-Pay Purchase Inflation .203 million; Software Assurance 1.800 million.

C. **Other Program Funding Summary**:

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
O&M, DW (PE0303140D8Z)	20.681	19.512	16.200	16.097	17.977	17.931	16.935	142.078

D. **Acquisition Strategy**: N/A

E. **Performance Metrics**:

- eMASS fielded and provides data support for FISMA;
- eMASS available as a Core Enterprise Service capability;
- IA Architecture incorporated into supported program plans;
- CND Architecture incorporated into IA Architecture;
- IA Portal prototype fielded and used by DoD IA Community;
- Pilots/technology demonstrations effect IA product development, concepts of operations development, or enterprise license decisions;
- Enterprise licenses for vulnerability patching and operating system wrappers awarded;
- DoD sensors integrated into an Enterprise Sensor Grid;
- Secure data tagging technology advanced;
- CND Response Action tools tested.

Exhibit R-2, RDT&E Budget Item Justification						Date: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide (0400), Budget Activity 7	R-1 ITEM NOMENCLATURE 0305125D8Z/CRITICAL INFRASTRUCTURE PROTECTION (CIP)						
COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	27.260	12.166	12.422	13.090	13.080	13.284	13.519
Critical Infrastructure Protection Project 125	27.260	12.166	12.422	13.090	13.080	13.284	13.519

A. Mission Description and Budget Item Justification

Homeland Security Presidential Directive #7 (HSPD-7), signed by President Bush on 17 December 2003, established national policy for Federal departments and agencies to identify and prioritize U.S. critical infrastructure and key resources and to protect them from terrorist attacks. In September 2003, the Deputy Secretary of Defense transferred oversight of the Defense Critical Infrastructure Program to the Office of the Assistant Secretary of Defense for Homeland Defense.

The Defense Critical Infrastructure Program is an integrated risk management program designed to assure the continuous availability of networked infrastructure assets, whether owned or operated by the Department of Defense or private industry, that are critical to executing military missions. Activities include the identification, assessment, monitoring, and risk management of cyber and physical infrastructure assets critical to the execution of the National Military Strategy.

Effective critical infrastructure protection results from actions taken to prevent, remediate, or mitigate the risks resulting from identified susceptibilities. Risk is managed by balancing probability of threat, impact of loss, and extent of the susceptibility. Depending on the risk, protection actions can include changes in tactics or procedures, added redundancy, selection of other assets to provide a similar service, isolation or hardening, or physically guarding, thus making the affected critical asset a hard target and improving overall critical infrastructure reliability. From an infrastructure protection perspective, this approach enables the achievement of warfighter operational goals through assured continuity of combat support and core Defense business processes, and assists in the restoration of capabilities should a disruption occur.

* Previous funding in the Navy RDT&E.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2006

B. Program Change Summary: Additional funds were reprogrammed to accelerate the development of mission assurance objectives for direct application in the Global War on Terrorism and Enduring Iraqi Freedom theaters as well as enhancing readiness of supporting domestic infrastructure. This acceleration will further the identification, prioritization and management of risk associated with critical assets supporting Department of Defense mission objectives both at home and in forward deployed areas.

COST ($ in Millions)	FY 2005	FY 2006	FY 2007
Previous President's Budget	28.367	11.363	12.229
Current BES/President's Budget	27.260	12.159	12.422
Total Adjustments:			
Congressional program reductions			
Congressional rescissions			
Congressional increases			
Reprogrammings			
SBIR/SSTR Transfer			
Program Adjustment	-1.107	.796	.193

C. Other Program Funding Summary:

COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
O&M,DW 0902198D8Z	10.7	23.3	23.1	11.9	12.0	12.4	12.7

D. Acquisition Strategy: N/A

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2006

E. Performance Metrics:

FY 2005 Performance Metrics

- Conducted Defense Critical Infrastructure Program pilot assessments in coordination with the Joint Staff
- Identified Service assets specific to Department of Defense missions identified by the Combatant Commands
- Developed, coordinated and obtained formal signature of Department of Defense Directive 3020.40, "Defense Critical Infrastructure Program."

FY 2006 Performance Metrics

- Publish a Department of Defense standard methodology to identify critical assets
- Publish infrastructure standards for use by existing assessment programs across Department of Defense
- Implement a self assessment capability based on published infrastructure standards for use by Department of Defense asset owners and industry assets supporting Department of Defense missions

FY 2007 – FY 2011 Performance Metrics

- Develop a risk management methodology to apply to all identified critical assets
- Develop a prioritization methodology to substantiate investment in risk management recommendations
- Perform infrastructure dependency assessments and evaluate results to reduce any recurring susceptibilities

Exhibit R-2a, RDT&E Project Justification						Date: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide (0400), BA 7	PROGRAM ELEMENT 0305125D8Z		PROJECT NAME AND NUMBER CRITICAL INFRASTRUCTURE PROTECTION (CIP)				
COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Critical Infrastructure Protection Project 125	27.260	12.166	12.422	13.090	13.080	13.284	13.519

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 resiliency of defense critical infrastructure, which includes DoD and non-DoD, domestic and foreign infrastructures essential to planning, mobilizing, deploying, executing, and sustaining United States military operations on a global basis. DCIP is directed by the Assistant Secretary of Defense for Homeland Defense [ASD(HD)] and managed by the Director for Critical Infrastructure Protection (CIP). DoD Directive 3020.40, 19 August 2005, establishes policy and assigns responsibilities for the DCIP.

The identification, prioritization, assessment, and assurance of defense critical infrastructure is managed as a comprehensive program that includes the development of adaptive plans and procedures to mitigate risk, restore capability in the event of loss or degradation, support incident management, and protect defense critical infrastructure related sensitive information.

Combatant Commands (COCOMs) are responsible for identifying critical warfighting missions, priorities, capabilities, and forces to meet the National Military Strategy . Service Component Commanders and Military Departments identify and prioritize assets required by COCOMs to execute the critical warfighting missions. 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.

DoD has ten (10) functional areas that provide support to COCOMs, Service Component Commanders, and Military Departments. Each functional area has a Defense Sector Lead Agent as identified in DoDD3020.40. 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-2a, RDT&E Project Justification	Date: February 2006

B. Program Change Summary

	FY 2005	FY 2006	FY 2007
Accomplishment/Subtotal Cost	14.000	5.463	5.343

Understanding Risks Through Analysis and Assessment:

FY 2005: The program has:

- Developed a Department of Defense (DoD) standard methodology to identify critical assets
- Developed standards and benchmarks for DoD infrastructure assessments
- Conducted pilot Defense Critical Infrastructure Program (DCIP) assessments on identified and prioritized critical assets to quantify associated risk as well as validate the standards and benchmarks

FY 2006: The program will:

- Institute a DoD standard methodology to identify critical assets
- Institute standards and benchmarks for DoD infrastructure assessments.
- Develop comprehensive training material to support incorporation of infrastructure assessment standards into existing assessment programs.
- Develop, test, and validate a remote self-assessment tool to provide the Service Component Commanders and the Defense Sectors/Agencies a more responsive, efficient assessment capability.
- Institute standardized DCIP methodology for conducting mission area analysis, foundational infrastructure analysis, and Defense Sector characterization.

FY 2007: The program will:

- Establish a standard risk management methodology to apply to all identified critical assets.

Exhibit R-2a, RDT&E Project Justification	Date: February 2006

	FY 2005	FY 2006	FY 2007
Accomplishment/Subtotal Cost	3.624	1.572	.955

Prepare, Plan and Respond to Incidents:

FY 2005: The program has:

- Responded to mission-focused analysis tasks, quick turn around requests for National Special Security Events, and DCIP community tasks directly supporting the Global War on Terror, Operation Iraqi Freedom and Operation Enduring Freedom.
- Provided an effective response capability to identify potential mission impacts to Department of Defense (DoD) from actual or anticipated events against United States or host nation infrastructure.
- Developed an all-hazards Continuity of Operations (COOP) plan to sustain Defense Critical Infrastructure Program (DCIP) capabilities in the event of a disaster

FY 2006: The program will:

- Respond to mission-focused analysis tasks, quick turn around requests for National Special Security Events, and DCIP community tasks directly supporting the Global War on Terror, Operation Iraqi Freedom and Operation Enduring Freedom.
- Provide an effective response capability to identify potential mission impacts to DoD from actual or anticipated events against U.S. or host nation infrastructure.
- Implement an all-hazards Continuity of Operations (COOP) plan to sustain DCIP capabilities in event of a disaster.
- Institute a monitoring and reporting capability that will improve overall responsiveness to threats associated with DCIP assets.

FY 2007: The program will:

- Perform trend analysis and develop remediation and mitigation options for addressing risks identified as part of the assessment process.
- Support taskings for critical asset or infrastructure data in support of designated National Security Special Events, validated requests from Combatant Commands, and other quick-response taskings.
- Provide an effective response capability to identify potential mission impacts to DoD from actual or anticipated events against U.S. or host nation infrastructure.

Exhibit R-2a, RDT&E Project Justification	Date: February 2006

	FY 2005	FY 2006	FY 2007
Accomplishment/Subtotal Cost	6.051	2.776	3.712

Provide Program Support and Integration:

FY 2005: The program has:

- Developed a monitoring and reporting capability that will improve overall responsiveness to potential threatening situations associated with DCIP assets.
- Provided liaisons to coordinate with other government agencies to further information sharing and leveraging of Critical Infrastructure Protection (CIP) information and capabilities across the homeland security interagency community.
- Provided a liaison focused on establishing cooperative agreements with the international community with related CIP interests relevant to those of the United States DoD.
- Began development of a top-down framework based upon reference standards to address global Enterprise Architecture (EA) to include: Development of a comprehensive EA Strategy to include: appropriate subordinates strategies to implement the EA program; a comprehensive architecture framework; concept papers on EA implementation processes; a Portfolio Management (PfM) process: a Configuration Management and Control (CCM) process; functional and technical process flow templates that map to the Defense Critical Infrastructure Program (DCIP) mission, goals, and objectives; appropriate EA documentation; an EA awareness strategy; and provide Systems Engineering expertise, and Enterprise Architecture expertise.

Exhibit R-2a, RDT&E Project Justification	Date: February 2006

FY 2006: The program will:

- Institute a monitoring and reporting capability that will improve overall responsiveness to potential threatening situations associated with DCIP assets.
- Identify standard data sources for infrastructure data to be used across DoD.
- Determine Education and Training requirements to ensure a cohesive DCIP effort and to accomplish program goals and objectives consistently across the community.
- Develop and implement a responsive Research, Development (R&D) and Technical Integration capability to evaluate the potential for new, technologies to provide added capability and value into the DCIP. This capability will include the development of a formal, requirements-driven process for considering and evaluating technical capabilities, data sets, assessment methodologies and other pertinent activities relevant to DCIP.
- Continue development of a top-down framework based upon reference standards to address global Enterprise Architecture (EA). Develop a comprehensive EA Strategy to include: appropriate subordinates strategies to implement the EA program; a comprehensive architecture framework; concept papers on EA processes; a Portfolio Management (PfM) process: a Configuration Management and Control (CCM) process; functional and technical process flow templates that map to DCIP mission, goals, and objectives; appropriate EA documentation; an EA awareness strategy; and provide Systems Engineering expertise, EA expertise, and support to the OASD(HD) CIP staff, the DCIP EA Working Group, and to the DCIP community, as required.

FY 2007: The program will:

- Develop, leverage, maintain, and enhance tools and data sets based on requirements derived from the DCIP community and the output of assessments performed on the Defense Industrial Base assets.
- Review, validate, prioritize, and develop DCIP concepts focused on concept development for military mission assurance; infrastructure remediations; DCIP assessment tools and methods; operations centers; techniques to respond to infrastructure disruptions; and multi-level security systems for advanced information sharing.
- Integrate identification, prioritization, assessment, and assurance efforts to adequately assess risk to DoD's critical missions. Track the progress of the remediation and mitigation of identified risks.
- Evaluate and prioritize concept development for military remediation; commercial infrastructure mission assurance; DCIP assessment tools and methods; decision support systems; focused operations centers; and response to infrastructure disruptions; and multi-level security systems for advanced information sharing.

Exhibit R-2a, RDT&E Project Justification	Date: February 2006

	FY 2005	FY 2006	FY 2007
Accomplishment/Subtotal Cost	4.692	2.348	2.412

Enable Management Initiatives:

FY 2005: The program has:

- Recommended, drafted, reviewed, and revised documentation associated with the Defense Critical Infrastructure Program (DCIP) and mission assurance policy, strategy, and plans.
- Reviewed and validated DCIP requirements received from the DCIP community
- Begun development of DCIP metrics to ensure that program accomplishments can be measured and reported.
- Overseen the Combatant Commands, Military Services, and Defense Sector responsibilities identified in DoD Directive 3020.40.

FY 2006: The program will:

- Review and validate DCIP requirements received from the DCIP community
- Establish, implement, and manage appropriate DCIP metrics to ensure that program accomplishments can be measured and reported.
- Track assessment, remediation, and mitigation efforts for DCIP to enable a value-added determination based on increased protective measures put in place.
- Oversee the Combatant Commands, Military Services, and Defense Sector responsibilities identified in DoD Directive 3020.40.

FY 2007: The program will:

- Review and validate DCIP requirements received from the DCIP community.
- Establish, implement, and manage appropriate DCIP metrics to ensure that program accomplishments can be measured and reported.
- Track assessment, remediation, and mitigation efforts for DCIP to enable a value-added determination based on increased protective measures put in place.
- Oversee the Combatant Commands, Military Services, and Defense Sector responsibilities identified in DoD Directive 3020.40.

Exhibit R-2a, RDT&E Project Justification	Date: February 2006

C. Other Program Funding Summary: DCIP O&M funding is allocated to the Combatant Commands, Military Services, and Defense Sectors/Defense Agencies. This funding will be used by these organizations to identify critical assets supporting DoD missions using the standard methodology developed through DCIP, assessing these identified critical assets to identify critical infrastructure support, and the performance of risk management activities associated with these assessed assets.

COST ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
O&M,DW 0902198D8Z	10.7	23.3	23.1	11.9	12.0	12.4	12.7

D. Acquisition Strategy: N/A

E. Major Performers: N/A

Exhibit R-2, RDT&E Budget Item Justification						Date February 2006		
Appropriation/Budget Activity RDT&E Defense-Wide, BA 7				R-1 Item Nomenclature: Net Centricity PE 0305199D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		124.376	8.254	8.746	10.585	13.096	1.535	30.920
Horizontal Fusion		116.992	0.000	0.000	0.000	3.081	0.000	20.211
GIG Evaluation Facilities (GIG-EF) and GIG End-to-End Systems Engineering Advisory Activities		7.384	8.254	8.746	10.585	10.015	1.535	10.709

A. Mission Description and Budget Item Justification:

This program element will support information management and information technology activities focused on the development, integration, testing and assessment of capabilities and applications in support of joint and coalition warfighter needs. Resources will support net centric collaborative development and operations to improve situational awareness, interoperability and operational planning efforts. This program is funded under Budget Activity 7, Operational System Development, because it supports engineering development and testing of RDT&E activities.

The Horizontal Fusion Project funding in FY 2006 and FY 2007 was realigned by the Department to support priority net centric transformation efforts such as information assurance, Multinational Information Sharing and Internet Protocol (IP) based capability into military communications satellites.

B. **Program Change Summary:** (Show total funding, schedule, and technical changes for the program element that have occurred since the previous President's Budget Submission)

	FY 2005	FY 2006	FY 2007
Previous President's Budget	128.233	8.387	12.548
Current President's Budget	124.376	8.254	8.746
Total Adjustments	-3.857	-.133	
Congressional program reductions			
Congressional rescissions, inflation adjustments	-3.857	-.133	-3.802
Congressional increases			
Reprogrammings			
Transfer			
Program Increase			

Program Change Summary Explanation:
FY 2005: SBIR -3.288 million; STTR -.395 million; Atomic Energy -.100 million; WHS reduction -.074 million.
FY 2006: FFRDC -.013 million; Economic Assumptions -.036 million; Rescission -.084.
FY 2007: Non-Pay Purchase Inflation 198 million; Reduction Net Centricity -4.000 million.

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: N/A

E. Performance Metrics:

1. User Activity and Participation. A key measurement of GIG-EF success is the amount of participation and usage of the GIG-EF in support of Joint warfighting requirements. Performance metrics in this area would include:
   - Number of events, tests and experiments scheduled
   - Percentage of GIG-EF time active vs. idle
   - Total amount of in-kind funding from GIG developers and activities
   - Aggregate funding per test
   - Number of service and user participants in tests (jointness)

2. Contributions to GIG development and transition. The GIG-EF should also advance the state of the art in support of GIG implementation.
   - Number of independent test reports and limited objective experiments support major GIG architectural issues (IA, IPv6/MPLS, Routing, etc.)
   - Number of demonstrations in support of major GIG architectural issues (IA, IPv6, Routing, etc.)

3. Risk mitigation for the GIG.
   - Demonstrations in support of GIG overall goals (ex: IPv6 by FY 2008, 10 Gb Optical HAIPE by FY 2007, etc.)
   - Number of GIG E2E Systems Engineering Oversight working group requirements addressed via GIG-EF demonstration, experimentation and testing.

4. Tangible products such as frameworks and design guidance used for program assessments and reviews.

5. Specific modifications to Programs based on the frameworks and guidance that improve program compatibility and end to end performance.

6. A more collaborative environment where systems engineering organizations of individual GIG programs and the end to end systems engineering oversight organization mutually identify and solve issues related to maximizing end to end performance

Exhibit R-2a, RDT&E Project Justification								Date: February 2006
Appropriation/Budget Activity RDT&E, Defense-Wide, BA 7				Project Name and Number: Horizontal Fusion/0305199D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Name: Horizontal Fusion		116.992	0.000	0.000	0.000	3.081	0.000	20.211
GWOT - Horizontal Fusion		6.300	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification:

The Secretary of Defense approved the establishment of the Horizontal Fusion Portfolio as one of his top ten priorities to make net-centric operations and warfighting a near-term operational reality consistent with the vision of force transformation. The Horizontal Fusion program also supports activities focused on the development, integration, testing and assessment of net centric capabilities, including those Information Assurance R&D activities necessary to implement the IA component of the GIG architecture essential to the transformation of the GIG. The participants that make up the Horizontal Fusion portfolio are primarily existing programs of record, which require strict procurement and requirements control under traditional acquisition policy. The Horizontal Fusion portfolio maximizes these ongoing efforts by integrating existing capabilities and, therefore, leveraging the DoD's resources while accelerating their inclusion in the net-centric environment. The selection for participation in the HF portfolio is based on 1) highest priority programs for net-centric joint warfighting (to include coalition and allied efforts) and GIG transformation on 2) time and cost to implement 3) the Joint Forces Command matrix of required capabilities to meet near-term joint warfighting conops and 4) the requirements of the IA component of the GIG architecture. Today, the US Army in Iraq is using tools developed as part of the Horizontal Fusion portfolio, such as the unattended ground sensor arrays. These acoustic sensors successfully locate mortars used to fire on US troops. These capabilities were demonstrated as part of the Army Research Lab's (ARL) Warrior's Edge project within the Horizontal Fusion Portfolio prior to being used in Iraq. Other HF operational capabilities, such as the acoustic sensor, are under development within the HF portfolio. Further, Horizontal Fusion provides for the practical net-centric implementation of interoperability and information assurance required to achieve the Secretary's vision of transformation. It is a critical element in the successful implementation of the GIG architecture (and its IA component), Net-Centric Enterprise Services (NCES), DoD Data Management Strategy (DDMS) and the services oriented architecture for Information Assurance (IA). These programs support the idea of accelerating, "Revolutionary technologies that 'change minds' and ways of doing things.

B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost		116.992	0.000	0.000
RDT&E Articles Quantity *(as applicable)				

FY 2005 Accomplishments: ($116.992 million)

FY 2005 efforts will focus on implementation of net centric capabilities and processes directly to the warfighter and analysis of the operational baseline. As a result of funding constraints, no additional initiatives will be added to the horizontal fusion portfolio to further expand net centric capability. In addition, operational support to the existing portfolio will be curtailed.

- Transitioned HF demonstrated capabilities to operations by supporting the deployed forces of the XVIII ABC and OED community.
- Continued the net-centric implementation of GIG architecture.
- Continued the implementation and development of the IA component of the GIG architecture.
- Coordinate with Combatant commanders for their attaching to "the net."
- Located and incorporated the additional operationally relevant information sources (both tactical and national for bi-lateral information sharing).
- Continued to refine the HF environment and services (i.e., Collaboration tool suite interoperability).
- Transitioned the next generation of NCES pilot services to operational enterprise infrastructure.
- Leveraged the GIG Bandwidth expansion to refine information sharing and net-centric processes.
- Investigated and incorporated, as appropriate, multiple end users platforms (low end – palm computing to high-end desktops and servers).
- Continued to address and streamline security policy/certification and accreditation implementation with evaluation and testing of security technologies emphasizing cross-domain information exchange.
- Addressed the tactics, techniques and procedures for net-centric operations within the Service schools and exercises.
- Continued to evaluate the parameters of the physical and logical edge of tactical data environments.

FY 2006 Plans: ($0.000 million)

N/A

FY 2007 Plans: ($0.000 million)

N/A

C. Other Program Funding Summary:

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Total Cost
O&M, DW (PE0902198D8Z)	5.909	0.000	0.000	0.000	0.000	0.000	0.000	5.909
Proc, DW (PE 0902199D8Z)	10.102	0.000	0.000	0.000	0.000	0.000	0.000	10.102

D. Acquisition Strategy. N/A

E. Major Performers: None

Exhibit R-2a, RDT&E Project Justification							Date: February 2006	
Appropriation/Budget Activity RDT&E, Defense-Wide, BA 7				Project Name and Number: GIG-EF/PE 0305199D8Z				
Cost ($ in millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Name: GIG Evaluation Facilities (GIG-EF) & GIG End-to-End SE Advisory Activities		7.384	8.254	8.746	10.585	10.015	1.535	10.709

A. Mission Description and Budget Item Justification:

The Global Information Grid (GIG) Evaluation Facilities and E2E Systems Engineering (SE) Advisory Activities project provides resources needed to test key systems in an end-to-end manner, including providing for system engineers, test-bed hardware, software and fiber optic connectivity at the Naval Research Laboratory and several other test locations in the U.S. The evaluation facilities will be used to demonstrate interoperability of multiple Transformational Communications programs including but not limited to the Joint Tactical Radio System (JTRS), Global Information Grid Bandwidth Expansion (GIG BE), Teleports, and Transformational Satellite Communications System (TSAT). For these systems GIG-EF & SE would:

-Perform tests that physically demonstrate technical performance.
-Provide an independent, overarching review of technology and interface standards.
-Ensure technical issues are identified early and schedules synchronized to produce a jointly interoperable, timely and cost-effective architecture development.
-Prevent costly program reworks and restructuring, and more importantly, avoid delays in providing joint warfighter connectivity.

The effort also provides engineering, integration and hardware and fiber optic connectivity necessary to validate the performance for key transformational communication programs. The funding will also provide the engineering resources necessary for performing the Global Information Grid (GIG) end-to-end systems engineering oversight function. Resources will be applied to end-to-end systems engineering topics related to the successful integration of several programs that will form the GIG in areas such as information assurance (IA), quality of service (QOS), network management, interface definition and standards selection, and routing protocols. These resources will work in conjunction with systems engineers from key GIG programs such as the Joint Tactical Radio System (JTRS), Transformational Satellite Communications System (TSAT), Teleport, GIG Bandwidth Expansion (GIG-BE), Warfighters Internet-Tactical (WIN-T), Net-Centric Enterprise Services (NCES) and Automated Digital Networking System (ADNS) to identify and address technical issues resulting from engineering decisions made without the end-

to-end perspective.

B. Accomplishments/Planned Program

		FY 2005	FY 2006	FY 2007
Accomplishment/ Effort/Subtotal Cost		7.384	8.254	8.746
RDT&E Articles Quantity *(as applicable)				

FY 2005 Accomplishments: ($7.384 million)

- Developed the first increment of the GIG end to end quality of service framework
- Worked with NSA to complete the GIG IA architecture
- Developed the first increment of the end to end GIG routing architecture
- Reviewed WIN-T, ADNS, JTRS Cluster One, and GIG-BE for compliance to end to end GIG frameworks, architectures, and design guidance
- Worked with systems engineering organizations from GIG programs to identify and address cross-program issues and influence programs to implement compatible designs that maximize end to end performance
- Established GIG-EF capabilities providing interoperability and connectivity to support OC-192 (10 Gb) end-to-end testing among key GIG transport program activities and OC-48 connectivity to Service (WIN-T, FORCENET, MC2, etc.), Combatant Command (JFCOM, STRATCOM, etc.) and other GIG activities (JTRS, Teleport, etc.) to ensure programs meet GIG architectural requirements.
- Developed and maintained a testing suite capable of supporting passive and active IP monitoring and injection of GIG-like traffic and hostile attacks
- Performed end-to-end testing and experimentation in support of GIG developer requirements including but not limited to:
    - JTRS Wideband Networking Waveform early testing (Cluster 2)
    - High Assurance IP Encryption (HAIPE) 1-10 Gb Terrestrial
    - Support warfighting interoperability experimentation via the Joint Rapid Architecture Experimentation (JRAE) and US Joint Forces Command (USJFCOM) Joint Battle Management C2 (JBMC2) Activity including Quality of Service, efficient routing and scalability
    - DoD IPv6 Transition (pilot programs)
    - Joint C2, applications and platform testing activities such as JITC

FY 2006 Plans: ($8.254 million)

- Develop the second increment of the GIG end to end quality of service framework
- Work with NSA to complete the GIG IA architecture
- Develop the second increment of the end to end GIG routing architecture
- Complete the end to end GIG network management framework
- Review E-10A, JTRS Cluster Five, FAB-T, WGS, and Teleport for compliance to end to end GIG frameworks, architectures, and design guidance
- Work with systems engineering organizations from GIG programs to identify and address cross-program issues and influence programs to implement compatible designs that maximize end to end performance
- Continued support of GIG-EF capabilities and enhancements via connectivity to Allied and Coalition activities and operational networks.
- Perform end-to-end testing and experimentation in support of GIG developer requirements including but not limited to:
    - JTRS WNW (Cluster 5 and early Cluster 1)
    - HAIPE 10 Gb implementation
    - HAIPE 10 Gb Optical Encryptors early testing
    - Netcentric Core Enterprise Services early testing
    - DoD IPv6 experimentation and transition
    - Support warfighter interoperability experimentation via JRAE tests in coordination with USJFCOM JBMC2 activities
    - Joint C2, applications and platform testing activities such as JITC

FY 2007 Plans: ($8.746 million)

- Ensure the GIG end to end quality of service framework evolves in accordance with the evolution of commercial products, services, and technology
- Refine the GIG IA, routing architecture, and network management framework to be consistent with evolving commercial products, services, and technology

- Review JTRS Cluster AMF, TSAT, JC2, and NCES for compliance to end to end GIG frameworks, architectures, and design guidance
- Work with systems engineering organizations from GIG programs to identify and address cross-program issues and influence programs to implement compatible designs that maximize end to end performance
- Analyze end to end systems engineering issues by review technical documentation, working with the systems engineering organizations of each of the programs, employing modeling and simulation, and using the results of end to end systems engineering testing and influence design changes to programs to assure compatibility and to maximize end to end performance
- Continued support of GIG-BE capability. Develop initial 40 Gb connectivity among DoD testing components (GIG-BE, TSAT, Teleports) and inter-connectivity to key GIG development sites including capability to support Inter-agency end-to-end testing with DoD, Intelligence Community, Allied and Coalition activities.
- Design and test upgrade to testing suites to support 40 Gb networks
- Perform testing in support of GIG developer requirements including but not limited to:
    - IPv6 transition final testing
    - JTRS WNW end-to-end testing in support of Cluster 5 (spiral 2), AMF.
    - 40 Gbps IPv6/MPLS experimentation and testing including early HAIPE concept development
    - Support NCES spiral development
    - Continued support of end-to-end warfighter interoperability experimentation via JRAE tests in coordination with USJFCOM JBMC2 activities

  Joint C2 applications and platform testing activities such as JITC

C. Other Program Funding Summary: N/A

D. Acquisition Strategy. N/A

E. Major Performers: Naval Research Laboratory, SPAWAR Systems Center San Diego, MIT Lincoln Laboratories, NSA, DISA, and MITRE.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 7	**1001018D8Z - NATO Alliance Ground Surveillance (AGS)**

	Cost ($ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
	Total Program Element (PE) Cost	25.300	25.068	41.670	53.230	57.504	62.667	72.821
P018	NATO Alliance Ground Surveillance (AGS)	25.300	25.068	41.670	53.230	57.504	62.667	72.821

A. Mission Description and Budget Item Justification: (U) This project supports the U.S. share of the cost for NATO to acquire a ground surveillance capability similar to what their owned and operated Airborne Warning and Control System (AWACS) provides for air surveillance.

(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
- 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, CNAD endorsed the Trans-Atlantic Industrial Proposed Solution consortium's selection as the program of record to enter the Design and Development Phase. The TCAR team was directed to merge with the AGS program.

(U) In May 2004, the NATO AGS Steering Committee approved an updated Master Schedule supporting a 2010 Initial Operating Capability (IOC) with Full Operational Capability (FOC) by 2013. A Risk Reduction Study (RRS) was completed in November 2005. The RRS provides 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 Transatlantic Cooperative AGS Radar (TCAR); and affordability.

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)			
Current BES/President's Budget (FY 2007)	25.300	25.068	41.670
Total Adjustments	25.300	25.068	41.670
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases			
Reprogrammings			

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE
RDT&E/ Defense Wide BA# 7	**1001018D8Z - NATO Alliance Ground Surveillance (AGS)**

SBIR/STTR Transfer			
Other			

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Not Applicable.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 7	**1001018D8Z - NATO Alliance Ground Surveillance (AGS)**	**P018**

Cost ($ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
P018	NATO Alliance Ground Surveillance (AGS)	25.300	25.068	41.670	53.230	57.504	62.667	72.821

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B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
	225.300	0.000	0.000

(U) FY 2005 Plans:
Program Activities:

- Execute the initial stages of the Procurement Strategy
- Staff the Design and Development MOU
- Prepare the Design and Development contract
- Develop the SOW for the Design and Development phase
- Complete the RFP for the Design and Development phase

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 7	**1001018D8Z - NATO Alliance Ground Surveillance (AGS)**	**P018**

- Complete the Risk Reduction Study
- Secure additional funding based on establishing an executable program
- Continue interoperability efforts with the Joint STARS and ASTOR programs
- Participate in AGS Steering Committee and TCAR Executive Committee meetings

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
	0.000	25.068	0.000

(U) FY 2006 Plans:

Program Activities:

- Execute Design and Development contract
- Participate in affordability and technical Working Groups.
- Improve and expand NATO alliance relationships relative to the industrial co-development.
- Ensure ministerial support for AGS continues
- Oversee integration testing and design work putting the TCAR radar onto the manned and unmanned platforms
- Oversee design and integration work on the ground elements of the AGS system
- Secure Congressional approval to enter into the MOU and sign Design and Development contracts

Accomplishment/Planned Program Title	FY 2005	FY 2006	FY 2007
	0.000	0.000	41.670

(U) FY 2007 Plans:

T&E Independent Activities:

- Provide for a professional user interface to the NATO AGS program office
- Provide radar engineers to the AGS program office
- Continue executing Design and Development Phase.
- Participate in technical and operational Working Groups.
- Improve and expand industry and professional association with NATO allies
- Address Congressional, GAO, IG Actions regarding program issues as they arise
- Ensure effective oversight of the program is provided by continuing to participate in the AGS Steering Committee

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy Pending Department and Congressional approval, the U.S. will sign a Multi-national Memorandum of Understanding (MMOU) committing the government to NATO-derived shares of the Design and Development Phase in 2005. The MMOU will support the contract and acquisition strategy now under development at the NATO AGS Support

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2006

APPROPRIATION/ BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
RDT&E/ Defense Wide BA# 7	**1001018D8Z - NATO Alliance Ground Surveillance (AGS)**	**P018**

Staff in Brussels. FY 2005 funds will fund the U.S. share of a NATO AGS Risk Reduction Study.

E. Major Performers Not Applicable.