

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**06030000D8Z - Insensitive Munitions Advanced Technology**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	0.000	6.000	16.000	21.000	18.000	23.000	25.000
P300 Insensitive Munitions AT	0.000	0.000	6.000	16.000	21.000	18.000	23.000	25.000

**A. Mission Description and Budget Item Justification:** (U) This program addresses advanced technology development associated with improving the lethality, reliability, safety and survivability of munitions and weapon systems. The goal is to develop joint enabling technologies that can be used by the Program Managers as they develop their specific weapon programs. The program invests in and demonstrates technologies from a Joint Service perspective thus insuring the development of technology with the broadest applicability.

(U) This effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions (IM) requirements established in Title 10, United States Code, DoDI 5000.1, and CJCSI 3170.01C. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the Program Executive Office IM Strategic Plans. In this way promising formulations, ingredients, case technologies, liners and coatings can be integrated into a munition configuration and its ability to improve the IM response can be validated. Program Managers can then transition mature demonstrated IM technology, decreasing their program costs and schedule risk, and hopefully facilitating their spin-off into other non-compliant munitions within their portfolios.

<b>B. Program Change Summary</b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)				
Current BES/President's Budget (FY 2008/2009)	0.000	0.000	6.000	16.000
Total Adjustments	0.000	0.000	6.000	16.000
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			6.000	16.000

**C. Other Program Funding Summary:** Not Applicable.

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**06030000D8Z - Insensitive Munitions Advanced Technology**

**D. Acquisition Strategy:** Not Applicable.

**E. Performance Metrics:** Not Applicable.

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**06030000D8Z - Insensitive Munitions Advanced Technology**PROJECT  
**P300**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P300 Insensitive Munitions AT	0.000	0.000	6.000	16.000	21.000	18.000	23.000	25.000

**A. Mission Description and Project Justification:** This RDT&E effort will demonstrate enabling technologies needed to develop weapons in compliance with Insensitive Munitions (IM) requirements established in Title 10, United States Code, DoDI 5000.1, and CJCSI 3170.01C. This effort will take promising technologies demonstrated at the laboratory scale and transition them into demonstration programs utilizing generic hardware based on priority munitions identified in the Program Executive Office (PEO) IM Strategic Plans. PEOs can then transition mature demonstrated IM technology, decreasing their program costs and schedule risk, and hopefully facilitating spin-offs to other non-compliant munitions within their portfolios.

**B. Accomplishments/Planned Program:**

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Insensitive Munitions Advanced Technology Development	0.000	0.000	6.000	16.000

**FY2008 Plans:** Using PEO IM Strategic Plans, identify candidate munitions configurations for generic IM testing. Design and manufacture generic hardware for utilization in technology demonstration tests. Fabricate a generic small diameter rocket motor to demonstrate minimum smoke rocket motor technology which may include new propellant formulations, coatings or case design concepts. Fabricate a generic artillery round to demonstrate blast/fragmentation warhead technology which may include new energetic ingredients and binders, novel formulations, liners and coatings or case design concepts. Fabricate a generic 1st generation anti-armor warhead to demonstrate anti-armor technology which may include new energetic ingredients and binders, novel formulations, liners and coatings or case design concepts. Conduct coordinated test programs which demonstrate the range of effectiveness of these new IM technologies against the IM threats of slow and fast heating, bullet and fragment impact, sympathetic reaction, and shaped charge jet impact.

**FY2009 Plans:** In FY2009, in addition to those efforts already underway, fabricate a generic small diameter rocket motor to demonstrate high performance rocket motor technology which may include new propellant formulations, coatings or case design concepts. Demonstrate large caliber gun propulsion technology which may include novel ingredients or formulations, case designs, or liners and coatings. Demonstrate the use of a reactive liner concept in a generic blast/fragmentation warhead concept. Conduct coordinated IM test programs which demonstrate the range of effectiveness of these new technologies against the IM threats of slow and fast heating, bullet and fragment impact, sympathetic reaction, and shaped charge jet impact.

**C. Other Program Funding Summary:** Not Applicable.

**D. Acquisition Strategy:** Not Applicable.

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**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

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PE NUMBER AND TITLE

**06030000D8Z - Insensitive Munitions Advanced Technology**

PROJECT

**P300**

**E. Major Performers** Not Applicable.

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603002D8Z - Medical Advanced Technology**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	1.094	0.000	0.000	0.000	0.000	0.000	0.000
P506 Medical Advanced Technology	0.000	1.094	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><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	0.000	0.000	0.000	0.000
Current BES/President's Budget (FY 2008/2009)	0.000	1.094	0.000	0.000
Total Adjustments	0.000	1.094	0.000	0.000
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other		1.094		

**C. Other Program Funding Summary:** Not Applicable.

UNCLASSIFIED

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603002D8Z - Medical Advanced Technology</b>	
<p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Performance Metrics:</u></b> Not Applicable.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 2			PE NUMBER AND TITLE <b>0603002D8Z - Medical Advanced Technology</b>						PROJECT <b>P506</b>									
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P506      Medical Advanced Technology	0.000	1.094	0.000	0.000	0.000	0.000	0.000	0.000										
<p><b><u>A. Mission Description and Project Justification:</u></b> 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.</p> <p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Congressional Add</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">1.094</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> </tr> </table> <p style="margin-top: 10px;">These resources will be transfered to Health Affairs for program execution.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Congressional Add	0.000	1.094	0.000	0.000
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
Congressional Add	0.000	1.094	0.000	0.000														

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APPROPRIATION/ BUDGET ACTIVITY  
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PE NUMBER AND TITLE

**0603121D8Z - SO/LIC Advanced Development**

Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost		44.883	35.670	32.669	32.896	32.478	33.100	33.617	34.135
P206	Explosive Ordnance Disposal/Low-Intensity Conflict/P206	11.954	9.382	7.350	7.401	7.308	7.448	7.564	7.680
P207	Special Reconnaissance Capabilities/P207	27.202	22.295	20.092	20.232	19.974	20.357	20.674	20.993
P208	Information Dissemination Concepts/P208	5.727	3.496	3.103	3.125	3.085	3.145	3.194	3.243
P209	Irregular Warfare Support (AWS)/P209	0.000	0.497	2.124	2.138	2.111	2.150	2.185	2.219

**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 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. Program Change Summary**

FY 2006

FY 2007

FY 2008

FY 2009



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PE NUMBER AND TITLE

**0603121D8Z - SO/LIC Advanced Development**

Previous President's Budget (FY 2007)	34.529	35.021	31.589	32.514
Current BES/President's Budget (FY 2008/2009)	44.883	35.670	32.669	32.896
Total Adjustments	10.354	0.649	1.080	0.382
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases	11.900			
Reprogrammings				
SBIR/STTR Transfer				
Other	-1.546	0.649	1.080	0.382

**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
06						
07						
08						

Comment: Performance Metrics:

SO/LIC Advanced Development - PE 0603121D8Z; Explosive Ordnance Disposal &amp; 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.

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<p>Performance Indicator and Rating:</p> <p>FY 2005 Target:</p> <ul style="list-style-type: none"><li>• 70% of currently funded research projects completed on time and within budget</li><li>• 5% increase in the number of research projects accepted</li><li>• Complete 90% of scheduled R&amp;D tasks</li></ul> <p>FY 2005 Rating: ON TARGET</p> <p>FY 2006 Target:</p> <ul style="list-style-type: none"><li>• 70% of currently funded research projects are completed on time and within budget</li><li>• 5% increase in the number of research projects accepted</li><li>• Transition scheduled projects to user communities</li></ul> <p>FY 2007 Target:</p> <ul style="list-style-type: none"><li>• 70% of currently funded research projects are completed on time and within budget</li><li>• 5% increase in the number of research projects accepted</li></ul> <p>Basis of FY 2005 to Date Performance Rating:</p> <p>Currently the number of funded research projects are on track to be completed per the target.</p> <p>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.</p> <p>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 ordnance; enable sustained information operations in denied areas; and contribute to resolution of hostile, unconventional conflicts.</p>		

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)							Date: February 2007		
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P206</b>				PROJECT <b>P206</b>		
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P206	Explosive Ordnance Disposal/Low-Intensity Conflict/P206	11.954	9.382	7.350	7.401	7.308	7.448	7.564	7.680
<p><b><u>A. Mission Description and Project Justification:</u></b> 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).</p>									
<p><b><u>B. Accomplishments/Planned Program:</u></b></p>									
Accomplishment/Planned Program Title					FY 2006	FY 2007	FY 2008	FY 2009	
2006 Accomplishments					11.954	0.000	0.000	0.000	
FY 2006 Accomplishments: Delivered a Special Operations Explosive Methods of Entry Planning software package to support tests and evaluations. Transitioned to a formal acquisition plan final prototypes of the Combatant Diver Display Mask (CDDM) systems. Successfully completed an operational test and evaluation of the Augmented Reality Visualization of the Common Operational Picture (ARVCOP) navigational aid, installed upon both operational and experimental craft. Delivered an improved portable X-ray capability to support port mortuary operations. Transitioned a digital camera/X-ray combination, which enhances EOD targeting capability for the currently fielded portable X-ray system to commercial production. Completed field-testing of a prototype remote firing system. Transitioned a rugged, miniaturized Universal Shock Tube Initiator (USTI) that supports initiation of standard military and commercial shock tubes from currently available remote firing devices and robotic platforms to commercial production. Conducted initial assessment of a second generation improved Launch Platform Boat Ramp, installed on an 11meter Rigid Hull Inflatable Boat (RHIB) boat to be used for recovery of current and future assets to include smaller vessels, unmanned underwater vehicles and mammal systems. Transitioned an improved armor solution that provides ricochet protection against 7.62mm ball ammunition at reduced weight to a formal acquisition program. Developed and delivered an initial prototype limpet mine removal tool that removes neutralized limpet mines from a ships hull for testing. Developed and delivered the Improved Underwater Demolition Charge for a formal acquisition plan. Completed final testing and evaluation of a low cost tactical/training projectile for the Mk 40 Mod 0 Disrupter.									
Accomplishment/Planned Program Title					FY 2006	FY 2007	FY 2008	FY 2009	
FY 2007 Plans:					0.000	9.382	0.000	0.000	
FY 2007 Plans: Conduct initial assessment of an unmanned aerial vehicle with a hover capability to support EOD combat operations. Conduct field evaluation and transition to commercial production a low cost unmanned ground vehicle. Conduct initial testing of a prototype high power ordnance and IED standoff laser disruption system. Conduct initial assessment of an IED detection system. Deliver Navy Ship Hull database/software system for operational use in underwater hull searches. Conduct initial assessment of a laser aiming device for the Mk 40 Mod 0 and PAN Standoff Disrupters. Deliver transition plan for low cost tactical/training projectile for the Mk 40 Mod 0 Disrupter to support production. Conduct comparative tests and evaluations of several candidate active thermal protective garments. Transition a suite of modular integrated displays for full face masks for use with various EOD chemical protective masks and the EOD bomb suit to a Program Office for acquisition. Transition an improved linear shape charge container that is effective against a variety of target materials in multiple environments to an acquisition program. Transition a second-generation improved launch platform boat ramp that									

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P206</b>			PROJECT <b>P206</b>
<p>is installed on an 11meter Rigid Hull Inflatable Boat (RHIB) for recovery of current and future small watercraft, unmanned underwater vehicles and mammals to production. Transition an improved underwater lift balloon system to commercial production. Conduct initial assessment of a prototype suite of sensors that fuse data from multiple sensors to detect hostile forces through foliage and other obscurants. Conduct initial assessment of an enhanced armor solution that provides protection against 7.62mm armor piercing ammunition. Develop and deliver a prototype Marine mammal expeditionary environmental control pen that will house six dolphins in a climate controlled water enclosure and is capable of being rapidly deployed. Deliver a Special Weapons Observation Reconnaissance and Direct Action System (SWORDS), weaponized robotic platform for operational tests and evaluations. Develop and deliver a prototype disposable reduced hazard initiator that uses low energy exploding foil initiator (LEEFI) technology for operational tests and evaluations. Develop an integrated dual US/UK modem interpreter to support underwater networking of sensors and vehicles in littoral regions. Develop two (2) prototype self developing X-ray film candidates to replace the currently used two-part wet film. Develop an 11-meter Rigid Hull Inflatable Boat (RHIB) launch and recovery from LPD/LSD ships stern gate. Deliver a prototype ordnance penalty simulator to support initial assessments during student exercises at the Naval Explosive Ordnance Disposal School.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
FY 2008 Plans:	0.000	0.000	7.350	0.000
<p>FY 2008 Plans: Deliver a hovering unmanned aerial vehicle with improved sensors for IED detection to conduct operational tests and evaluations. Conduct operational tests for a suite of sensors that fuse data from multiple sensors to detect hostile forces through foliage and other obscurants and transition to a Program Office for formal acquisition. Deliver an improved high power ordnance and IED standoff laser disruption system to support operational tests and evaluations. Complete upgrades identified during initial prototype testing and deliver a Marine mammal expeditionary environmental control pen system and support formal acquisition planning. Complete development and deliver disposable reduced hazard initiators for operational tests and evaluations. Deliver prototype dual US/UK modem interpreter for initial operational tests and evaluations. Conduct initial prototype testing of a first generation self developing X-ray film. Conduct initial prototype testing of an 11-meter Rigid Hull Inflatable Boat (RHIB) launch and recovery from LPD/LSD ships stern gate. Finalize design and deliver ordnance penalty simulator system.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
FY 2009 Plans	0.000	0.000	0.000	7.401
<p>FY 2009 Plans: Deliver final dual US/UK modem interpreter for operational tests and evaluations. Conduct comparative testing of two (2) prototype self-developing X-ray film candidates. Deliver 11-meter Rigid Hull Inflatable Boat (RHIB) launch and recovery from LPD/LSD ship stern gate for operational tests and deliver transition plan. Deliver to a Program Office for formal acquisition the final configuration of the disposable reduced hazard initiator to support operational tests and evaluations.</p>				
<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p>				
<p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p>				
<p><b><u>E. Major Performers</u></b> Not Applicable.</p>				

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007																			
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P207</b>					PROJECT <b>P207</b>																				
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013																				
P207      Special Reconnaissance Capabilities/P207	27.202	22.295	20.092	20.232	19.974	20.357	20.674	20.993																				
<p><b><u>A. Mission Description and Project Justification:</u></b> 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.</p>																												
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2006</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2007</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2008</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">FY 2006 Accomplishments: The SRC Program</td> <td style="text-align: right; padding: 5px;">27.202</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> </table> <p style="padding: 5px;">FY 2006 Accomplishments: The SRC Program provided technology support to GWOT to include variants of unattended ground sensor prototypes as well as tag prototypes for maritime and ground persistent surveillance missions with associated technology training. Assessed, evaluated, and initiated the integration of various sensor, tag, and optical capabilities for end-to-end operations in concert with user CONOPS. Initiated a program to develop a sensor-less visible camera system. Continued 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. Completed the preliminary design of the remote sensor controller that reduces the form factor and improves the power management. Began to integrate air droppable capabilities to the remote sensor camera controller and unattended ground sensors. Initiated a sensor/tag aerial delivery system. Assessed and began integration of an improved day, starlight, 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 SR technology to operational community.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2006</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2007</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2008</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">2007 Plans</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">22.295</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> </table> <p style="padding: 5px;">FY 2007 Plans: Integrate new micro sensors into prototype remoted, 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</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2006 Accomplishments: The SRC Program	27.202	0.000	0.000	0.000	<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	2007 Plans	0.000	22.295	0.000	0.000
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009																								
FY 2006 Accomplishments: The SRC Program	27.202	0.000	0.000	0.000																								
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009																								
2007 Plans	0.000	22.295	0.000	0.000																								

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>				Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3		PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P207</b>			PROJECT <b>P207</b>
operator training exercises to vet tactics, techniques and procedures for employment. Continue operational assessment of an airborne interrogator-transponder prototype 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. Deliver several prototypes of a sensor-less visible camera system and begin integrating night capabilities. 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.					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
2008 Plans		0.000	0.000	20.092	0.000
FY 2008 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 the following projects: 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; to engage the research and development community for technical solutions and candidate technologies to improve DoD SR mission capabilities; to 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; to insert operationally capable prototypes into operator training exercises to vet technologies and to develop tactics, techniques and procedures for employment; to 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; to integrate improved SR data infiltration and exfiltration capabilities though the development and integration of advanced technology and new communications links; to perform field evaluations of selected SR technologies and document results in on-line SRC knowledgebase; and to support cooperative projects with DoD and OGA to accelerate the transition of advanced SR technologies to operational community.					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
2009 Plans		0.000	0.000	0.000	20.232
FY 2009 Plans: Insert operationally capable prototypes into operator training exercises to vet technologies and new develop tactics, techniques and procedures for 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 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 mini and micro maturing technologies; research, evaluate and integrate enhanced tagging and sensing capabilities to extend mission life and standoff emplacement; integrate extended life mission sensors, micro optics, fingerprinting, emerging precise location technologies, and improved netted SR data infiltration and exfiltration capabilities; research, evaluate and integrate emerging netted sensor technologies into remoted capabilities; perform field evaluations of selected SR technologies and document results in on-line SRC knowledgebase; and support cooperative projects with the DoD and OGA Intelligence Agencies to accelerate the transition of advanced R&S technology to operational community.					
<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p>					

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P207</b>	PROJECT <b>P207</b>
<p><u>E. Major Performers</u> Not Applicable.</p>		

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)							Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P208</b>				PROJECT <b>P208</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P208 Information Dissemination Concepts/P208	5.727	3.496	3.103	3.125	3.085	3.145	3.194	3.243
<b><u>A. Mission Description and Project Justification:</u></b> 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><u>B. Accomplishments/Planned Program:</u></b>								
Accomplishment/Planned Program Title				FY 2006	FY 2007	FY 2008	FY 2009	
FY 2006 Accomplishments				5.727	0.000	0.000	0.000	
Added operator requested enhancements to the Multimedia Alert Processing Systems (MAPS). These enhancements included the addition of Farsi language, network configuration for data sharing, developed the capability to monitor local radio broadcast, increased data storage, error reduction, web page translation, and integrated a foreign text import function. Tested and supported MAPS deployment in Iraq. Examined technologies, which specifically addressed information dissemination techniques into physically denied areas that possess mature information infrastructures.								
Accomplishment/Planned Program Title				FY 2006	FY 2007	FY 2008	FY 2009	
FY 2007 Plans:				0.000	3.496	0.000	0.000	
Begin the process to transition MAPS to Services and COCOMS for procurement and support. Support counter-terrorism and combating terrorism operations by continuing development of 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.								
Accomplishment/Planned Program Title				FY 2006	FY 2007	FY 2008	FY 2009	
FY 2008 Plans:				0.000	0.000	3.103	0.000	
Continue transitioning MAPS to Services. Support counter-terrorism and combating terrorism operations by improving upon existing tools and expanding technologies to enhance monitoring and translation capabilities across the full spectrum of communication media. Develop new projects to address technology shortfalls in building partnership capacity for distribution of themes and messages favorable to Coalition operations								
Accomplishment/Planned Program Title				FY 2006	FY 2007	FY 2008	FY 2009	
FY 2009 Plans:				0.000	0.000	0.000	3.125	



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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P208</b>	PROJECT <b>P208</b>
Continue to provide technology support the Global War on Terrorism. Develop Information Operation tools and techniques that assist in the analysis and planning phase of Information Operations. Investigate additional mechanisms, platforms, and payloads to provide IO planners with multiple means of delivering themes and messages to targeted audience.		
<b>C. Other Program Funding Summary:</b> Not Applicable.		
<b>D. Acquisition Strategy:</b> Not Applicable.		
<b>E. Major Performers</b> Not Applicable.		

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P209</b>					PROJECT <b>P209</b>	
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P209	Irregular Warfare Support (AWS)/P209	0.000	0.497	2.124	2.138	2.111	2.150	2.185	2.219
<p><b><u>A. Mission Description and Project Justification:</u></b> 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.</p>									
<b><u>B. Accomplishments/Planned Program:</u></b>									
<b>Accomplishment/Planned Program Title</b>					FY 2006	FY 2007	FY 2008	FY 2009	
FY 2006 Accomplishments: Not Applicable (Not Funded)					0.000	0.000	0.000	0.000	
<b>Accomplishment/Planned Program Title</b>					FY 2006	FY 2007	FY 2008	FY 2009	
FY 2007 Plans:					0.000	0.497	0.000	0.000	
FY 2007 Plans Collaborate with the United States Government (USG) counterinsurgency (COIN) user community to further define technology gaps and incorporate the defined research and development into plans for ongoing USG Irregular Warfare (IW) requirements. Integrate Clandestine Close Access Surveillance (CCAS) modular training support capabilities; and research insurgent prevention and disengagement strategies.									
<b>Accomplishment/Planned Program Title</b>					FY 2006	FY 2007	FY 2008	FY 2009	
2008 Plans					0.000	0.000	2.124	0.000	
FY 2008 Plans: Research and develop capabilities that support the Military and Interagency Irregular Warfare mission. This will include conducting operational analysis of requirements for and capability design of indigenous police capability enhancement, youth de-radicalization, counter-human network operations, and critical cooperation nodes between USG entities.									
<b>Accomplishment/Planned Program Title</b>					FY 2006	FY 2007	FY 2008	FY 2009	
FY 2009 Plans:					0.000	0.000	0.000	2.138	

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603121D8Z - SO/LIC Advanced Development P209</b>	PROJECT <b>P209</b>
<p>FY 2009 Plans: Research and develop capabilities that support the Military and Interagency Irregular Warfare mission. This will include further operational analysis of completed FY08 plans to assess measures of effectiveness and systems integration for equipped solutions, and new operational analysis and capability design for pilot IW training and education programs across the Interagency, enhanced counter-human network operations, and offensive media operations</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603122D8Z - Combating Terrorism Technology Support**

Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost		141.288	114.728	76.276	80.125	83.185	86.357	87.705	89.057
P484	Combating Terrorism Technology Support (CTTS) P484	141.288	114.728	76.276	80.125	83.185	86.357	87.705	89.057

**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><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	55.301	66.624	78.821	82.321
Current BES/President's Budget (FY 2008/2009)	141.288	114.728	76.276	80.125
Total Adjustments	85.987	48.104	-2.545	-2.196
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases	90.575	48.104		
Reprogrammings				
SBIR/STTR Transfer				
Other	-4.588		-2.545	-2.196

\$90575 includes \$25000 from Title IX additional appropriation.

**C. Other Program Funding Summary:** Not Applicable.

**D. Acquisition Strategy:** Not Applicable.

<b>OSD RDT&amp;E BUDGET ITEM JUSTIFICATION (R2 Exhibit)</b>					Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603122D8Z - Combating Terrorism Technology Support</b>			
<b><u>E. Performance Metrics:</u></b>						
<b>FY</b>	<b>Strategic Goals Supported</b>	<b>Existing Baseline</b>	<b>Planned Performance Improvement / Requirement Goal</b>	<b>Actual Performance Improvement</b>	<b>Planned Performance Metric / Methods of Measurement</b>	<b>Actual Performance Metric / Methods of Measurement</b>
06						
07						
08						
<p>Comment: Combating Terrorism Technology Support - PE 0603122D8Z</p> <p>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&amp;D) agreements with the United Kingdom, Canada and Israel to leverage technology investments; and initiate full cooperative R&amp;D programs with two new foreign partners.</p> <p>Performance Indicator and Rating:  FY 2006 Target: <ul style="list-style-type: none"> <li>70% of currently funded research projects completed on time and within budget</li> <li>5% increase in the number of research projects accepted</li> <li>Initiate pilot cooperative R&amp;D program with new foreign partners</li> <li>Continue threat/technology solutions workshop program</li> </ul> FY 2006 Rating: ON TARGET</p> <p>FY 2007 Target: <ul style="list-style-type: none"> <li>70% of currently funded research projects are completed on time and within budget</li> <li>Expand pilot R&amp;D programs with two new foreign partners to full cooperative programs</li> <li>Continue full R&amp;D programs with existing and new foreign partners</li> </ul> FY 2008 Target: <ul style="list-style-type: none"> <li>70% of currently funded research projects are completed on time and within budget</li> <li>5% increase in the number of research projects accepted FY 2009 Target</li> <li>70% of currently funded research projects are completed on time and within budget</li> </ul> </p>						

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## OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE  
**0603122D8Z - Combating Terrorism Technology Support**

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.

FY 2009 Target:

- 70% of currently funded research projects are completed on time and within budget

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.

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603122D8Z - Combating Terrorism Technology Support</b>					PROJECT <b>P484</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P484 Combating Terrorism Technology Support (CTTS) P484	141.288	114.728	76.276	80.125	83.185	86.357	87.705	89.057										
<p><b><u>A. Mission Description and Project Justification:</u></b> 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.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">BLAST EFFECTS AND MITIGATION</td> <td style="text-align: center; padding: 5px;">13.694</td> <td style="text-align: center; padding: 5px;">7.636</td> <td style="text-align: center; padding: 5px;">4.386</td> <td style="text-align: center; padding: 5px;">5.387</td> </tr> </table> <p>FY 2006 Accomplishments: Designed, tested, and fielded a high strength protective load bearing building material for protection against airblast from large military or improvised explosives to operations entry control facilities. Developed a modeling tool for engineers to provide damage assessment of steel frame structures subjected to near contact blast loads.</p> <p>Tested new blast mitigation building material using the Blast Simulator operationally to determine the dynamic properties of the material. Published a best practice blast mitigation guide to be used by bridge owners and operators.</p> <p>FY 2007 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. Publish a best practices blast mitigation guide to be used by tunnel owners. 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 in an urban environment. Develop an expeditionary structure that provides both blast and ballistic protection. Develop a polymer application apparatus that is lightweight and uses a polymer material comparable to current polymers used for blast mitigation. Validate use of the Blast Simulator to test larger structural components to be used in CENTCOM. Provide a field laptop software system to aid in designing field fortifications at forward operating bases. Investigate homemade terrorist explosive mixtures and their effects on buildings and mass transit infrastructure.</p> <p>Develop urban environment blast test models. Test bridge tower structures using Blast Simulator.</p> <p>FY 2008 Plans: Develop rapidly deployable entry control point equipment package for forward operating locations. Refine and provide critical blast information to military, industrial, and civil engineers by</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	BLAST EFFECTS AND MITIGATION	13.694	7.636	4.386	5.387
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
BLAST EFFECTS AND MITIGATION	13.694	7.636	4.386	5.387														

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603122D8Z - Combating Terrorism Technology Support</b>		PROJECT <b>P484</b>	
performing experiments in a configurable urban city test facility. Promulgate engineering guidance and designs incorporating commercial technologies to protect critical U.S. infrastructure including tunnels and train/subway stations.				
FY 2009 Plans: Develop an entry control point design software that adapts to the current threat. Develop commercial off-the-shelf (COTS) technologies for blast mitigation. Examine blast mitigation strategies to protect critical U.S. infrastructure to include electrical power sub-stations, dams, and maritime facilities. Demonstrate integrated systems to protect facilities from vehicle borne improvised explosive devices, suicide bombers on foot, and standoff weapons				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR COUNTERMEASURES	13.711	9.545	5.582	6.315
FY 2006 Accomplishments: Designed a small portable radio repeater system to maintain voice communication for combat forces and first responders operating in underground environments. Designed a food security test kit for personnel protection at high-threat overseas government facilities. Reviewed initial design for advanced personal protective equipment with improved heat stress management capabilities. Assessed food-borne threat levels of selected biological agents. Designed a portable test kit for collective protection filters. Evaluated viral suppression method against transmission of viral particles. Optimized color-based sensor array for chemical agent detection. Field-tested the hybrid chemical detection system for building collective protection. Designed and developed a self-contained escape respirator for both chemical and smoke protection. Initiated design of advanced alpha and beta radiation detector for water. Initiated laboratory testing of a personal hydration water purifier against biological, toxic chemical and petroleum distillates.				
Designed and planned for field-testing of the fiber-optic-based Distributed Chemical Sensor system at a mass-transit location. Assessed quality control methods for threat agent sampling and decontamination. Initiated design of next-generation, fuel-cell ground support equipment for evaluation. Initiated optimized fuel-cell design for continuity of operations.				
FY 2007 Plans: Test a small portable radio repeater system to maintain voice communication for combat forces and first responders operating in underground environments. 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. Design and develop a pocket-size, low-profile escape respirator capable of meeting NIOSH standards. Analyze gaps in existing risk-based permeation criteria for toxic industrial chemicals (TICs). Design a vehicle retrofit kit for emergency mass evacuation. Design prototype total organic carbon detector for water. Evaluate a portable test kit for collective protection filters. Develop advanced alpha and beta radiation detector prototype for water. Analyze data gaps in chemical instrumental libraries for detection of threat agents. Develop a guide to assist explosive ordnance disposal (EOD) and bomb squad personnel in recognizing radiological dispersion devices. Integrate an electronic command board for 3-D locator system for tracking incident response personnel.				
Field test the fiber-optic based Distributed Chemical Sensor System at a mass-transit station. Analyze results from assessment of threat agent sampling, collection, detection, and decontamination methods to provide recommendations for process improvement.				
FY 2008 Plans: Complete lab testing and initiate user field evaluation of color-based sensor array for chemical agent detection. Field NIOSH certified, self-contained escape respirator. Finalize design for a pocket-size, low-profile escape respirator capable of meeting NIOSH standards. Initiate testing for risk-based permeation criteria for TICs. Conduct user evaluation of vehicle retrofit kit for emergency mass evacuation. Test and evaluate prototype total organic carbon detector for water. Test and evaluate advanced alpha and beta radiation detector for water. Populate database for chemical instrumental libraries for detection of threat agents. Conduct expert and end-user evaluation of a guide to assist EOD and bomb squad personnel in recognizing radiological dispersion devices. Test 3-D locator system with electronic command and control system for tracking incident response personnel inside of buildings. Initiate design and materials testing for integrating chemical protection into utility uniforms for base security and fire fighter personnel.				
FY 2009 Plans: Implement wireless capability for color-based sensor array. Disseminate risk-based permeation criteria for TICs to the Department of Defense and industry standards development				



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organizations. Conduct field evaluation of a 3-D locator system with electronic command and control system for tracking incident response personnel inside of buildings.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
EXPLOSIVES DETECTION	12.292	6.533	7.801	7.801
FY 2006 Accomplishments: Evaluated a prototype system for screening bottles for explosives and hazardous materials. Evaluated a Passive Millimeter Wave (PMMW) system for screening humans for explosive threats. Evaluated effectiveness of a canine training aid for detection of a homemade explosive. Developed techniques to identify additional explosives in vehicles using Nuclear Quadrupole Resonance (NQR). Initiated feasibility assessment of laser photothermal acoustic interferometry for suicide bomber detection.				
FY 2007 Plans: Develop prototype systems for standoff detection of explosives worn on the body. Implement canine optimization methods in operational pilot program. Investigate training methods for canine detection of explosives on humans. Assess the feasibility of an X-ray system for real time imaging of vehicles for vehicle-borne improvised explosive device detection.				
FY 2008 Plans: Evaluate prototype systems for standoff detection of explosives worn on the body. Evaluate training methods for canine detection of explosives on humans. Continue development an X-ray system for real time imaging of vehicles for vehicle-borne improvised explosive device detection. Develop a mobile system to screen mail for explosive threats. Determine feasibility of integrating multiple sensors for suicide bomber detection.				
FY 2009 Plans: Evaluate prototype X-ray system for real time imaging of vehicles for vehicle-borne improvised explosive device detection. Assess a mobile system to screen mail for explosive threats. Develop multisensor systems for real time suicide bomber detection.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
IMPROVISED DEVICE DEFEAT	4.750	7.755	8.303	7.303
FY 2006 Accomplishments: Investigated technologies that can be incorporated into the protective components of the next generation bomb suit. Transitioned a tactical timed firing device to commercial production. Developed a multiple improvised explosive device (IED) disruption system initial prototype for integration with existing robotic platforms. Characterized a select set of VBIED disruption tools. Defined specifications and developed the initial design for a low cost sensor detector kit. Developed an initial prototype power backup system for robotic platforms. Developed a Joint Architecture for Unmanned Systems (JAUS) compliant interface for the visual and X-ray targeting systems. Developed a prototype advanced aiming and standoff measurement device for disruptors.				
FY 2007 Plans: Manufacture final prototypes and field evaluate the multiple IED disruption system and power backup system for robotic platforms. Build and evaluate initial single sided imaging prototype system. Design, model, and evaluate the performance of select components of the next generation bomb suit with emphasis on blast and ballistic mitigation panels. Transition the robotically deployable VBIED disablement system to commercial production. Finalize design and test a low cost sensor detector kit. Characterize additional sets of general disruption tools designed for use against IEDs and VBIEDs. Develop an electronic tool characterization guide for use in scenarios involving IEDs and VBIEDs to aid in the decision making process for disabling the threat device. Investigate solutions to address compatibility issues between ECM equipment and EOD robotic platforms. Demonstrate plug-and-play capability by integrating JAUS compliant X-ray targeting system and components with JAUS compliant robotic platform. Develop new tools for integration with current EOD robotic platforms and integrate existing commercial off-the-shelf (COTS) tools/systems with EOD robotic platforms to provide new and/or enhance existing remote capabilities. Develop a suite of tools to assist in the manual attack of wiring within an IED. Develop a multipurpose EOD cart to assist in transporting tools to an incident site and aid in the delivery of VBIED disruptors. Manufacture preproduction prototypes of the New Explosive Ordnance Mover (NEOMOVER) robotic platform. Investigate the use of nanomaterials as a means to defeat IEDs without the use of explosives.				
FY 2008 Plans: Design and build a utility cart and its custom interface for the single sided imaging system and subsequently integrate and test it with the imaging system. Design, model, and evaluate the base				

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layer of the next generation bomb suit using newly developed ballistic fiber. Transition the low cost sensor detector kit, IED wire attack tools, and multipurpose EOD cart to commercial production. Integrate JAUS compliant components with the NEOMOVER robotic platform and conduct field evaluations. Design and develop a nonexplosive IED defeat tool. Define specifications and develop the initial design for a radio frequency (RF) receiver detection device.				
FY 2009 Plans: Integrate the cart mounted single sided imaging system with a small robotic platform. Integrate the next generation bomb suit components into a comprehensive model. Construct, and evaluate the full-scale next generation bomb suit. Transition the NEOMOVER robotic platform into commercial production. Field evaluate the nonexplosive IED defeat tool and transition to commercial production. Finalize design, build, and test the final prototype of a RF detection device.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
INFRASTRUCTURE PROTECTION	2.351	3.132	3.389	3.389
FY 2006 Accomplishments: Deployed the Systems Administrator Simulation Trainer (SAST). Tested a secure means of data communications between military/commercial aircrafts and air traffic controllers. Fielded an enhanced database with expanded content on the effects of blast on buildings and other critical infrastructure to blast engineers. Published a study of available software tools for critical infrastructure interdependency modeling.				
Initiated cyber security development and training.				
FY 2007 Plans: Complete an in-flight test of a secure means of data communications between military/commercial aircrafts and ground stations. Develop a cyber security assessment tool. Develop a virtual cyber security testing capability. Field a prototype early warning system for critical drinking water infrastructure. Update the critical infrastructure database. Develop a transmission tower and line security monitor. Develop an evacuation simulation planning tool. Develop a secure software engineering guide. Develop a supervisory control and data acquisition cyber alert attack tool.				
FY 2008 Plans: Develop an integrated cyber and physical assessment tool. Field-test and deploy a prototype transmission tower and line security monitor. Deploy and evaluate the performance of the evacuation simulation planning tool. Develop secure software engineering tools. Develop a process control security metrics and testing guide. Convert the enhanced blast effects database into a web-based application. Identify critical infrastructure interdependency modeling technology gaps.				
FY 2009 Plans: Develop integrated physical/cyber security systems. Develop zero-day security methodology and tools. Develop curriculum and text for the secure software engineering course. Develop critical infrastructure dependency modeling standards and tools. Deploy a web-based blast effects database.				
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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
INVESTIGATIVE SUPPORT AND FORENSICS	4.873	3.778	4.253	4.253
FY 2006 Accomplishments: Delivered a tool for three-dimensional crime scene modeling. Established criteria for forensic document methodology reliability and error rates. Fielded a system for authentication of digital video recordings and electronic data files. Delivered a forensic mobile command post for federal law enforcement deployment. Distributed pocket fingerprint kits to the U.S. military.				
FY 2007 Plans: Field a computer-based software system for the statistical verification of camouflage pattern matching. Distribute a system for automatic analysis of text for author attribution. Improve the performance and scientific defensibility of dog teams by improving the absorption materials used for collecting human scent. Produce a technique for post-blast identification of urea nitrate. Improve the protocol for adsorption of triacetone triperoxide (TATP) from the gas phase to assist in evidence collection from post-blast exhibits. Field a two-way multifunctional encrypted radio. Distribute a ruggedized				

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version of a canine scent transfer system. Deploy an online IED component identification database.					
FY 2008 Plans: Field an automated three-dimensional ear identification system. Field a distributive network attack system for decrypting steganography. Distribute a multifunctional compact crime scene collection device. Distribute a forensic audio spectral analysis tool. Field a laser Doppler vibrometry system for the remote measurement of physiological activity. Field a data stream profiling database.					
FY 2009 Plans: Produce a canine human scent identification working protocol. Field improved automated voice identification and speaker recognition system. Improve the protocols for remote biometric assessment. Improve forensic capabilities for retrieving data from electronic equipment.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
PHYSICAL SECURITY		8.674	19.754	9.132	8.940
FY 2006 Accomplishments: Conducted field-tests of automated license plate reading systems. Developed requirements for the operational demonstration of an integrated suite of explosive detection tools to meet the high-throughput requirements of vehicle and passenger ferries. Conducted an operational assessment of an automatic under vehicle inspection system. Developed a merchant vessel inspection guide to consolidate existing tactics, techniques, and procedures for Visit, Board, Search and Seizure teams and security personnel. Developed an integrated forward scatter and back scatter X-ray screening system to detect concealed explosives and metallic items in vehicles. Conducted vehicle crash tests against nonstandard vehicle barriers with large vehicles and published a user's manual for emplacing nonstandard vehicle barriers in tactical and nontactical applications. Evaluated design parameters and tests results necessary to develop wide-area security surveillance systems integrating radars, optical devices, security sensors, and user-friendly command and control systems. Developed a test protocol for evaluating shallow tunnel detection equipment capabilities and tested the electromagnetic gradiometer. Fielded the improved optical detection, tracking, and assessment system for user evaluations. Developed interconnectivity protocols to integrate three to five (3-5) stand-alone optical detection sensors into a command and control system.					
FY 2007 Plans: Develop an enhanced concealed nonmetallic and metallic weapon detection system for screening personnel. Develop an interoperable personnel identity management capability and conduct field tests. Develop and test a paint that will reveal evidence of tampering when subjected to ultra-violet (UV) light. Conclude the operational assessment of an automated under vehicle inspection system. Conduct an interagency antiterrorism technology workshop. Conduct crash tests of domestic and international vehicle security barriers and publish the results. Evaluate the command and control station integrating three to five (3-5) stand-alone optical systems designed to reduce labor and false alarms. Develop and publish an updated vehicle inspection checklist to identify hidden explosives, contraband, and weapons in vehicles. Conduct field assessment of the integrated forward scatter and back scatter X-ray screening system to detect concealed explosives and metallic items in vehicles. Assess technology to detect disassembled weapons and improvised explosives components in hand carried baggage. Initiate development of a blast and ballistic protective system with integrated intrusion detection capabilities for remote power substation protection.					
Develop comprehensive port and maritime domain awareness. Develop remotely operated underwater screening to detect anomalies on submerged facilities and ship hulls. Evaluate, ruggedize, and deploy high payoff commercial systems to enhance protection for coalition forces.					
FY 2008 Plans: Commercialize a paint that will reveal evidence of tampering when subjected to UV light. Evaluate next generation biometric identification technologies for inclusion with 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. Conduct field-tests of handheld devices to detect metallic and nonmetallic weapons on personnel. Develop a system to detect disassembled weapons and improvised explosives components. Develop an integrated personnel portal to detect concealed metallic threats. Conduct crash tests of nonstandard installation techniques of vehicle security barriers and update existing vehicle barrier guide. Conduct live-fire testing and intruder detection evaluations of a blast and ballistic protective system with integrated intrusion detection capabilities for remote substation protection. Explore novel sensor technologies for improved intruder detection while reducing false/nuisance alarms.					

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FY 2009 Plans: Develop an integrated personnel-screening system with remote capability to detect metallic, nonmetallic, and improvised explosive devices. Assess and demonstrate entry point screening and force protection technology. Assess a system to detect disassembled handguns and improvised explosives devices. Commercialize a blast and ballistic protective system with integrated intrusion detection capabilities for remote substation protection. Integrate novel sensors to extend perimeter/border capabilities to increase situational awareness and provide earlier warning of potential adversary attack.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
CONCEPT DEVELOPMENT	9.263	1.939	1.329	2.329
FY 2006 Accomplishments: Facilitated interagency and international combating terrorism capability transfer across the public and private sectors. Conducted a detailed analysis of the current counterterrorism enterprise and explored business-based approaches to enhance strategic and operational capabilities. Developed an online, secure methodology to conduct low-level source and reporting operations in a hostile environment. Created a multi-language software suite that is capable of running on various operating systems and report through secure message transfer (SMT) protocol. Conducted classes and explored the analysis of the public information domains (radio, television, cinema, internet, etc.) to ascertain what type of programming assists in persuading indigenous people to disengage and avoid recruitment by insurgents and their sympathizers.				
Conducted a global search for explosive detection and disruption technologies; planned and executed a NATO co-sponsored counter-IED conference in Madrid; commenced a global research for companies developing novel technologies to combating terrorism; currently planning a NATO co-sponsored combating terrorism technology demonstration.				
FY 2007 Plans: Several subcomponent efforts are being transitioned to a new Project within the SO/LIC Advanced Development Program (PE 0603121D8Z), Asymmetric 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.				
Conduct a Maritime Counter-Terrorism Exercise Asymmetric Warfare Initiative 2007 North.				
FY 2008 Plans: Develop unique operational, intelligence, and technical capabilities tailored to support counterterrorist information analysis requirements.				
FY 2009 Plans: Conduct research and development that supports counterterrorism information analysis requirements. Integrate novel capabilities with the existing and emerging counterterrorism force structure.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
SURVEILLANCE, COLLECTION AND OPERATIONS SUPPORT	22.396	17.086	9.453	9.453
FY 2006 Accomplishments: Expanded language capabilities with automated tools for translation and prioritization of foreign language media. Provided advances in joint tagging, tracking, and locating technology to improve maritime tagging and tracking. Increased access to open source foreign media with broader language domains. Addressed challenging aspects of facial recognition technology shortfalls by improving algorithms and executing pilot projects. Integrated facial recognition technology with surveillance systems by including multispectral imaging and laser vibrometry. Built automated tools for the detection of shallow tunnels. Expanded operational use and capabilities of multimedia broadcast systems to two separate locations.				
Initiated pilot project for evaluation of facial recognition technology for security of DOD facilities. Developed and improved airborne reconnaissance system reliability.				
FY 2007 Plans: Integrate multiple tagging, tracking, and location technologies as a cue for other sensors or actions. Expand existing geolocation and targeting capabilities. Evaluate and initiate biometric and				

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other novel technology areas to improve tagging, tracking, and locating effectiveness. Increase effectiveness of biometric technologies by studying and applying promising fusion techniques for the face, finger, and iris. Continue to benchmark and compare accuracy of machine and human face recognition. Develop automated tools and techniques to aid deployed forces in foreign language and cultural awareness skills.				
Enhance current prototype systems and improve access and sharing of watch lists available to operational law enforcement. Continue to develop modular roll-on roll-off intelligence, surveillance, reconnaissance (ISR) capability for employment on nonspecialized aircrafts.				
FY 2008 Plans: Improve access to open source media through new language processing technologies for multimedia information from degraded input sources. Continue to develop biometric and novel technology areas to improve tagging, tracking, and locating. Apply the gains in facial recognition technology to long-range video surveillance. Continue to investigate and improve biometric fusion techniques. Investigate methods and concepts for increasing the effectiveness of human identification at a distance when a person is aided by automated facial recognition algorithms. Continue to develop automated tools and techniques to aid deployed forces in foreign language and cultural awareness skills.				
FY 2009 Plans: Enhance value of open source media through new language processing technologies for degraded input sources. Improve biometric and novel technology areas for tagging, tracking, and locating. Increase performance of facial recognition technology for long-range video surveillance and human ID at a distance. Transition language processing techniques including increasing support for additional languages and domains to deployable systems for use. Enhance geolocation and targeting capabilities.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
TACTICAL OPERATIONS SUPPORT	22.260	14.596	8.505	9.505
FY 2006 Accomplishments: Delivered a Muzzle Flash Detection System for user operational tests and evaluations. Delivered the Eye Ball S-1 preproduction system for user operational tests and evaluations. Provided RCIED ECM training and initial equipment to seven (7) select state and local bomb squads. Delivered Dual Universal Night Sight (DUNS) prototypes for operational tests and evaluation. Delivered Personal Defense Weapon (PDW) prototypes for user tests and evaluation. Fabricated the first generation Augmented Reality Training System for tactical assault team testing. Delivered a next generation diversionary device for tactical team's operational tests and evaluations. Delivered an enhanced tactical rope-ascending device for operational tests and evaluation. Delivered Front Line Viewing Units (FLVU) for local law enforcement agency operational tests and assessment in their mobile command centers. Built initial improved small laser target designator prototype.				
Conducted several scenario-based exercises and training events designed to increase the ability of military, local, State, and Federal agencies to respond to a terrorist event involving asymmetric threats. Developed and delivered tactical surveys for select high risk facilities that will enable first responders to react to a crisis with enhanced safety, speed and effectiveness. Conducted emergency response exercises Pacific Peril 2006, Solid Curtain 2006, and Asymmetric Warfare Initiative 2006 South.				
FY 2007 Plans: Deliver a High Performance In-Line Sniper Scope for operational tests and evaluations that will provide enhanced infrared images for sniper weapons. Deliver improved small laser target designator for operational tests and evaluation. Deliver a weapon mounted video display for operational tests and evaluations. Deliver a shoulder-fired weapon scope providing both long-range and close quarter battle sight that is selectable by the shooter without magnification. Deliver a prototype lightweight, weapon-mounted, integrated rangefinder. Deliver a Dynamic Breaching Guide for SWAT operations. Deliver a high power in-line sniper scope for low rate initial production. Finalize training and equipping of select state and local bomb squads for RCIED ECM. Develop low-profile fusion panoramic night vision goggles that provide enhanced situational awareness and ballistic eye protection. Develop an integrated level IIIA ballistic helmet that supports modular tactical attachments and improves balance and wearer comfort. Develop an intrinsically safe distraction device for use by assault teams during shipboard operations. Deliver a prototype portable garage door overmaster for initial testing. Develop a deployable patient monitoring system to improve critical care during low light combat evacuation operations. Develop a deployable, high bandwidth, universal communications converter that is capable of receiving a variety of voice and/or data transmissions and splitting or transferring them into a variety of broadband communication devices. Develop a remotely operated standoff vehicle stopping system that can be deployed from both a helicopter and vehicle. Develop a compact amplifier and low-profile antenna to support use of the Multiband Inter/Intra Team Radio (MBITR) in military				

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and civilian vehicles.				
Analyze, design, and develop a program for tactical support surveys with civilian support teams.				
FY 2008 Plans: Deliver an initial prototype low-profile fusion panoramic night vision goggle for initial testing. Deliver initial integrated level IIIA Ballistic Helmets for operational tests and evaluations. Deliver a prototype intrinsically safe distraction device for initial testing. Finalize design and deliver a portable countermeasure for remote controlled garage doors and conduct operational tests and evaluations. Integrate a concealable individual team communication system to support tactical operations in urban environments. Finalize design for a level 4 integrated lightweight ballistic helmet. Deliver a prototype remotely operated standoff vehicle stopping immobilization system for initial testing. Deliver a deployable patient monitoring system for operational tests and evaluations. Deliver initial prototype of a portable, high bandwidth universal communications converter for initial testing. Deliver a low profile MBITR amplifier and antenna for operational testing and evaluation.				
FY 2009 Plans: Finalize design and deliver low-profile fusion panoramic night vision goggle for operational tests and evaluations. Finalize design and deliver an intrinsically safe distraction device for operational tests and evaluations. Finalize design and deliver a deployable patient monitoring system for operational tests and evaluations. Finalize design and deliver a portable, high bandwidth universal communications converter for operational tests and evaluations. Deliver a prototype reusable nonpyrotechnical distraction devices and conduct operational tests and evaluations. Finalize design and deliver a prototype standoff vehicle stopping system for initial operational tests and evaluations.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
TRAINING TECHNOLOGY DEVELOPMENT	10.266	8.147	3.389	4.389
FY 2006 Accomplishments: Produced an intrinsically safe chemical and radiological stimulant kit. Designed and developed an online training program for managing an agricultural incident. Integrated interactive simulation technologies with training and mission performance support capabilities				
Developed a program that produced a combined canine and human tracking team capability. Conducted a series of training needs analysis for combating terrorism threats. Developed several training aids and devices to complement recently fielded TSWG advanced technologies.				
FY 2007 Plans: Develop an Advanced Distributed Learning (ADL) 3-D software tool to enable integration of 3-D models with online training. Develop the next generation ADL registry for combating terrorism related content and assets. 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.				
Analyze, design, and develop a program of training technologies focused on addressing port security. Develop language capabilities which allow linguists, analysts, warfighters, and other individuals to quickly access and learn about essential language words, sentences, phrases, contexts, and linguistic data. Develop training and training technologies to increase mission readiness and enhance the operational capabilities of military and civilian communities involved in combating terrorism and consequence management.				
FY 2008 Plans: Enhance the creation of adaptable, agent-based, adversarial models in simulations that model human behavior and social interactions. Create knowledge management architectures, tools, and services to integrate performance and mission support systems with DoD ADL delivery architecture. Develop advanced techniques and metrics for conducting effectiveness evaluations in existing and future military training simulations.				
FY 2009 Plans: Investigate the effectiveness of robotics for identifying combating terrorism related skill gaps and motivational deficiencies. Design and develop a 3-D isometric, real time strategy simulation for coordinating resources and directing autonomous civilian agents. Enhance accuracy and fidelity of virtual reality-based, head mounted displays for weapons and tactical training.				

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<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
VIP PROTECTION	5.272	5.648	4.651	4.651
<p>FY 2006 Accomplishments: Demonstrated a prototype design for an indirect laser detection system for early warning of laser targeting activity. Developed a sensor system for detecting threats and automatic activation of the IPPS shield. Integrated vehicle tamper alerting system components and conducted final system testing. Delivered the window laser detection system for early warning of laser targeting activity. Conducted VIP security kit component validation testing. Researched new threat rounds for incorporation into a previously developed projectile database that identifies frangible and new threat ammunition characteristics as well as ammunition performance against selected body armors. Enhanced the personal duress system user interface. Conducted advanced evaluation of body armor performance in multi-hit scenarios and evaluated metrics for dynamic effects of ballistic blunt trauma. Evaluated the performance of body armor treated with a shear thickening fluid (STF) and developed a concealable, flexible body armor prototype using the STF-treated fabric. Assessed blunt trauma to the head and torso using the advanced ballistic helmet and body armor test fixtures. Developed a prototype concrete imaging system to detect possible bombs within flat concrete surfaces.</p> <p>Evaluated deployable armor system performance against armor piercing ballistic threats and deployed several units for evaluation.</p> <p>FY 2007 Plans: Finalize prototype design and field an indirect laser detection system for early warning of laser targeting activity. Field the vehicle tamper alerting system. Integrate the VIP security kit components, conduct final testing, and deploy the completed system. Characterize the ballistic performance of selected threats ammunition for inclusion in a previously developed projectile database. Develop modeling capabilities and perform testing to assess blunt trauma to the head and torso for selected ballistic helmets and body armor. Develop an IED blast/fragmentation test protocol to determine the effects on VIPs and protective detail armored vehicles. Design improved inconspicuous body armor for operations where the detection of body armor presents an increased danger to the wearer. Construct a field-installable inconspicuous vehicle armor system for a range of common civilian vehicles. Conduct state-of-the-art armor research for vehicle and body armors currently available to the Government. Compare commercially available wireless surveillance earpieces and assess suitability for protective details.</p> <p>Develop enhancements for the deployable armor system, verify ballistic and blast protection against multiple threats, and deploy additional prototype units for operational evaluation.</p> <p>FY 2008 Plans: Deploy the updated projectile database with frangible and new threat ammunition information. Integrate an IED blast/fragmentation test protocol with the standards used by purchasers of armored vehicles. Deploy and evaluate improved inconspicuous body armor for operations where the detection of body armor presents an increased danger to the wearer. Deploy a field-installable inconspicuous vehicle armor system for a range of common civilian vehicles. Complete and release a database of state-of-the-art armor research for vehicle and body armors currently available to the Government. Recommend which commercially available wireless surveillance earpieces best meet the needs of protective details and any improvements that enhance suitability.</p> <p>FY 2009 Plans: Develop improved threat detection capabilities for fixed-site VIP facilities. Characterize the ballistic protection thresholds of emerging opaque and transparent armors to determine applicability in vehicle and body armor. Develop a system that improves surveillance of unsecured areas where VIPs must travel. Research emerging threats to VIPs from assassination techniques currently attempted abroad.</p>				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
PROGRAM MANAGEMENT	11.486	9.179	6.103	6.410
<p>FY 2006 Accomplishments: Provided program management oversight and technical support for CTTS R&amp;D projects. Augmented the CTTS program office with contract, financial, and security management personnel. Managed an additional \$88 million in funds from other agencies. Finalized/signed cooperative R&amp;D agreements with Australia and Singapore. Managed cooperative R&amp;D programs with the United Kingdom, Canada, and Israel. Established communication and information sharing with other government agencies for CTTS related initiatives to reinforce interagency and international participation</p>				

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<p>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.</p> <p>FY 2007 Plans: Provide program management oversight and technical support for CTTS R&amp;D projects including funds from other agencies and management of international cooperative R&amp;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.</p> <p>FY 2008 Plans: Provide program management oversight and technical support for CTTS R&amp;D projects including funds from other agencies and management of international cooperative R&amp;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.</p> <p>FY 2009 Plans: Provide program management oversight and technical support for CTTS R&amp;D projects including funds from other agencies and management of international cooperative R&amp;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.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		



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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603225D8Z - Joint DoD/DOE Munitions Technology Support**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	23.606	22.765	23.488	23.773	23.926	24.059	24.375	24.718
P225 Joint DOD/DOE Munitions	23.606	22.765	23.488	23.773	23.926	24.059	24.375	24.718

**A. Mission Description and Budget Item Justification:** (U) The mission of the Joint DoD/Department of Energy (DOE) Munitions Technology Development Program (JMP) is to develop advanced 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 this effort. Under the auspices of the JMP, the fusion of DOE technologies with Joint Services needs has provided major advances in warfighting capabilities for many years and continues to play a crucial role in the exploration, development, and transition of new technologies needed by the Services. The JMP is aligned with Department strategic plans such as the 2006 QDR and is developing capabilities and modeling tools for urban combat and counter-terrorism efforts. The JMP provides a unique opportunity for the collaboration of DoD and DOE scientists and engineers so they can develop technologies of interest to both Departments, within a structured framework of technical reviews and scheduled milestones. The JMP has strong support from the Services in that they are actively engaged in leading JMP technical activities and collaborating in the transition of new capabilities. This interdepartmental cooperation makes use of the substantial historic investment in scientific resources by the DOE , and the budgeted JMP funds represented in this justification are supplemented by matching DOE funds.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	24.702	16.862	19.362	24.439
Current BES/President's Budget (FY 2008/2009)	23.606	22.765	23.488	23.773
Total Adjustments	-1.096	5.903	4.126	-0.666
Congressional Program Reductions		-0.097		
Congressional Rescissions				
Congressional Increases				
Reprogrammings	-0.400			
SBIR/STTR Transfer	-0.696			
Other		6.000	4.126	-0.666

**C. Other Program Funding Summary:** Not Applicable.

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OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603225D8Z - Joint DoD/DOE Munitions Technology Support</b>	
<p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Performance Metrics:</u></b> Not Applicable.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603225D8Z - Joint DoD/DOE Munitions Technology Support</b>					PROJECT <b>P225</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P225      Joint DOD/DOE Munitions	23.606	22.765	23.488	23.773	23.926	24.059	24.375	24.718										
<p><b><u>A. Mission Description and Project Justification:</u></b> (U) The Joint DoD/DOE Munitions Technology Development Program (JMP) is a collaborative, jointly-funded effort between DoD and Department of Energy (DOE) and has the mission to develop new and innovative warhead, explosive, initiation, and lifecycle technologies, as well as enabling tools, in order to bring about major improvements in non-nuclear munitions. The JMP supports the development and exploration of advanced munitions concepts and enabling technologies which precede system engineering. Through a Memorandum of Understanding (MOU) arrangement with DOE, DoD resources are evenly matched. More importantly, this relatively small DoD contribution effectively taps the annual multi-billion dollar DOE Research, Development, Test, and Evaluation (RDT&amp;E) investments by accessing technical experts with highly specialized skills, advanced scientific equipment, unique facilities, and computational tools not available within DoD. These efforts take advantage of the extensive and highly developed technology base resident in the DOE national laboratories relevant to achieving the JMP goals of developing capable, cost-effective, conventional munitions.</p> <p>(U) The JMP currently supports about 50 projects which can be summarized in five technical focus areas: Initiation, Fuzing, and Sensors; Energetic Materials; Computational Mechanics and Material Modeling; Warhead and Integration Technology; and Munitions Lifecycle Technologies. The JMP is administered and monitored by Office of the Secretary of Defense (OSD), and reviewed annually by the Technical Advisory Committee (TAC) composed of senior executives from the Army, Navy, Air Force, Special Operations Command, OSD, and DOE. Projects are organized in Technology Coordinating Groups (TCGs) in order to bring together the disciplines necessary to properly evaluate technical content and progress. DoD Service laboratory technical experts lead each of the TCGs to ensure that the technologies under development address high priority DoD needs; they also coordinate the semi-annual technical peer-review process.</p> <p>(U) The JMP is further integrated with Service efforts through participation in the Defense Technology Area Plan (DTAP) for conventional weapons. The JMP is also 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.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Joint DOD/DOE Munitions</td> <td style="text-align: right; padding: 5px;">23.606</td> <td style="text-align: right; padding: 5px;">22.765</td> <td style="text-align: right; padding: 5px;">23.488</td> <td style="text-align: right; padding: 5px;">23.773</td> </tr> </table>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Joint DOD/DOE Munitions	23.606	22.765	23.488	23.773
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
Joint DOD/DOE Munitions	23.606	22.765	23.488	23.773														
<p>FY 2006 Accomplishments:</p> <p>(U) Exploding Foil Initiators (EFIs) were developed by the JMP and transitioned to the Army and Air Force. Both are implementing EFIs into new systems. In the development of new Electronic Safe and Arm Devices (ESADs), 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 development continued with work on diagnostics for monitoring the current distribution in multipoint initiators. The latest miniaturization</p>																		

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603225D8Z - Joint DoD/DOE Munitions Technology Support</b>	PROJECT <b>P225</b>
<p>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 was demonstrated using 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 5), and a prototype was successfully flight tested. The Laser Dynamic Range Imager was transitioned to NASA for use on space shuttle flights. Initial experiments were performed to measure the run-to-detonation distance of advanced explosives for both low pressure and slapper-driven initiation. 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. Work on energetic materials has been aligned with the recommendations from a recent Weapons TARA, and is coordinated with the national initiative in Advanced Energetic Materials. This focus area of the JMP is aimed at developing the next-generation EMs that have increased energy density over those in the current inventory while attempting to provide insensitivity to extreme environments. A fundamentally new approach to increasing lethality while simultaneously reducing collateral damage is being investigated. (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 helped focus these efforts. A 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. Other new energetic materials continue to be developed by JMP activities. 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 more accurate performance predictions for an extended set of energetic materials. (U) The development of Eulerian, Lagrangian, and ALE codes relevant to the design and evaluation of munitions is an on-going, long-term effort. CTH, a workhorse shock physics code developed by the JMP, is used by over 120 licensees throughout the DoD and DOE, on desktop PCs to the massively parallel, High Performance Computing (HPC) center resources. It is the number 1 "go-to" code 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.</p> <p>FY 2007/FY 2008/FY 2009 Plans:</p> <p>(U) Studies will continue on predictive materials aging of solders, including investigation of electronics corrosion, and aging of propellants and adhesives. Further development of the Bayesian approach to system reliability assessment will be conducted. The development of robotic disposal of munitions will be continued and new automation technologies for removing and safing submunitions that are automatically armed on exit from a projectile will be developed. Chemical kinetic models for combustion of TNT and RDX will be added to the extensive chemical database already existing for combustion processes. A project to develop a network of sensors for monitoring and quantifying the gaseous and particulate metallic species of environmental concern in OB/OD plumes will continue with field tests. The JMP will continue low collateral damage verification testing in comparison with current best baseline munitions. They will also continue to develop, extend, and support the application of DOE codes and associated material models to DoD warhead and explosives design and evaluation.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603618D8Z - Joint Electronic Advanced Technology**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	10.341	9.219	9.338	9.620	9.948	10.079	10.220
P619 Joint Electronic Advanced Technology	0.000	10.341	9.219	9.338	9.620	9.948	10.079	10.220

**A. Mission Description and Budget Item Justification:** In the Global War on Terror (GWOT), the U.S must be ready to meet the widespread and growing threat of sophisticated devices improvised from commercially available electronic sensors, computer modules, navigation and control components coupled with widely proliferated, man-portable explosives, mortars, rockets and small aircraft. Such devices provide terrorists and foreign military units the novel means to rapidly construct a wide range of weapons capable of disruptive actions against civilian and military forces alike. The U.S. must be ready to counter such weapons on short notice.

The asymmetric nature of such devices is already well understood by terrorists. Improvised explosive devices are in widespread use. 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. Global Positioning System (GPS) civil navigation and autopilot devices capable of precisely controlling Unmanned Aerial Vehicles (UAV) can be held in the palm of one's 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.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	0.000	9.400	9.500	9.600
Current BES/President's Budget (FY 2008/2009)	0.000	10.341	9.219	9.338
Total Adjustments	0.000	0.941	-0.281	-0.262
Congressional Program Reductions		-0.059		
Congressional Rescissions				
Congressional Increases		1.000		
Reprogrammings				
SBIR/STTR Transfer				
Other			-0.281	-0.262

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603618D8Z - Joint Electronic Advanced Technology****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 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603618D8Z - Joint Electronic Advanced Technology</b>					PROJECT <b>P619</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P619 Joint Electronic Advanced Technology	0.000	10.341	9.219	9.338	9.620	9.948	10.079	10.220	
<p><b><u>A. Mission Description and Project Justification:</u></b> 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 with 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.</p> <p>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:</p> <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>3. Emerging commercially derived technologies; including rapid prototyping of those required to combat adaptive threats in the GWOT including, initially Small Unmanned Aerial Vehicle (UAV) detection and engagement.</li> </ol> <p>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.</p>									

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603618D8Z - Joint Electronic Advanced Technology</b>		PROJECT <b>P619</b>	
<b><u>B. Accomplishments/Planned Program:</u></b>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Ground Based Counter-ManPADS:	0.000	2.000	1.019	0.300
FY 2007/2008/2009 Plans: This project assumes control of netted, ground-based, Infrared (IR) sensor technologies originally developed in FY05-06 under PE0604618D8Z . By combining high-speed, high-resolution tracking mechanisms with either onboard decoys or on-/off-board directed-energy devices, it seeks to demonstrate the end-to-end capability to detect, track, and defeat shoulder-fired, man-portable air defense (MANPAD) systems known to be in the hands of terrorists in IRAQ and elsewhere. Under the previous 6.4 effort, thermal signature data was collected on a representative set of fixed-wing commercial aircraft suitable for CRAF operations; IR sensors were evaluated for missile detection performance and suitability; ground-engagement concepts were modeled and evaluated; integration and tracking software was developed and refined; and detection and tracking performance were evaluated in more than 120 live fire events; and several ground-based directed energy engagement concepts, including the General Dynamics, Ground MANPAD Defeat System, were jointly reviewed with other agencies/industry. The resultant products of these prior efforts have yielded an one-of-a-kind large, fixed-wing aircraft data base for shared use by DOD and DHS that has subsequently been requested for use by US allies and airline officials alike; a proven, 3-element IR sensor array whose demonstrated performance in a 2-pole configuration is capable of exceeding required detection and tracking parameters under constrained launch conditions for all threats tested; and a proof of concept event which positively confirmed the ability of the system to defeat a MANPAD under live-fire conditions by automatically remotely triggering flares on drone aircraft. In FY07-08, PE0603618D8Z will advance this ground-based sensor project to demonstrate a 4-pole system configuration capable of MANPAD detection, tracking, warning and engagement under all-aspect launch conditions and will complete the assessment of alternative ground-based directed energy devices capable of deceiving or disabling the primary MANPAD systems in terrorist inventories at ranges comparable to that of the missiles themselves. An initial live-fire demonstration of the unconstrained system configuration combined with directed energy devices to defeat a live-fire missile is projected for summer 2007. FY08 efforts will complete the assessment of this system in combination with other, available ground-based MANPAD defeat devices and will document performance characteristics for consideration by force protection planners, integrated military base defense experts, and homeland defense officials. FY07-08 will also test and measure this system for its ability to detect, warn and track other threats such as aircraft, cruise missiles, and UAVs whose signatures represent a difficult challenge for many conventional weapons systems.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Low Cost/Near Term Counter-ManPADS:	0.000	6.841	5.200	1.900
FY 2007/2008/2009 Plans: This project extends FY06 efforts originally initiated under PE0604618D8Z to determine the feasibility of substantially improving the protection of air platforms by reducing false alarm events by combining existing active and passive sensors with advanced sensor fusion software. Current operations in the middle east have shown that missile detection and warning systems now used by US and coalition forces are adversely affected by the large number of background events radiating in the ultraviolet (UV) spectrum and the average response recovery time of sensors exposed to high-intensity flares at short range. The technologies under examination uses multiple spectrally independent sensors and fusion algorithms, since at least one sensor would always be free of interference, it is estimated that the fusion could reduce false alarms to near-zero levels while retaining exceptionally high threat detection rates. FY07-08 will complete the analysis of previous laboratory, anechoic chamber characterization, and live fire testing of selected components; will initiate collection and analysis urban false alarm testing of Doppler sensor system; will evaluate pyrophoric material effectiveness in a responsive scenario; will use measured data to update simulated performance objectives prior to attempting an on-aircraft integration and evaluation; FY-08 will conclude testing to verify and validate performance and will document results for inclusion in future aircraft force protection programs. The management and sustainment of the IR signatures database developed in FY 06 will be funded from this project in FY07-09				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Electronic Advanced Technology:	0.000	1.500	3.000	7.138
FY 2007/2008/2009 Plans: Unconventional and disruptive technology defeat concepts. This effort recognizes the asymmetric nature of devices and tactics being developed by various nation-state and terror				



**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE  
**0603618D8Z - Joint Electronic Advanced Technology**

PROJECT  
**P619**

organizations on an adversarial footing with the U.S.. In some circumstances such technologies are being adapted at rates faster than conventional defense systems can reasonably respond; in other cases, the cost of the response options are far in excess of the threat development costs—creating inefficiencies and incompatibilities in developing cost effective alternatives. This project recognizes the near-term nature of one such threat which is quickly proliferating and which has demonstrated interest to terror organizations—the small UAV. Such UAVs can be used individually as terror weapons through the incorporation of small chemical, biological or explosive components, or can serve as detonation initiators in combination with larger explosive stockpiles. Because the small UAV is both inherently hard to detect and low in cost relative to conventional counter-air defense systems, it is a unique candidate for alternative, low-cost detection and defeat mechanisms. A recent USAF Science Advisory Board study on UAV Detection and Defeat, highlights the complexities and risks of this problem which spans traditional counter-military operations and spills over into homeland defense. Because of the lack of clear solutions to the detection and defeat problem, this project will join with exercise events planned in coordination with USNORTHCOM and DIA to document various UAV signatures, sensors and defeat mechanisms to assess the current range at which such UAVs can be reasonably detected and to determine state of the art, unconventional, near-term defeat options, including directed energy options. This project will fund targets for testing and will jointly with NORTHCOM arrange for a variety of US defense systems to be demonstrated and evaluated in the MAY 07 timeframe. FY09 expenditures will be developed in coordination with the defense research community and DIA elements seeking ways to avoid technological surprise.

**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 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3		PE NUMBER AND TITLE <b>0603648D8Z - Joint Capability Technology Demonstrations</b>						
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	33.707	36.468	194.352	207.740	213.989	207.572	210.299	213.256
P648 Joint Capability Technology Demonstration (JCTD)	33.707	36.468	194.352	207.740	213.989	207.572	210.299	213.256

**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 with new modifications. The JCTD model specifically addresses congressional concerns and recommendations made by the General Accountability Office (GAO) regarding rapid development and transitioning of Combatant Commander (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. However, in FY08 all ACTD funding is being transferred to the JCTD program to complete this transition more quickly than originally anticipated. Beginning in FY07 all new starts will be JCTDs (replacing ACTD new starts). This will implement a process that will more rapidly provide 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. The resources are aimed at carrying successful projects through the difficult transition stage ("S&T valley of death"). The remaining ongoing ACTDs that were started in previous years but not yet complete will be funded to completion in the JCTD program element and will complete in two to three years. It is anticipated that all ongoing ACTDs will be complete by FY09. Beginning in FY07 there will be only JCTD new start projects. In FY 2006, the 13 ACTD/JCTD new start projects consisted of six ACTDs and seven JCTDs. To better support the rapid transition of joint, CoCom/coalition operational capabilities, the JCTD business model includes a JCTD Transition program element. While not all ACTDs and JCTDs require transition funding, these resources provide a "transition bridge" to enable sustainment for innovative, "joint-peculiar" and Combatant Commander (CoCom)/coalition capabilities until traditional programming and budgeting can provide a permanent solution.

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)

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources (\$40 million) from the ACTD PE 0603750D8Z into the JCTD program element (PE)s. In FY08 all remaining ACTD resources will be shifted into the JCTD BA 3 PE 0603648D8Z. This will initially establish a funding stream to support approximately five to ten new JCTDs each year. The BA-3 JCTD PE will replace the current ACTD BA-3 PE in FY08; The JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs in FY07. In FY08 and out ongoing ACTDs will be supported with funding from the JCTD PE until completion in two to three years. JCTDs may be funded from both the ACTD and JCTD PEs during in FY07 as the JCTD model shift reaches completion. 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, new 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

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603648D8Z - Joint Capability Technology Demonstrations**

Defense Wide RDT&E funding managed by DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including a transition period to a program of record, 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 new model for Department of Defense acquisition with the addition of a transition arm through funding in the JCTD Transition BA4 which will provide a path for rapid fielding of successful, transformational capabilities that may require additional transition resources to "bridge" to a program of record.

FY 2007/2008/2009 General Program Plan: DUSD (AS&C) will maintain oversight of the JCTD/ACTD program. The FY 2007 review and validation process began in February 2006, with JROC validation in June of 2006. Congressional notification followed in December 2006 with seven "new start" JCTDs and five potential "rolling starts". Rolling start projects were selected because they represent important warfighter concerns and potential capabilities. Three of the proposals, address issues with emerging technologies that could be significant "game changers". While these projects have been successfully vetted through the JCTD selection process, some additional proposal development must be addressed with the stakeholders (i.e., Services, Agencies, Coalition and Inter-agency partners), prior to project initiation. This year, five candidates emerged that were particularly compelling; however, due to technology or resource related issues, they are still in a developmental stage. For FY 2008, the new start selection process will be repeated beginning in March 2007. It is anticipated that new start initiatives will range from 5 to 7 JCTDs. JCTD funding will be drawn from both the ACTD and JCTD PEs in FY07. Funding available for initiating new FY 2007 JCTDs and Rolling Starts will be approximately \$47 million from both the ACTD and JCTD PEs. In FY08 all ACTD funding will be shifted to the JCTD PE and it is anticipated approximately \$50 million will be available for JCTD new start/rolling start initiatives. Finally, in FY09 \$50 million will be available for new start/rolling start initiatives. Due to the accelerated pace of JCTD development over ACTDs (JCTDs demonstrate in 2 to 3 years), the turnover rate is faster, thus funding for new starts each year has increased to approximately \$50 million per year.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	34.443	35.553	35.590	35.624
Current BES/President's Budget (FY 2008/2009)	33.707	36.468	194.352	207.740
Total Adjustments	-0.736	0.915	158.762	172.116
Congressional Program Reductions				
Congressional Rescissions		-0.210		
Congressional Increases		1.125		
Reprogrammings				
SBIR/STTR Transfer	-0.736			
Other			158.762	172.116

In FY06 there were no congressional increases or decreases to the JCTD program element. Congressional rescissions and other taxes such as Section 8125 and FFRDC totaled \$557 thousand that were displayed in the FY 2007 President's Budget. The SBIR/STTR transfer totaled \$735 thousand. For FY07 congressional increases if \$1.125 for Computer Assisted Threat Exploitation Program (CATE). Congressional rescissions and other taxes such as Section 8023 for FFRDC totaled \$214. In FY08 and FY09 all ACTD funding 0603750D8Z transfers to the JCTD BA 3 Program Element 0603648D8Z.

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603648D8Z - Joint Capability Technology Demonstrations****C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.**E. Performance Metrics:**

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

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.

A comparison of ACTD and JCTD metrics are:

1) Project Selection Focus:

a. ACTD - Threat based: shared military service and CoCom influence.

b. JCTD - Capability Based: Greater CoCom influence looking at nearer term joint/coalition needs.

2) Spiral Technologies:

a. ACTD - No metric

b. JCTD - 25% will provide an operationally relevant product demonstration within 24 months of ID signature.

3) Final Demonstration Completed

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<p>a. ACTD - 3 to 4 years after initiation</p> <p>b. JCTD - 75% of projects complete final demonstration within three years of ID signature.</p> <p>4) Shared Funding and Viability of resources:</p> <p>a. ACTD - OSD provides no more than 30% of the budgeted resources. Funding provided from many different program elements.</p> <p>b. JCTD - OSD provides significantly more funding, greater than 30% in some cases a majority of projected funding, especially in the first two years.</p>		

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603648D8Z - Joint Capability Technology Demonstrations</b>					PROJECT <b>P648</b>	
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P648	Joint Capability Technology Demonstration (JCTD)	33.707	36.468	194.352	207.740	213.989	207.572	210.299	213.256

**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 with new modifications. The JCTD model specifically addresses congressional concerns and recommendations made by the General Accountability Office (GAO) regarding rapid development and transitioning of Combatant Commander (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. However, in FY08 all ACTD funding is being transferred to the JCTD program to complete this transition more quickly than originally anticipated. Beginning in FY07 all new starts will be JCTDs (replacing ACTD new starts). This will implement a process that will more rapidly provide 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. The resources are aimed at carrying successful projects through the difficult transition stage ("S&T valley of death"). The remaining ongoing ACTDs that were started in previous years but not yet complete will be funded to completion in the JCTD program element and will complete in two to three years. It is anticipated that all ongoing ACTDs will be complete by FY09. Beginning in FY07 there will be only JCTD new start projects. In FY 2006, the 13 ACTD/JCTD new start projects consisted of six ACTDs and seven JCTDs. To better support the rapid transition of joint, CoCom/coalition operational capabilities, the JCTD business model includes a JCTD Transition program element. While not all ACTDs and JCTDs require transition funding, these resources provide a "transition bridge" to enable sustainment for innovative, "joint-peculiar" and Combatant Commander (CoCom)/coalition capabilities until traditional programming and budgeting can provide a permanent solution.

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)

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources (\$40 million) from the ACTD PE 0603750D8Z into the JCTD program element (PE)s. In FY08 all remaining ACTD resources will be shifted into the JCTD BA 3 PE 0603648D8Z. This will initially establish a funding stream to support approximately five to ten new JCTDs each year. The BA-3 JCTD PE will replace the current ACTD BA-3 PE in FY08; The JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs in FY07. In FY08 and out ongoing ACTDs will be supported with funding from the JCTD PE until completion in two to three years. JCTDs may be funded from both the ACTD and JCTD PEs during in FY07 as the JCTD model shift reaches completion. 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, new 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

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007	
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<p>Defense Wide RDT&amp;E funding managed by DUSD(AS&amp;C) will support demonstration of military utility and deployment of interim capability including a transition period to a program of record, 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 new model for Department of Defense acquisition with the addition of a transition arm through funding in the JCTD Transition BA4 which will provide a path for rapid fielding of successful, transformational capabilities that may require additional transition resources to "bridge" to a program of record.</p> <p>FY 2007/2008/2009 General Program Plan: DUSD (AS&amp;C) will maintain oversight of the JCTD/ACTD program. The FY 2007 review and validation process began in February 2006, with JROC validation in June of 2006. Congressional notification followed in December 2006 with seven "new start" JCTDs and five potential "rolling starts". Rolling start projects were selected because they represent important warfighter concerns and potential capabilities. Three of the proposals, address issues with emerging technologies that could be significant "game changers". While these projects have been successfully vetted through the JCTD selection process, some additional proposal development must be addressed with the stakeholders (i.e., Services, Agencies, Coalition and Inter-agency partners), prior to project initiation. This year, five candidates emerged that were particularly compelling; however, due to technology or resource related issues, they are still in a developmental stage. For FY 2008, the new start selection process will be repeated beginning in March 2007. It is anticipated that new start initiatives will range from 5 to 7 JCTDs. JCTD funding will be drawn from both the ACTD and JCTD PEs in FY07. Funding available for initiating new FY 2007 JCTDs and Rolling Starts will be approximately \$47 million from both the ACTD and JCTD PEs. In FY08 all ACTD funding will be shifted to the JCTD PE and it is anticipated approximately \$50 million will be available for JCTD new start/rolling start initiatives. Finally, in FY09 \$50 million will be available for new start/rolling start initiatives. Due to the accelerated pace of JCTD development over ACTDs (JCTDs demonstrate in 2 to 3 years), the turnover rate is faster, thus funding for new starts each year has increased to approximately \$50 million per year.</p>				
<b><u>B. Accomplishments/Planned Program:</u></b>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Counter Intelligence - Human Intelligence Architecture Modernization Program, Intelligence Operations Now (CHAMPION)	6.800	1.200	1.200	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for CHAMPION as a FY06 new start Joint Capability Technology Demonstration. The outcome will provide improved capabilities for the counter-intelligence, human-intelligence and special forces communities of interest. These improvements will provide an accessible and actionable information system for management of the CI/HUMINT/SOF collection, mission planning and asset management information. The capabilities include technologies for integration of biometrics and geospatial information. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment are: 1) joint data standard for human domain; 2) CHAMPION information collection tool and associated concept of operations (CONOPS), tactics, techniques and procedures (TTPs); 3) CI-HUMINT/SOF source management tools with federated search capability and data replication/access across multiple networks; and 4) integrated language translation collection, CIHUMINT source vetting tool and data access tools for multi-intelligence discipline fusion. The efficiencies to be gained are; 1) improved effectiveness of HUMINT operations; 2) elimination of Human domain data stovepipes; 3) joint human domain data standard; 4) improved web enabled data access across multiple networks and security levels; 5) Joint CONOPS/ TTPs; 6) Biometric and geo-spatially enabled mission and asst management tools. The transition strategy is to incorporate CHAMPION capabilities into the Distributed Common Ground Station program of record (POR). The sponsoring Combatant Command (CoCom) is the U. S. Central Command (CENTCOM). Other organizations involved as participants, users of capabilities, and/or observers include USSOCOM, USJFCOM, Counter-Intelligence Field Activity, Defense Intelligence Agency, National Geospatial Agency, and the National Security Agency. The lead service is the Army.</p> <ul style="list-style-type: none"> <li>• FY2006 Output - Identification and documentation of Counter-Intelligence, Human-Intelligence and special operations forces functional requirements. Analysis of alternative technologies for the solution set. Plan Spiral 1 demonstration to assess critical operational issues. Prepare transition plan. Coordinate planned POM funding of the deliverable by the program of record.</li> <li>• FY2007 Planned Output - Complete Spiral 1 limited assessment report and Spiral 2 assessment plan. Execute the Spiral 2 demonstration and assessment of Spiral 2 deliverables. Prepare final assessment plan. Complete approval of transition plan. Secure funding for fielding of spiral deliverables and interim capabilities found to have military utility by operational sponsor.</li> </ul>				

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• FY2008 Planned Output - Execute final military utility assessment and finalize CONPs and TTPs. Continue efforts to field spiral deliverables and interim capabilities found to have military utility by operational sponsor. In FY2009 the project will transition to Program of Record and project completion.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Comprehensive Maritime Awareness (CMA)	6.720	1.100	5.600	0.000
<p>The Joint Requirements Oversight Council validated the capability need for CMA as an FY-06 new start. The outcome of CMA is demonstration and transition of technologies and operations concepts showing the value of information sharing and effective information management for improving global Maritime Domain Awareness. CMA will demonstrate the value of both interagency and international (Republic of Singapore) information sharing. CMA will demonstrate data management techniques such as automated anomaly detection and threat evaluation, and application of the Department of Defense Net-Centric Data Strategy. CMA is a 4-year project sponsored by U.S. Pacific Command, U.S. Northern Command, and U.S. European Command. Initial capabilities will be demonstrated and operated in CY-06, with advanced capability spirals in FY07 and FY08, and transition support in FY09. The lead Service is U.S. Navy. The primary outputs and efficiencies to be demonstrated in CMA Military Utility Assessments are (1) percent increase in the number of maritime tracks and identified tracks in U.S. military, interagency, and coalition maritime operational pictures; (2) percent increase in numbers of maritime contacts with amplifying information (such as crew list, cargo manifest, port-of-call history, etc.); (3) percent increase in numbers of vessels of interest monitored by maritime intelligence analysts; (4) number of automated anomaly detections and threat alerts provided to maritime intelligence analysts; (5) increase in number of agencies (U.S. and international) engaged in information sharing across a common service oriented architecture.</p> <p>• CY 2006 Output - Capability for around-the-clock machine-to-machine data sharing with Republic of Singapore, including sharing the releasable U.S. Pacific Command common operational picture and Singapore interagency maritime data; and capability for machine-to-machine collaboration between maritime intelligence analysts in the U.S. and Singapore. An initial Concept of Operations is drafted. Service oriented architecture planning, and other data management planning has been conducted in workshops. Strong partnerships are developed with US Coast Guard and DoD Maritime Intelligence communities, and partnership is building with U.S Customs and Border Protection. Spiral Output -- operational data exchange and collaboration with Republic of Singapore.</p> <p>• FY 2007 Planned Output - Continue operating FY 2006 spiral capability. Integrate capabilities of the U.S. Coast Guard Vessel Tracking Program, and automated anomaly and threat assessment, at key regional sites determined by architecture decisions. Conduct interim military utility assessment. Complete planning for network services and architecture implementation for FY 2008 for interagency sharing.</p> <p>• FY 2008 Planned Output - Implement network services and service oriented architecture for interagency information exchange. Conduct final military utility assessment. Continue operating and improving FY 2006 and FY 2007 capabilities. In FY 2009 the project will continue operating delivered capabilities. Complete transition of network services to Program Executive Office C4I&amp;Space, and complete transition of operating capabilities to operations and maintenance budgets. CMA JCTD scheduled completion date is September 2009.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Modular Intermodal Distribution System (JMIDS)	7.350	2.930	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JMIDS as an FY06 new start. The outcome of JMIDS is to demonstrate, analyze and transition joint service, all-mode containers and platforms that are equipped with Automatic Identification Technology (AIT). JMIDS will permit efficient, seamless, and visible movement of supplies through the distribution system from CONUS-based depots and vendor locations to tactical end users. This includes movement through the Seabase to support forward operating expeditionary and task force units. JMIDS technologies will enhance the ability to source load supplies that can move from origin to destination without the current intensive and inefficient handling and re-packing caused by: 1) incompatible air and ground cargo systems; and, 2) sorting, storing, and/or reconfiguring cargo. The goal of this JCTD is to improve the agility, flexibility, efficiency, effectiveness, responsiveness, and interoperability of the Joint Distribution System.</p> <p>JMIDS is a three-year project under sponsorship of US Transportation Command, with JCTD completion by the end of FY 2008, and transition to selected Program Manager(s) / Program of Record(s) [Joint Modular Intermodal Platform (JMIP) and Joint Modular Intermodal Container (JMID)] by FY 2009. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the JCTD Limited and Capstone Military Utility Assessments are: (1) Timeliness of JMIDS technologies to deliver supplies to operating forces as compared to present distribution system; (2) Capability to support</p>				



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transportability across different modes by reducing re-handling/ packing time; (3) Improved supply flow through the available technologies- Tonnage processed per hour, Time per load-out of platform Wait times per load-out; and, (4) Capability to support Command Level Situational Awareness-Accuracy of AIT tracking technology (contents, position), percent of JMICs tracked correctly, overall improvement of situational awareness upon use of AIT. <ul style="list-style-type: none"><li>• FY 2006 Output - Developed Military Utility Assessment Plan (MUAP). Completed development and testing of prototype JMIDS hardware. Evaluated and selected Automatic Identification Technologies (AIT). Established Transition IPT - with 5 key functional areas, Transition Manager, assigned to Armament Research, Development and Engineering Center (ARDEC). Development of initial acquisition strategy - including an identification of prospective Program Managers. Commenced development of JCIDS documentation.</li><li>• FY 2007 Planned output - Complete acquisition of JMIC, JMIP and AIT demonstration hardware. Conduct two Limited MUA Military Utility Assessments (MUAs) and a Capstone MUA. Conduct cost, weight, producibility trade studies for the JMIP and JMIC prototypes. Complete three Capability Development Documents (CDD) spirals, including Business Case Analysis and Integrated Logistics Support planning drafts. Commence CDD staffing through Joint Staff and Services. Final demonstration date is September 2007. Deliver hardware, conduct engineering tests, and plans for a Coalition Warfare Demonstration of the JMIDS hardware with the United Kingdom. Activities in FY 2008 will be to complete final MUA Report. Commence transition to formal acquisition program(s). Complete Final CDD document and submit to JROC; Execute Milestone B Decision; Transition to Identified PM; Conduct Residual evaluations and follow-on engineering development. JMIDS JCTD scheduled completion date is December 2008. Identify three spiral technologies that enhance JMIDS output. Exploit JMIDS success through a Coalition Warfare Demonstration of the JMIDS hardware with the United Kingdom that determines the value of JMIDS to coalition warfare logistics.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Epidemic Outbreak Surveillance (EOS)		0.000	0.000	2.500	2.500
The Joint Requirements Oversight Council (JROC) validated the capability need for EOS as an FY 2005 start. The outcome of EOS is to demonstrate and transition solutions that are transformational dual use for operational and clinical medicine as well as bio-defense. 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. Clinically, a practitioner, if faced with 100 cases of flu will assume you also have the flu if you exhibit the same symptoms. EOS will ensure a correct diagnosis more quickly while running a series of pathogen tests in the background to look for biological attack. The overall goal is to develop a business case that makes the technology affordable for and integrated into the command structure for both routine and wartime scenarios. 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. The first spiral of EOS has begun with the initiation of an avian flu (H5N1) warning network to established at 22 USAF sites worldwide. This system should be operational by the Fall, CY-2006, in time for the next flu season. DUSD/AS&C, USJFCOM (warfighter), AF/SG (technical manager), and JPEO/CBD (transition manager) are the principals for this ACTD. The ACTD will end in FY2008. Outputs and Efficiencies: Viral/Bacterial Agents per Chip Assay - 100 vice 20; Total Cycle Time per Individual Assay - 2 hours vice 8; Approximate Cost per Assay - \$40 vice \$500; Portability of Fully Capable System - 40 pounds vice 500; Rapid ID of Bio Agents vs. Backgrounds - 2 hours vice 1 day; Forensic Attribution of Agent Strains - days vice months; contain Outbreak and Reconstitute Forces - 2 days vice weeks. <ul style="list-style-type: none"><li>• FY 2006 Output- Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output-Continue to monitor trainees for outbreaks and refine</li></ul> CONOP'S and TTP's. Conduct operational exercises with US Navy. Continue to monitor for avian flu outbreaks and institute warning as necessary. Transition products to active duty locations for use. Begin spiral two assessment of follow-on technologies in FY 2008 and 2009. The ACTD completes in FY 2009.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009

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Joint Coordinated Real-time Engagement (JCRE)		0.000	0.000	1.200	1.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JCRE as an FY 2005 start. The outcome of JCRE will be to develop the CONOPS and the GIG-enabled software that enables Joint Real-Time Operations and Engagement across multi-Combatant Command (COCOM) Theaters and Echelons. JCRE will support Joint Operations by providing Net-Centric Command and Control Tools that greatly enhance Planning and Execution across multiple COCOMS. These tools will be provided as web services, so they can easily be extended to support 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; Joint Force Engagement Packages; and Joint Force Synchronization Tools. These JCRE technology components will be implemented using a Service Oriented Architecture (SOA) with distributed service orchestration. 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. Output and Efficiencies: % of relevant data that is properly synchronized; % of global operation centers that have Synchronization awareness; % of synchronization problems that go undetected for &gt; 10 minutes; Average time to detect a synchronization problem; Average time to determine impact of synchronization problems on effects; time to assemble and organize global effects; workload to assemble and organize global effects; time to synchronize global actions, capabilities, and resources; workload to synchronize global actions, capabilities, and resources; number of resynchronizations / number of original synchronizations (synchronization robustness); time to create a globally synchronized operational plan. The lead service is the Navy and the lead CoComs are U.S. Strategic Command and U.S. Special Operations Commands.</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Refer to the ACTD R2a.</li> <li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>• FY 2008 Demonstration #3 (Fall 2007). Output: Demonstration of Joint Force Global Situational Awareness Tools, Joint Force Engagement Packages, and Joint Force Synchronization Tools in a battle staff exercise. A Joint MUA will be performed in conjunction with the final demonstration. Demonstration goals may be changed based on Operational Manager's direction.</li> </ul> <p>Extended User Evaluation (EUE) Phase</p> <ul style="list-style-type: none"> <li>• FY 2008-FY2009 Output: Prepare JCRE capability for primary transition to Net Enabled Command Capability (NECC). The EUE Package will consist of the JCRE System Prototype (all hardware and software required to host JCRE capabilities, in full or presentation server configuration), to be installed at USSTRATCOM, USSOCOM and DISA as necessary, and finalized CONOPS and TTP documents and training packages, to be delivered to US Joint Forces Command (USJFCOM). Secondary transition targets include USSTRATCOM and USSOCOM programs of record-Integrated Strategic Planning &amp; Analysis Network (ISPAN) and Special Operations Mission Planning Environment (SOMPE), respectively. Navy PEO C4I and Space will transition relevant capabilities as web services into GCCS-M/NECC.</li> </ul>					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Sea Eagle		0.000	0.000	0.800	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for Sea Eagle as an FY 2005 start. The outcome of Sea Eagle will be to demonstrate and transition technologies to provide persistent, clandestine, and unattended monitoring of maritime areas in a Special Operations Forces (SOF) deliverable "system of systems". These sensors and systems will be deliverable by SOF and networked in a multi-media (sea, air, land) system-of-systems approach. Sea Eagle will greatly increase SOF's ability to clandestinely conduct persistent, intrusive Intelligence, Surveillance, and Reconnaissance (ISR) in maritime areas. The warfighter will tactically emplace Sea Eagle systems to provide targeted, tactical information that complements national and theater intelligence assets to enable a layered intelligence collection strategy. 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. Outputs and Efficiencies: The overarching output for Sea Eagle is persistence. This output incorporates a variety of initiatives such as power management, intelligent triggering, and signal discrimination to optimize system performance and persistence. Measures of persistence will be relevant for individual component, subsystem, and overall system performance. Quantitative metrics are classified. USSOCOM is the COCOM/User Sponsor; Navy is the Lead Service.</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Refer to the ACTD R2a.</li> <li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>• FY 2008: Conduct final Military Utility Assessment of the entire Sea Eagle network. In FY 2009 the Extended User Evaluation (EUE) will complete and the ACTD will complete.</li> </ul>					

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<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Agile Rapid Global Combat Support (ARGCS)	0.000	0.000	0.900	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for ARGCS as an FY-04 start which is using advanced technologies to demonstrate a family of testers for electronic components and provide unprecedented interoperability between weapon systems, Services, and levels of maintenance. This will reduce costs and the proliferation of testers while improving the availability and performance of weapon systems. In addition, ARGCS will demonstrate technologies to facilitate net-centric diagnostics by capturing historical logistics data and developing an expert support system that will further reduce repair times and costs, as well as future sparing requirements. Outputs and efficiencies will include increases in performance and test accuracy, interoperability between Services, reduced logistics and weapon system support costs, and reduced proliferation of automatic test systems in the future. (100% interoperability, Time to field - one year or less, 40% reduced time to diagnose and repair, proliferation of systems - reduce footprint by 50%, Scalability of systems - 100%). The ARGCS technology will be transitioned to the Services through existing automated test programs of record. The user sponsor is U.S. Pacific Command and the lead service is the Navy.</p> <ul style="list-style-type: none"> <li>•FY 2006 Output - Refer to the ACTD R2a.</li> <li>•FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>•FY 2008 Planned Output: Complete the ACTD and continue to evaluate ARGCS military utility through the EUE. Support transition of ARGCS technologies and products into Service programs of record.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Joint Unmanned SyS Common Control (JUSC-2)	0.000	0.000	0.300	0.000
<p>The JROC validated the capability need for JUSC2 as an FY-04 new start. The desired outcome of JUSC2 is to provide a reconfigurable and scaleable common control architecture, capable of concurrently managing large numbers of unmanned systems of all types, leveraging interoperability afforded by existing joint and coalition interfaces and message sets for unmanned systems. The primary outputs and efficiencies to be demonstrated by this project include more efficient management and improved overall operational effect through: (1) the ability to concurrently manage (in some cases, control) all unmanned systems deployed with Littoral Combat Ship (LCS) mission packages; (2) demonstration of NATO STANAG 4586 (UAV Control Standard) Level 3/4 control handoff of STANAG enabled unmanned aircraft between Army and Navy control stations; and (3) demonstrate the ability to hand-off control of unmanned surface vehicles (USVs) and unmanned ground vehicles (UGVs) to other services' Joint Architecture for Unmanned Systems (JAUS)-compliant control stations. Current transition plans include: JUSC2's Unmanned Vehicle Common Control (UVCC) software product - an integral component of the Navy's Littoral Combat Ship Flight 0. JUSC2 Common Unmanned Aerial Vehicle (UAV) Interface Segment (STANAG 4586 compliant ground station) - now a transition product that the Army's UAV Project Office will insert into the One System Acquisition Program. The user sponsor is U.S. Joint Forces Command and the lead service is the Navy.</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Refer to the ACTD R2a.</li> <li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>• FY 2008 Plans - Complete residual final MUA activities. Complete reporting efforts; provide final engineering packages, software, and evaluation results to LCS program. Complete the ACTD.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Special Operations Forces (SOF) Long Endurance Demonstrator (SLED)	0.000	0.000	5.000	0.000
<p>The JROC validated the capability need for SLED as an FY-05 new start. The outcome of SLED is to demonstrate an unmanned vertical take off and landing vehicle (the DARPA developed 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. Efficiencies and outputs will be evaluate the A160 for its capability to perform designated functions. Platform performance must be compatible with payload and mission requirements in terms of altitude, endurance, range, weight (platform and payload), and payload power. The payloads must meet mission requirements and be compatible with A-160 capabilities and constraints. Planned Transition is to integrate with USSOCOM components.</p>				

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U.S. Special Operations Command is the user sponsor and lead agency. <ul style="list-style-type: none"> <li>FY 2006 Outputs - Refer to the ACTD R2a.</li> <li>FY 2007 Planned Outputs - Refer to the ACTD R2a.</li> <li>FY 2008 Planned Outputs - Complete final MUA activities and reports. Update CONOPs. Perform Extended User Evaluation. Complete the ACTD.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Small UAV (SUAV)	0.000	0.000	3.700	1.700
The JROC approved the capability need for SUAS as an FY-06 new start. The outcome of SUAS is to address Joint operational concerns noted during on-going operations through the integration of new technology across the entire class of Small UAVs. The outputs and efficiencies to be demonstrated are: technology insertions to provided measurably improved performance/logistical support in the following areas: Command, Control and Communications (C3); Payload Integration; Targeting; Platform Related Issues (power, propulsion, etc.); improved operator training though the use of integrated training programs with emphasis on simulation; improved and more efficient Tactics, Techniques, and Procedures (TTP) across the Services for small unit real-time reconnaissance and surveillance capabilities. New operational capabilities will be evaluated and no less than once per year. Transition strategy: FY2009/2010 is the transition period. The capabilities will be integrated into USSOCOM systems, and available for integration into all SUAS customers assets (spiraled out of the ACTD into the field as they become available). The User Sponsor and Lead agency is U.S. Special Operations Command (USSOCOM). <ul style="list-style-type: none"> <li>FY 2006 Outcome - Refer to the ACTD R2a.</li> <li>FY 2007 Planned Outcome - Refer to the ACTD R2a.</li> <li>FY 2008 Planned Outcome - Continue technology definition and cut in (spiral fielding). Continue TTP development and refinement. Continue CONOP refinement. Perform one limited assessment, one Interim Military Utility Assessment to support fielding of capabilities. Perform the final (culminating) assessment, capturing overall improvement to operational capabilities. In FY 2009 the extended User Evaluation (EUE) will begin and support of fielded technology and training packages. The ACTD will complete.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Counter Bomb/Counter Bomber (CB2)	0.000	0.000	3.700	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for CB2 as a FY03 new start. The outcome is to provide improved capabilities for military installations against the threat posed by terrorist delivered bombs and improvised explosive devices (IEDs). The capabilities include technologies for detection, identification, mitigation, and command/ control/ communications (C3); along with tactics, techniques, and procedures, and concepts for operations. The sponsoring Combatant Commands (CoComs) are USSOUTHCOM and USEUCOM. Other organizations involved as participants, users of capabilities, and/or observers include USCENCOM, Department of Homeland Security, and US Coast Guard. The lead service is the U. S. Navy. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are 1) ability to perform surveillance on the movements of people and vehicles near the installation as possible precursor to the threat, 2) detection and identification of the threat device prior to blast, 3) mitigation of the bomb, and 4) C3 to tie together the people, systems, and data critical to the accomplishment of the mission. The efficiencies to be gained are 1) the ability to perform an important and increasingly critical mission that had little priority until a few years ago, 2) the ability to perform that mission at little or no increase in manpower to military force protection organizations, 3) the ability to reduce the vulnerability and casualties of the force protection personnel while performing this dangerous mission. The transition strategy is to roll CB2 capabilities into existing programs of record (POR) and acquisition program elements of Service force protection projects, and also to utilize the J34 sponsored Combating Terrorism Readiness Initiative fund. User data packages for each of the systems will be developed, along with a users' guide on how to select and introduce new technology for force protection. Four critical products from this ACTD have already been deployed to Iraq: 1) van-mounted backscatter x-ray for vehicle inspection, 2) vehicle under carriage video inspection systems, 3) infra-red imaging system, and 4) off-leash trained canines for explosives detection. Transition plans will include program of records for Anti Terrorism/Force Protection acquisition agencies in each of the 3 services, GSA, and the J34 Combating Terrorism Readiness Initiative Fund. <ul style="list-style-type: none"> <li>FY 2006 Outcome - Refer to the ACTD R2a.</li> <li>FY 2007 Planned Outcome - Refer to the ACTD R2a.</li> <li>FY 2008 Planned Outcome - Continue EUE and transition activities for all Spirals. Planned completion date is in FY 2009.</li> </ul>				

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FLM Small Diameter Bomb	2.000	4.000	6.200	1.300
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for FLM as a new start in FY 2006. The outcome of FLM is to provide Combat Air Force aircraft the ability to prosecute high-value targets in a collateral damage sensitive environment. FLM integrates a carbon fiber warhead case and the multi-phase blast explosive (MBX) onto the existing Small Diameter Bomb (SDB) I airframe. The FLM is not intended to replace SDBI but to complement it. FLM's sub-four meter accuracy will result in pin-point focused lethality with minimal collateral damage concerns. FLM is a four-year project under sponsorship of United States Central Command (USCENTCOM), with completion of development and demonstration by the mid-CY 2008, and fielding of approximately fifty (50) residual FLMs with continued contractor sustainability provided through mid-CY 2010. The primary outputs and efficiencies to be demonstrated in the JCTD Military Utility Assessment are (1) successful integration of the carbon fiber warhead and MBX onto the existing SDB I airframe with a fully functioning weapon and kill mechanism, (2) safe carriage and separation from F-15E, (3) to demonstrate FLM's sub-four meter accuracy, (4) the elimination of fragmentation as kill mechanisms in the FLM weapon integration design, (5) a full and complete characterization of FLM's capability against defined target set for USCENTCOM. The planned transition strategy is: upon Military Utility demonstration, enter into formal acquisition process at Milestone C for Low Rate Initial Production buys; Extended User Evaluation (EUE) of residuals by USCENTCOM; Follow-on system development and demonstration, production, and fielding through service Program Executive Office/Program Managers (PEOs/PMs); Submit funding for Low Rate Initial Production in FY09 with the targeted Program of Record: Small Diameter Bomb Program. The User Sponsor is USCENTCOM and the Lead Service/Agency is the U.S. Air Force.</p> <ul style="list-style-type: none"><li>• FY 2006 Output Year - Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - Final operational demonstration of FLM. Deliver approximately 50 residual FLMs to CENTCOM. Initiate 2-years of operational logistical field support. Begin FLM insensitive munition and hazard classification certification. Initiate preparation for formal acquisition program transition. Transition manager is 918th Armament Systems Group.</li><li>• FY 2009 Planned Output - Continue FLM residual weapon fielding support. Complete FLM insensitive munition and hazard classification certification. FLM JCTD scheduled completion is second quarter CY 2010.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Night Vision Cave/Urban Assault (NVCUA)	0.000	0.000	0.600	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for NVCUA as an FY-03 new start. The outcome of NVCUA is to demonstrate a suite of lightweight, soldier-borne sensor technologies, together with new Concepts of Operation (CONOPs) and Tactics, Techniques and Procedures (TTPs), to enable decisive overmatch for dismounted assault in subterranean and urban environments. Five-year project under sponsorship of U.S. Special Operations Command (USSOCOM), with completion of development and final demonstration in FY05, and final completion date in FY08. The lead service is U.S. Army. The primary outputs and efficiencies to be demonstrated in the Night Vision ACTD Military Utility Assessment are: 1) Increased capability for Special Operations Forces (SOF) to identify detected targets during Special Reconnaissance (SR) missions; 2) Increased capability for SOF during Direct Action (DA) missions; 3) Enhanced SOF capabilities to move and identify targets in low/no-light environments; 4) Enhanced SOF capabilities to move and identify targets in urban/restrictive terrain. Current Efficiency Goals: SWIR Standoff Identification Range - 2k = IR Detection Range; UCIR Detection Range (Cave Assault) 150m, 200m ,250m; UCIR Detection Range (Urban UGS) - 15m ,25m; Pd (Approach Sensors) -- 90% - 95%; STTW Detection Range -- 10m, 20m. TheTransition status: Long Range Identification (LRID) system was successfully demonstrated and is currently undergoing an Extended User Evaluation in Iraq for consideration for transition to Army Programs of Record (POR). There are also classified capabilities that are being considered for transition. In addition, efforts are underway to provide selected items (e.g., Combat Periscope, ENV Goggles) for operational use on a rapid-equipping basis.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - Complete interim capability/residual support. Complete transition to designated Programs of Record. Complete the ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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Extended Space Sensors Arch (ESSA)		0.000	0.000	1.600	1.700
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for ESSA as a FY06 new start. The ESSA ACTD focuses on creating a joint, distributed, net-centric space surveillance framework. The expected outcome of the ESSA ACTD is a flexible, responsive and scalable command and control family of systems which enhance United States Strategic Command's (USSTRATCOM) Space Situational Awareness (SSA) capability. ESSA is a three-year ACTD sponsored by USSTRATCOM and Commander Joint Forces Component Command Space (CDR JFCC SPACE). ESSA is planned for a final demonstration in mid FY 2009 and transition to a Programs of Record (PORs) will occur by the end of FY 2009. The lead service is the U.S. Air Force. The expected outputs and efficiencies of the ESSA ACTD is to develop and demonstrate net-centric sensor architecture which provides more timely SSA information via the Secret Internet Protocol Router Network (SIPRNET) to decision makers. ESSA efficiencies will include: increased timeliness for delivering data products from sensor to command and control (C2) node; ability of netted sensors to perform more efficient strategies for searching, tracking, identifying and monitoring space object population; ability of C2 node to observe sensor operations in real-time and make rapid decisions in response to space events; and the ability of architecture to support both theater and strategic users. While this ACTD does not answer all of the SSA gaps and shortfalls identified in USSTRATCOM's Space Control Joint Capability Document (JCD), it does address the number one priority identified in the JCD of synergistically exploiting all available SSA data.</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Refer to the ACTD R2a.</li> <li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>• FY 2008 Planned Output - The second ESSA demonstration is scheduled for March 08. The second demonstration will add sensor sidecars to two sites: ALTAIR radar and Millimeter Wave Radar at the Reagan Test Site and the Ground Based Electro-Optical Deep Space Surveillance (GEODSS) site in Maui, HI. A fusion node at Massachusetts Institute of Technology Lincoln Laboratory (MIT/LL) will provide a web-based service for change detection alerts. The objective of this demonstration is to provide SSA-relevant alerts to interested users. These alerts will allow a user to define their operational picture by having the ability to identify the satellite, country of interest, type of change and / or the basis for the change detection.</li> <li>• FY 2009 Planned Output - The final ESSA demonstration is scheduled for February 09. Immediately after a successful operational utility demonstration, an Extended User Evaluation (EUE) will begin and the ESSA products (sidecars) will transition to the appropriate PORs. The final demonstration will provide situational awareness during the course of a New Foreign Launch (NFL). The objective is to expose operations-related information and situation status in a net-centric manner with regards to tracking, identifying and cataloging components of an NFL. The demonstration will include timely pre-event operational information, real-time sensor data, and real-time operational information via a web log-type of collaboration tool. Complete the ACTD.</li> </ul>					
<b>Accomplishment/Planned Program Title</b>		<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Actionable Situational Awareness Pull (ASAP)		0.000	0.000	0.600	0.000
<p>The JROC approved the capability need for ASAP as an FY-05 new start. The ASAP output will 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) core service architecture and the Net-Enabled Command Capability (NECC), a "Smart Pull" service will be operationally demonstrated and transitioned into NECC and the Integrated Broadcast System (IBS). ASAP's outputs and efficiencies include (1) increased percentage of useable data available to the user, (2) increased performance through decreased latency of data, (3) percentage of increase in data obtained via "pull" vice "push" procedures, and (4) increased interoperability with coalition forces by use of XML Common Message Format Standards. Expected efficiencies (to be measured and verified) will include response time performance on the return of data as a web service. Planned Transition: Software tools and documentation will transition to Net-Enabled Command Capability (NECC) and the Integrated Broadcast System (IBS) starting in FY 2007. The ASAP User Sponsor is the U. S. Pacific Command (PACOM) and the lead service/agency is the Defense Information Systems Agency (DISA).</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Refer to the ACTD R2a.</li> <li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>• FY 2008 Planned Output - Finalize CONOPs / TTPs, training package and recommendations for DOTMLPF. Complete transition ASAP ACTD products to programs of record / programs pending results of JMUA. Complete the ACTD.</li> </ul>					
<b>Accomplishment/Planned Program Title</b>		<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Regional Maritime Awareness Capability (RMAC)		1.000	2.234	2.200	0.000

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<p>The JROC approved the capability need for RMAC as an FY-06 new start. RMAC is a coordinated DoD and Department of State project. The outcome of RMAC will demonstrate and transition a regional maritime awareness solution set consisting of sensors and their indigenous processors, communications systems, and software. The initial application of the capability will enable friendly nations in the Gulf of Guinea region to develop maritime domain awareness in the regional waters, and share their data with each other and with the U.S. This solution set will be equally applicable to local sensor sites, national operations centers, regional coordination centers, and external users. The sensors and processors include Automated Information System (AIS), radar, video cameras, and night vision devices. Communications will be done through UHF/VHF Radios, W3C-compliant, commercially secure, IP-based networks and cell phones. RMAC's outputs and efficiencies include surveillance, tracking, fusion and analysis, vessel tracks, and multi national information sharing and collaboration capabilities. The current Transition Strategy will deliver: 1) Residuals: AIS, radar, video cameras, night vision devices, radios, cell phones; 2) Documentation: training package, software / hardware specifications, site surveys, frequency management plan and user maintenance manuals, CONOPS / TTPs; 3) Post-JCTD acquisition strategies for procurements of capability will be developed by host nations and U.S. Program Managers pending outcome of demonstrations and assessments. The User Sponsor is the U. S. European Command (EUCOM) and the lead service is the Navy.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Developed preliminary Concept of Operations (CONOPS), requirements definition and architecture. Conducted site surveys for twoone nations. Initiated procurement of sensors systems. Developed preliminary sensors-to-software interfaces.</li><li>• FY 2007 Planned Output - Complete definition of requirements. Conduct additional site surveys in participation host nations, and develop coordinated installation plans with host nations. Finalize procurement of RMAC capability. Initiate development of training package. Continue development of CONOPS, Tactics, Techniques, and Procedures (TTP) and architecture. Conduct technical testing and demonstrations. Install baseline operational capability (BOC) equipment and software systems, and conduct initial checkout tests.</li><li>• FY 2008 Planned Output - Finalize requirements definition and architecture. Complete installation of RMAC capability. Continue development of CONOPS, TTP, and training package. Conduct operational demonstrations and Coalition Utility Assessment (CUA) of RMAC capability including local harbors / ports, National Operational Centers (NOC), Regional Coordination Center (RCC) and external users. In FY 2009 RMAC will sustain operational capabilities, complete transition planning and complete the JCTD.</li></ul>						
Accomplishment/Planned Program Title			FY 2006	FY 2007	FY 2008	FY 2009
Coalition Secure Management and Operations System (COSMOS)			0.000	0.000	1.900	1.900
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for COSMOS as a FY05 new start. The COSMOS ACTD output will be a pilot implementation of the Multilateral Interoperability Program (MIP) specifications for C2 data sharing (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. COSMOS is planned for a final demonstration in the second quarter of FY08, with sustainment of the demonstrated capabilities by DISA through FY09. The expected output is identifying necessary and sufficient conditions for implementing the MIP specifications, leading to rapid, secure protected sharing of critical C2 information to and among coalition partners' organic command and control (C2) systems on a single and secure integrated coalition network. The expected efficiency is substantial reduction of textual message exchange required to establish and maintain situational awareness among coalition commanders, improved collaborative decision making, reduced confusion, uncertainty and delay in combat and crisis operations and effective bridging of coalition sourced information with US Global Information Grid (GIG) Network Centric Enterprise Services (NCES) for two-way information exchange, when approved cross domain solutions are available. Transition to programs of record is planned for FY09, targeted at the emerging Multinational Information Sharing (MNIS) initiative. A policy enforcement capability for discrete rapid information sharing will be implemented in enterprise and theater-level coalition networks (i.e., CENTRIXS migrating to an emerging program based on the Joint Requirements Oversight Council (JROC) approved Multinational Information Sharing (MNIS) Initial Capabilities Document (ICD)). The use of Open Source Code for software-based capabilities will enable improved capabilities to be inserted into programs of record for coalition information sharing, network services, and next generation command and control, including those of Allies and Coalition partners. COSMOS is a three year ACTD co-sponsored by U. S. Pacific Command (PACOM) and U. S. European Command (EUCOM). The Defense Information Systems Agency (DISA) is the lead agency.</p> <ul style="list-style-type: none"><li>• FY 2006 output - Refer to the ACTD R2a.</li><li>• FY 2007 Planned output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output: The final demonstration for Military Utility Assessment (MUA) in a USEUCOM venue is planned for the fourth quarter of FY08. Use of the foundational MIP specification based C2 information exchange between coalition partners able to implement the necessary and sufficient conditions and security solutions in stabilization and recovery operations will provide increased political confidence, technical experience and collaborative abilities. Programmatic focus in FY08 is FY10 budget documentation to successfully transition sustainment of the demonstrated capability to programs of record. DISA will sustain the demonstrated militarily useful functionality until transitions to programs of record in FY09.</li></ul>						

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• FY 2009 Planned Output: The primary focus of activities in FY09 is final documentation and transition of functionality to programs of record. The ACTD completes in FY09.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Node Mgt and Deployable Depot (NoMaDD)		0.000	0.000	1.900	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for NoMaDD as a FY-06 new start which is demonstrating technologies to address critical delays in getting needed supplies to the warfighter. Loss of visibility of items in the distribution pipeline and the inability to provide realistic delivery dates or effectively adjust the flow of commodities for delivery at the right place at the right time continue to impact the effectiveness of our forces. Node Management will provide distribution node managers the visibility needed to make logistics decisions to positively affect the distribution system. Deployable Depot will provide the ability to quickly establish a supply and distribution center in theater to control the physical flow of materiel moving into and through the theater. Together, these capabilities will provide the logistic responsiveness necessary to support our warfighters in any theater of operation. NoMaDD's effectiveness will be measured through its contribution to sustained logistics for major military deployments. Specific outputs and efficiencies will include: 1) increased accuracy in accounting for supplies resulting in reductions in customer wait time; 2) improvements in required airlift to support sustainment; 3) reductions in container demurrage costs and repeat requisitions. The planned transition for NoMaDD: Node Management will transition to the Army's Battle Command Sustainment Support System. The Deployable Depot will become a program of record and be managed by DLA. The Combatant Command/User Sponsor is the U.S. Transportation Command (TRANSCOM) and the lead service/agency is Defense Logistics Agency (DLA).</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - Complete spiral development of Node Management capabilities and development of Deployable Depot. Perform Joint Military Utility Assessments of both capabilities.</li></ul> <p>Continue transition of Node Management capabilities into the Army's Battle Command Sustainment Support System. In FY 2009 capabilities developed will continue to be assessed during Extended User Evaluations. Life-cycle management Node Management will transition to the Army's Battle Command Sustainment Support System. Life-cycle management of Deployable Depot will transition to a program of record established in the Defense Logistics Agency. Complete the ACTD.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Joint Enable Theater Access (JETA-SPOD)		0.000	0.000	3.700	1.900
<p>The Joint Requirements Oversight Council (JROC) validated the need for JETA-SPOD capabilities as a FY-06 new start. The outcome of JETA-SPOD is to develop and demonstrate: a Lightweight Modular Causeway System (LMCS) transportable by and employable from intra-theater sealift vessels such as the JHSV; and an austere port Decision Support Tool for selection of optimal sites from multiple austere SPOD options. The capabilities proposed for development in this ACTD will optimize the use of the Joint High Speed Vessel (JHSV), current Army/Naval watercraft, and Lines of Communication (LOC) bridging requirements by providing increased and more rapid flow of combat power and sustainment through multiple theater austere seaport locations. This provides to Joint/Combined Force (J/CFC) commanders a means to mitigate threat anti-access activities and increases flexibility to conduct operational maneuver from strategic distances. JETA-SPOD ACTD is a three-year project under sponsorship of U.S. Pacific Command, with completion of development and demonstration by end of FY2008; and transition to U.S. logistics systems by FY2009. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the ACTD Military Utility Assessment (MUA) are: 1) the LMCS will reduce weight, volume, and deployment time compared to existing military causeway and bridging systems; 2) the operational parameters for evaluating the military utility of the LMCS are based on a quantitative and qualitative comparison to the capability provided by the existing Modular Causeway System (MCS); 3) LMCS will result in a reduction in weight and volume by 50% over the MCS; a reduction in deployment time by 50% over the MCS; and elimination of in-water connections; 4) the Decision Support Tool capability equates to an increase in availability of throughput prediction information for 50-80% of worldwide small ports; and 5) the combination of LMCS and the Decision Support Tool includes a five-fold increase in the number of JHSV-compatible ports and doubling of the port throughput rate. LMCS Output includes incorporation of state-of-the-art connector and tensioning technology; innovative emplacement and recovery system applicable to multiple military/civilian platforms; innovative self-locking and strap tensioning technologies; high strength fabrics for robust, lightweight floatation technology that quickly inflates/deflates for rapid LMCS emplacement and recovery; puncture/abrasion resistant floatation components; lightweight decking materials; and common 8x20 rapid transport footprint design. The efficiency is that the transport (land/sea) cost of moving causeway capabilities into austere SPODs will be significantly reduced; and causeway capabilities will arrive in theater more rapidly with a smaller logistics footprint. Austere Port Decision Support Tool Output includes query-able austere world port data; a port characterization model; rapid port enhancement tool;</p>					



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<p>austere port throughput simulation; a comprehensive set of environmental and physical factors affecting ingress/egress throughput rates; and parametric algorithms for throughput rates in small ports and rates for planning and execution of vessel offload operations; developed with an open source tool; user friendly Graphical User Interfaces (GUI); and runs on a laptop computer. The efficiency is that the warfighter will possess flexibility and a broader range of options to establish austere seaports as strategic or operational maneuver entry points with a greater assurance of success. The transition strategy for LMCS and the Decision Support Tool is to establish Programs of Record under the guidance of two Transition Managers: Product Manager, Army Watercraft Systems (PdM AWS) and USTRANSCOM, respectively.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - Develop final Management Plan and CONOPS, finalize extended user evaluation and transition plan, complete system integration and incorporate lessons learned, fabricate LMCS, delivery final version of Decision Support Tool; complete MUA/Final Demonstration in Sep 2008; develop final MUA and ACTD report; and transition LMCS and Decision Support Tool to Programs of Record.</li><li>• FY 2009 Planned Output - Conduct pre-transition and interim capability; JETA-SPOD ACTD scheduled completion date is September 2010.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Coalition Joint Spectrum Management and Planning Tool (CJSMPT)	1.166	0.919	0.500	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capabilities needed from CJSMPT as an FY06 new start. The outcome of CJSMPT is a force structure driven database of basic friendly communications and counter-Improvised Explosive Devices jammers with an associated software based spectrum management tool to enable the Warfighters to coordinate electromagnetic spectrum resources usage in a timely way. CJSMPT is a three year project under the sponsorship of US European Command with direct engagement by US Central Command, with phased software deliveries and demonstrations in FY07 and FY08. The US Army is the technical lead Service for the JCTD and has agreed to sustain the delivered capability in the USEUCOM and USCENTCOM theaters until transition of the initial capabilities into the Defense Information Systems Agency (DISA) as the lead Agency for Global Electromagnetic Spectrum Information System program. The primary output and efficiencies to be demonstrated in the JCTD Military Utility Assessment are (1) interfaces to currently disparate and isolated data bases into a virtual knowledge repository, (2) interactive emitter, receiver and terrain models permitting user visualization of spectrum usage, and (3) spectrum use plans for operational coordination, scenario development and course of action evaluation.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Established the integration framework, first instantiation of the force driven spectrum knowledge repository, established interfaces to legacy databases, and conducted user workshops to clearly articulate requirements, current business processes and concepts for usage of the tools. Affirmed the need for both fully networked and intermittently connected software capability.</li><li>• FY 2007 Planned Output - Initial demonstration of basic counter-IED, friendly communications coordination and visualization tools applied to priority Warfighter scenarios. Establish and conduct operator training. Integrate CJSMPT software capability into USCENTCOM pre-deployment training for spectrum managers and electronic warfare officers.</li><li>• FY 2008 Planned Output - Refine phase one software capability and expand to additional friendly force spectrum usage. Expand mobile training, classroom instruction and doctrine for spectrum coordination with operational scenarios. Conduct Joint Military Utility Assessment of capabilities delivered. Coordinate sustainment activities within US Army and transition documentation with DISA. Complete the development of CJSMPT software capability and demonstrations by December 2008. Complete the JCTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Event Management Framework (EMF)	0.000	0.000	2.500	1.300
<p>The outcome of EMF is to demonstrate the ground breaking capability of vertical and horizontal sharing of heretofore stove-piped information among organizations within and outside of DOD by emphasizing EMF policies; operational concepts; and tactics, techniques and procedures. 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.</p> <p>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. The primary outputs and efficiencies to be demonstrated in the ACTD Military Utility Assessment</p>				

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<p>(MUA) are: 1) Integrated EMF policies; operational concepts; and tactics, techniques and procedures; 2) Improved and more timely incident and information correlation to "connect the dots"; 3) Faster visualization of analytic results to aid decision makers in event assessment; 3) Addition of EMF databases and engine servers to cache data; 4) Capability to share information and analytical results across COCOMs, Coalitions, Services, and its interagency partners; 5) Reduced time required for event based decision making. EMF is a three-year project under the sponsorship of the United States Northern Command. The lead agency is the Defense Information Systems Agency (DISA).</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Refer to the ACTD R2a.</li><li>• FY 2007 Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - Spiral 3: Adapt ontology, data models, and smart agents for selected Communities of Interest. Increase partner base. Conduct JMUA. Harden software.</li><li>• FY 2009 Planned Output - Assuming a successful JMUA, transition is planned for FY09. Transition paths are to be determined. One possibility is transition to a DISA Program of Record such as NECC or NCES. The EMF ACTD is scheduled to complete in September 2009.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Theater Effects Based Operations (TEBO)	0.000	0.000	4.400	2.700
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for the TEBO ACTD as a new start in FY 04. The outcome of the TEBO ACTD is to 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 TEBO ACTD is a six-year project under the sponsorship of Pacific Command and Combined Forces Command/U.S. Forces Korea (CFC/USFK) as the Operational User. Completion of development and demonstration is planned for by the end of CY 2009 with transition to the Net Enabled Command Capability (NECC) System of Record in 2010. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the TEBO ACTD Military Utility Assessments are (1) Exploit existing knowledge base(s) of strategic, operational and tactical environments (e.g. Operational Net Assessments [ONA] - critical capabilities and vulnerabilities, centers gravity [COG] and nodal analysis, (2) Facilitate collaborative effects-based campaign planning within a combined/Joint environment, (3) Support execution with prioritization of strategic and operational levels of effort, synchronization of actions, and battle tracking, (4) Comprehensively assess and forecast progress toward the desired end state by analyzing observed direct and indirect effects.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - Conduct Operational Demonstration 5 (RSOI 08 and UFL 08) Final enhancement and integration of COA planning capabilities through the use of modeling and simulation; final military utility assessment; Begin transition of TEBO Knowledge Management Services into Army Battle Command Systems (ABCS) Program of Record.</li><li>• FY 2009 Planned Output - Begin transition to Net Enabled Command Capability (NECC) Program. Complete the ACTD by September 2009.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Smart Threads Integrated Radiation Sensors (STIRS)	0.000	0.750	6.100	3.800
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for SMART Threads (STIRS) JCTD as an FY-07 new start. The outcome of STIRS is to demonstrate a set of technologies and CONOPS to provide an integrated, ruggedized, manned and unmanned "system-of systems" radiation sensor capability for force protection and counter-proliferation missions on land, sea, and air and be integrated within current/future joint architecture for sensor network &amp; data fusion. STIRS includes Next generation gamma and neutron detector glass fibers doped with Li (Lithium 6) "woven" into unique form factors and detector platforms and will comprise of a system of detectors that work together to provide real-time situational awareness to detect, locate, identify and respond nuclear materials. STIRS is a joint integrated sensor network for information and data fusion. The outputs and efficiencies in STIRS will be to provide a tangible improvement in the state-of-the-art of land, sea, and air-based nuclear/radiological reconnaissance. The primary outputs and efficiencies to be demonstrated in the Military Utility Assessment (MUA) are: (1) percent increase in the ability to collect information against radiological/nuclear (R/N) material/threats,(2) percent increase in the ability to develop understanding and accurately ID R/N material, (3) percent increase in the ability to operate across the spectrum of battlefield environments, (4) percent increase rate of ship track generation per-day over current manual process, (5) percent increase in the ability to network and insure flow of STIRS-based information. STIRS is a three-year JCTD under the Sponsorship of Northern Command (NORTHCOM); DTRA is Lead Agency and Joint Program Executive Office for Chemical and Biological Defense (JPEO CBD) is</p>				

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Transition Manager. STIRS demonstration phase will complete in FY 2009 and transition to the user community will begin in FY 2009. <ul style="list-style-type: none"><li>• FY 2007 Planned Output - Begin development of STIRS technology into a man-portable system to confirm presence of R/N materials while being worn as a 'vest'-like garment. Begin development of a required over-the-horizon C4I network to send STIRS data to required users in a near real-time timeline.</li><li>• FY 2008 Planned Output - Integrate STIRS technology into a vehicle mounted panel system which can be employed along border (land/maritime) areas for random searches/portal-type operations. Man-pack systems developed in FY 07 will also be employed in follow-on search of targeted vehicles. Info provided over line-of-site C4I network.</li><li>• FY 2009 Planned Output - Continue development of STIRS as a Post-event mapping/detection capability utilizing a UAV with a STIRS pod or payload to assist in contamination area identification and R/N mapping. Individual and vehicle systems to be used to avoid "hot" areas. Information will be provided over tactical &amp; strategic-level C4I network. The STIRS Residuals assets will provide limited initial operational capability to joint warfighter's. The STIRS JCTD Residuals notionally include: 35 Radiation Detection Backpacks; 35 Radiation Detection Vests; 3 Airborne Radiological Detection &amp; ID Mounted Systems; 3 Boat/Ship Mounted Detection Systems (3-4 gross counting panels and 1-2 identification panels) 3 Vehicle Mounted Detection Systems (1-2 gross counting panels and/or 1-2 identification panels).</li></ul> Complete the JCTD.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Mapping the Human Terrain (MAP-HT)	0.000	0.500	2.700	1.300
<p>The Joint Requirements Oversight Council (JROC) validated the capability need of MAP-HT JCTD as an FY-07 new start. The outcome of MAP-HT is to develop an integrated, open source, spatially/relationally/temporally referenced human terrain data collection and visualization toolkit to support BCT/RCTs in understanding human terrain. The objective is to deploy MAP-HT toolkit to Joint, Interagency, Intergovernmental, and Multinational (JIMM) elements (e.g. USAID, DEA, Coalition Partners). MAP-HT will provide a joint common relevant picture of the human terrain for use by tactical elements, operational commanders, theater planners, interagency organizations, and coalition partners. The fundamental problem addressed by the MAP-HT JCTD is to provide an integrated capability (organization, methods, tools) to the Joint, Service, or Inter-agencies that will effectively collect/consolidate, visualize, and understand open source socio-cultural ("green data") information that will assist Commanders in understanding the "human terrain" in which they operate. This basic understanding will help to reduced IED incidents via improved situational awareness of the human terrain by using "green layer data/unclassified" information to understand key population points to win the "will and legitimacy" fights and surface the insurgent IED networks. This will also increase the socio-cultural knowledge base for operational units and will increase the dissemination of current information to trainers and the intelligence community. The overall project context for MAP-HT is development and deployment "by, through, and with" deployed units in contact. MAP-HT will directly support joint and combined operations. In addition to Army support, the US Marine Corps sees substantial merit in an institutionalized human terrain capability. The key to success in this endeavor is to stop the loss of human terrain data during unit rotations. To do so, a capability (people, process, and tools) must be further developed to provide a means for commanders and their supporting operations sections to collect data on human terrain, create, store, and disseminate information from this data, and use the resulting understanding as an element of combat power. While information and SME support are the primary MAP-HT thrusts, development and integration work will also be performed to allow commanders to visualize cultural information in geospatial and social network contexts. Compliant with the Joint Force Generation cycle, MAP-HT will also support training commands that prepare warfighters for deployment. USEUCOM has included this in their Roadmap, and is also included in the DOD Irregular Warfare Roadmap.</p> <ul style="list-style-type: none"><li>• Lead Service: US Army</li><li>• User Sponsor and OM: USCENTCOM</li><li>• USSOCOM, USEUCOM, USJFCOM</li><li>• Technical Manager: US Army ERDC-TEC</li><li>• Technical Agents: US Army TRADOC-DCSINT, USMC TECOM, USSOCOM</li><li>• Transition Mgr: DCGS-A; DCGS-MC; DCGS-SOF;SOCOM SOAL PEO IIS</li><li>• Industry: MITRE, Aptima</li></ul> <ul style="list-style-type: none"><li>• FY 2007 Planned Output: Spiral .5 and Spiral 1 - Develop baseline for MAP-HT Toolkit, Develop ID and MP. Focus on continued evolution of the prototype MAP-HT Tool, enhancement of relevant data collection and analysis/visualization tools, and development of doctrine and TTPs.</li><li>• FY08 Planned Output: Spiral 2 will refine the doctrinal implications of Spiral 1, advance the core knowledge management tools, add capabilities in knowledge discovery and advanced</li></ul>				

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visualization and modeling, and test the integrated prototypes at Service labs, battle labs, and military exercises. Also, finalized prototypes and software, as well as developing Concept of Operations including Tactics, Techniques and Procedures (TTPs). The Military Utility Assessment (MUA) will evaluate the effectiveness of prototypes, provide an operationally relevant scenario with red and blue forces, and compare existing pre-deployment cultural training tools/methods with proposed MAP-HT training tools. •FY 2009 Planned Output: The transition phase will involve final demonstration & assessments of all MAP-HT products, CONOPS, & TTPs. Transition is planned to the following Program of Records (PORs): DCGS-A, DCGS-MC, DCGS-SOF, USSOCOM PEO IIS/SOJICC, as well as US Marine Corps Training and Education Command, and the US Army TRADOC - DCSINT. Complete the JCTD.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Multi-Mission Electro-Optic Sys. (JMMES)	0.000	2.400	5.000	5.100
The Joint Requirements Oversight Council validated the capability need for JMMES as an FY-07 new start. The outcome of JMMES is demonstration and transition of airborne sensors and automated processing for automatic detection of itemstargets for Joint Service, Coalition, and Interagency partners. The JMMES project will demonstrate use of advanced multi-spectral sensors in an aircraft turret compatible with existing turret mounts in US Navy, US Army, Drug Enforcement Agency, and British and Canadian aircraft. The project will develop and demonstrate automatic processing and automated operator cueing for targets such as submarines, mines, targets under trees, illicit crops, and search-and-rescue targets at sea. The primary outputs and efficiencies to be demonstrated in JMMES Military Utility Assessments are (1) ability of JMMES to recognize targets of interest, in terms of (a) percent of auto detections and auto cues that are relevant, (b) distance error of auto detect and auto cue reports, (c) timeliness of reports (seconds) to decision makers; and (2) ability of JMMES to defeat denial and deception efforts, in terms of (a) percent of denial and deception efforts defeated, (b) where and when JMMES applies (operating environments, seasons, time of day, range, etc.), (c) percent of time operable during missions, and (d) reliability and logistic support requirements. JMMES is a 3-year project sponsored by U.S. Pacific Command and U.S. Southern Command. Initial capabilities will be demonstrated and operated in FY07, with demonstrations against additional targets with additional aircraft types in FY08 and FY09. Transition activities will begin in FY07, leading to firm transition to programs of record in Program Objective Memorandum 2010. The lead Service is U.S. Navy. • FY 2007 Planned Output - Upgrade existing sensor suites for JMMES applications, integrate sensor and processing systems aboard selected aircraft. Conduct data collection and assessments for anti-submarine warfare missions, and begin algorithm development for other targets. Begin Concept of Operations and system architecture documentation. Support transition of initial capabilities required in Navy POM 08 for Littoral Combat Ship. • FY 2008 Planned Output - Complete JMMES integration into additional aircraft types for mine detection missions, search and rescue missions, counter concealment and deception (land targets) missions, illicit crop detection, and other missions. Complete initial algorithm development for the additional missions and conduct data collection and assessment trials, including interagency and coalition partner participation. Submit documentation for Navy programming for Navy aircraft programs. • FY 2009 Planned Output - Complete multi-aircraft/multi-mission assessment trials and draft Military Utility Assessment. Complete Concept of Operations, Tactics/Techniques/Procedures, and System Architecture documentation. Support ongoing transition activities into programs of record. Complete the JCTD.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Maritime Auto Super Track enhance Reporting (MASTER)	0.000	2.000	5.600	3.100
The Joint Requirements Oversight Council (JROC) validated the capability need for MASTER (Maritime Automated Super Track Enhanced) as an FY-07 new start. The outcome of MASTER is to demonstrate a set of technologies and CONOPS to provide automatic tracking of ship traffic using unclassified methods, classified methods and National Technical Means which will provide a tangible improvement of United States maritime domain awareness on a global-basis. The MASTER JCTD will also provide Tactics, Techniques and Procedures (TTPs) to the Intelligence Community (IC) which will allow the IC the ability to use MASTER in Agency-specific environments. The primary outputs and efficiencies to be demonstrated in the Military Utility Assessment (MUA) are to develop and deploy an initial 24/7 operational capability to provide: (1) percent increase in an analysts ability to create a fully vetted, high quality ship tracks using additional information sources from SCI/Secret/Unclassified-levels and disseminate these "Super Tracks" including associated metadata, alerts, and notifications to operational users at all security levels using a standardized MDA report format, (2) percent decrease in the time required for an intelligence analyst to assemble a fully vetted, high quality coherent and thorough file of information of the ship(s) being tracked together with a time history and track of the vessel between any desired points between the departure point and arrival point and points in between, (3) percent increase in the ability of an analyst to determine ship threat profile (friend or foe) based on ship metadata and				

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track history, (4) percent increase rate of automatic ship track generation per-day over current manual process, (5) percent increase in number of ship tracks per analyst in a given time period and a relative decrease in cost to create and assess a given number of tracks over a specific time frame. The JCTD Residuals include: 1) Multi-INT generation algorithm for worldwide MDA tracks and their metadata; 2) MLS Guards and accreditation (SCI, Secret, SBU); 3)Draft USMTF-type MDA message format for Super Track dissemination through MLS Guards; 4) Alarms/alerts notification methodology; 5) Operationally tested CONOP for a 24/7 worldwide capability. MASTER is a three-year JCTD under the Sponsorship of Northern Command (NORTHCOM) and ONI, NRO (proposed), USCG (proposed) with completion of development and demonstration by the end of FY 2009 and transition to the IC through PEO-ISR/Space beginning in FY 2009. The lead service is Navy. <ul style="list-style-type: none"><li>•FY 2007 Planned Output - Integrate technologies &amp; demonstrate initial automatic capability in a single AOR/AOI.</li><li>•FY 2008 Planned Output - Expand system into a global 24/7 operational prototype; develop MLS dissemination capability with standard USMTF-type message reports.</li><li>•FY 2009 Planned Output - Final operational demonstration of MASTER and begin the Transition to operational users. Transition Manager is the Office of Naval Intelligence (ONI). Complete the JCTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Internet Protocol Router in Space (IRIS)	0.000	2.000	5.000	5.100
The Joint Requirements Oversight Council (JROC) validated the need for capability from IRIS as a FY07 new start. IRIS leverages a planned launch of a commercial communications satellite to introduce Internet Protocol (IP) routing and cross-banding between C-band and Ku-band transponders. The IRIS outputs and efficiencies include (1) demonstrate the capability to collaborate with industry in leveraging the commercial acquisition processes to provide near-term, space-based, IP routing network capability, (2) demonstrate the capability via a commercial payload to conduct on-board IP packet routing communications from a geostationary orbit, (3) explore and incorporate a decision process to determine which commercial SATCOM users should leverage the IRIS capability. USSTRATCOM is assigned responsibility for global network operations, and as the operational user sponsor seeks to improve network reliability and endurance through dynamic topology updates (multiple transport paths) and improved collaboration and interoperability among info sources and users (e.g., sensors, soldiers, command centers at Joint, Allied and Coalition levels). The Defense Information System Agency (DISA) is the lead Service and will transition the demonstrated commercial capability into contracting language for future services subscription in support of operations, including integration of IRIS services into existing network architectures beyond the IRIS JCTD. <ul style="list-style-type: none"><li>• FY 2007 Planned Output - Develop the draft CONOP and conduct a scenario-based limited military utility assessment that will simulate the use of the IRIS capability.</li><li>• FY 2008 Planned Output - Validate and verify draft CONOP and demonstration architectures to enable a limited military utility assessment of an emulated IRIS capability. Participate in the industry led end-to-end IRIS technical capabilities demonstration with representative hardware prior to IS 14 launch.</li><li>• FY 2008/2009 Planned Output - Launch of the IS 14 spacecraft is projected for the 1st quarter FY2009. Conduct a live scenario and capability based demonstrations culminating in a final military utility assessment of the IRIS JCTD. The IRIS JCTD will leave behind the IRIS capability on a fee for service basis to provide a space based routing enterprise solution that enables video, voice and data network services. Complete the JCTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Coalition Mobility System (CMS)	0.000	2.000	0.000	0.000
The Joint Requirements Oversight Council validated the capability need for CMS as an FY-07 new start. The outcome of CMS is to develop the capability for rapid coordination of coalition movement execution. CMS will integrate selected, operationally relevant data from U.S. systems with data sources used by coalition partners to establish a working coalition environment, which meets the needs of U.S. and CTF decision makers. The primary outputs and efficiencies to be demonstrated in the JCTD are: 1) U.S. operators gain access to coalition movement data (military and commercial) using familiar U.S. national systems (Single Mobility System, Global Transportation Network, etc.), 2) Supports the Common Operating Picture for Deployment & Distribution (COP D2), 3) Coalition partners and CTF staff gain access to selected, operationally relevant information on U.S. and coalition airlift and sealift (military & commercial) supporting coalition activities. CMS is a 3-year project sponsored by U.S. Pacific Command. Key participants include the Quadrilateral Logistics Forum consisting of Australia, Canada, United Kingdom, and the United States. Initial capabilities will be demonstrated and operated in FY07, with full-scale demonstrations on coalition networks in FY08 and FY09. USTRANSCOM is the Transition Manager and transition activities will begin in FY07, leading to firm transition to Command andControl Information Exchange Data Model (C2IEDM) and multiple coalition networks by 2010.				

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<p>• FY 2007 Planned Output - Identify the existing US SMS data elements to be made available in CMS; Identify appropriate queries for use by CMS users ; Adjust the coalition data format as required to ensure operational efficiency; Address the issue of replicating SMS data in a CMS data server; Define report formats for CMS users and identify existing SMS functionalities to be made available in the CMS tool. In FY08 the following activities will occur: Operationally harden the Phase I prototype; Deliver network integration; Design and implement an electronic data interface (EDI) which allows for the acceptance of properly formatted coalition partner information into the CMS database; Determine, design and deliver CMS reports in coalition-preferred format; Operationally test the ability of CMS to provide coalition data to SMS or a suitable US feeder system; Operationally test the ability of CMS to export data for coalition partners (to include commercial partners); Integrate CMS into the Coalition Theater Logistics (CTL) portal; Conduct an appropriate MUA utilizing an agency not affiliated with product development; Complete an MUA employing the certified and accredited network in an operational or exercise setting.</p> <p>In FY 2009 the following activities will occur: Finalize CONOPS documentation and complete DOTMLPF Change Recommendation; Transition is planned to C2IEDM and multiple coalition networks; Complete the JCTD remaining Program Management actions.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Multi-Sensor Aerospace-ground Joint ISR IC (MAJIIC)	0.000	0.000	3.100	0.000
<p>The JROC approved the capability need for MAJIIC as an FY-04 new start. The outcome of MAJIIC is to 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. MAJIIC will 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. Outputs and efficiencies include: 1) Near real-time MAJIIC ISR mission and sensor data is available for discovery and smart pull within the Collateral Space in near real time (i.e. Post in Parallel); 2) MAJIIC services and data are readily discoverable via portals, C2 Visualization and other applications, and other Global Information Grid (GIG) service providers; 3) MAJIIC data pedigree is trustable by users; 4) MAJIIC service access is assured for authorized users and denied for unauthorized users; 5) MAJIIC data access is provided based on user clearance, country affiliation, and role and protected from those not meeting the minimum policy requirements. 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. Transition already Accomplished: The MAJIIC Full-Motion Video ISR Information Services (ISRIS) capability deployed as part of JIOC-I to OIF, and is transitioning to the Army Distributed Common Ground System (DCGS-A). NATO is deploying the MAJIIC coalition shared database (CSD) as part of the NATO Intelligence Management and Reporting Tool (IMART) to OEF. Remaining transition: NATO, Supreme Headquarters Allied Power—Europe (SHAPE), and the U.S. will adopt demonstrated capabilities and concepts of operation into existing national and coalition systems. MAJIIC technology and lessons learned will transition to the Service 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 Air Force is lead service.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Refer to the ACTD R2a.</li><li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li><li>• FY 2008 Planned Output - 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. Complete the ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
MASINT Tactical Intelligence Fusion (MASTIF)	0.000	0.000	3.700	2.500
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for MASTIF renamed MASTIF as an FY-06 new start. The outcome of MASTIF is to provide the warfighter with a set of Network Centric Intelligence, Surveillance and Reconnaissance (ISR) collection systems and management applications to employ traditional and non-traditional, distributed sensing against concealed/obscured targets, with the goal of enhancing detection, classification, characterization, and tracking of these targets. This five-year project is under the sponsorship of the United States Special Operations Command (USSOCOM) and United States Southern Command (USSOUTHCOM). The lead DOD agency is the Defense Intelligence Agency (DIA). The primary outputs and efficiencies to be demonstrated are: 1) exploit Measurement and Signatures Intelligence (MASINT) technologies and develop new sources and methods to counter adversary concealment and deception techniques, 2) develop new methodologies for</p>				

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sensor-to-sensor communications to enable tipping and cueing, and 3) seek new fusion processing systems to make maximum use of the data to solve the difficult problem of concealed/obscured targets. • FY 2006 Output - Drafted, coordinated and completed a fully signed Implementation Directive (ID). Drafted, coordinated and refined specific user requirements that are used to identify useful applications and technology. ACTD Management IPT moved forward in understanding the intelligence operational concept and the system CONOPS. Worked with COCOMs and other government agencies to research and leverage ongoing fusion studies, intelligence initiatives/products that could bear on MASTIF ACTD capability leaning toward harmonization of fielded capabilities and a successful transition. Reached tentative agreement with NGA for future MASTIF participation in an Empire Challenge exercise during the Extended User Evaluation Period (EUEP). Began transition planning by examining interoperability requirements. Finalized critical operational issues for operational assessment. Began military utility assessment planning. • FY 2007 Planned Output - Refer to the ACTD R2a. • FY 2008 Planned Output - Mature fusion capability. Complete Demo 1 with sensor integration in a laboratory environment. Conduct final demonstration on airborne test platform and complete JMUA. Plan for spiral capabilities to field during transition and identify opportunities for integration of other on or off board sensor information. • FY 2009 Planned Output - Begin EUE. Spiral initial ACTD capability for COCOM field application. Support required documentation modification needs, and supply required documentation as appropriate for transition. Continue development of CONOPs and TTPs, based on user feedback. Support technology transition. In FY 2010 Complete EUE and ACTD.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Computer Assisted Threat Exploitation Program	0.000	1.125	0.000	0.000
FY 2007 Plan: Funding will be used solely for the purposes of exploiting the capability of the CATE System for use with coalition partners. Working with staff of Commander, U.S. Naval Forces Europe, and staff of the North Atlantic Treaty Organization Component Commander Maritime, this funding will embed CATE capability into existing NATO CCMAR maritime awareness systems, and provide associated support for integrating the capability into ongoing NATO CCMAR operations.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
CoCom Direct Support, Pre-Transition and Classifiec Programs	0.000	0.000	23.000	23.000
FY 2008/2009 Plan: JCTD Direct Program Support is comprised of four programs broken-out separately from the specific JCTDs projects. The direct funding line is used to provide support for the entire JCTD program (versus individual JCTDs). These four programs include (1) Unified Combatant Commander; (2) JCTD Pre-Transition Support; (3) Interagency Classified Projects, and (4) Joint enabling technologies that are either directed by congress or initiated by DUSD (AS&C). Unified Combatant Commander (UCC) Direct Support: The UCC's play an essential role in the selection, validation, demonstration, and transition of JCTDs. Many JCTDs 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 JCTD 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 JCTDs that are coalition oriented (within their specific AOR). UCC direct program funding is estimated at \$5.0 million per year. •2) JCTD Pre-Transition Support: The JCTD 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 JCTDs to the warfighter, the SECDEF established the goal of increasing the number of JCTDs evolving into formal acquisition programs. In order to enhance this transition effort and to respond to GAO recommendations in earlier years, the JCTD program continues to support a pre-transition line in the JCTD budget submission. Funding for pre-transition initiatives will be approximately \$3.0 million per year. •3) Special Capabilities Office (SCO)/Interagency Classified Support for JCTDs: JCTDs 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 at \$12.0 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 JCTD program to investigate the military utility of these technologies. DUSD (AS&C) also becomes aware of promising technologies which may have transformational application to JCTDs. The need for these technologies may be				

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realized until an JCTD 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 JCTDs.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 Rolling Starts	0.000	10.365	19.152	24.080
In FY 2007 JCTD selection process five JCTDs were identified by the Department as potential "rolling starts." These projects were selected because they represent important warfighter concerns and capabilities. Three of the proposals, address issues with emerging technologies that could be significant "game changers". While these projects have been successfully vetted through the JCTD selection process, some additional proposal development must be addressed with the stakeholders (i.e., Services, Agencies, Coalition and Inter-agency partners), prior to project initiation. This year, five candidates emerged that were particularly compelling; however, due to technology or resource related issues, they are still in a developmental stage. These projects show such great promise that, we are including them in this report as part of our official congressional notification requirement. This helps meet the new JCTD goal of being a more agile process to meet urgent warfighter needs faster. The five projects are: 1)Airborne Weapons Surveillance System (AWSS)- ability to detect and identify enemy fires, pass enemy target locations to Counter Fire Task Force within seconds; 2) Classification - Stateless, Trusted Environment (CSTE)- a "clean slate approach" to information assurance providing the ability to screen "licensed" users so they can communicate, share/access information (data), and access/control net-centric enabled (NCE) services, applications, systems, and actionable elements (NCE objects); 3) Global Observer (GO)- demonstrate a liquid hydrogen (LH2) powered unmanned aerial vehicle, using a modified, off-the-shelf internal combustion engine, capable of flying extremely long endurance (objective of 7 days on station) with a moderately sized payload capacity (380 lbs) at an altitude of 55-65,000 ft. mean sea level (MSL); 4) Joint Surface Warfare (JSUW) - network technologies to integrate multiple Intelligence, Surveillance, and Reconnaissance (ISR) and launch platforms with existing stand-off weapons, allowing interchangeable ISR assets to provide initial targeting data as well as in-flight target updates for multiple weapons; and 5) Zephyr - demonstrate and transition a solar-powered unmanned aerial vehicle into service to meet urgent operational requirements providing low-cost persistent surveillance and communications relay, flying continuous operations for periods of months at a time using solar power.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2008 JCTD New Starts	0.000	0.000	51.800	58.660
Funding for FY 2008 JCTD new starts and the resulting from the JCTD selection process that will begin in March 2007. New start selections will be finalized in August/September of 2007, just prior to the year of execution. These funds will start six to ten new starts in FY08. Although the specific projects are unknown at this time, the 2007 selection process provides a more rapid delivery of capabilities than the traditional, incremental programming and budgeting methods that are supported by the deliberative Planning, Programming, Budgeting and Execution (PPBE) process. The JCTD process is adaptive and provides an agile technology development and demonstration program to better address a quickly changing threat. The JCTD model is an agile process spanning of two to four years. The concept falls between the Joint Rapid Action Cell (JRAC) "urgent needs" process of less than two years with little or no development, and the traditional, more deliberate, formal acquisition process that can stretch five to ten years.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2009 JCTD New Starts	0.000	0.000	0.000	61.300
Funding for FY 2009 JCTD new starts that will result from the JCTD selection process in March 2008. New start selections will be finalized in August/September of 2007, just prior to the year of execution. These funds will start six to ten new starts in FY08. Although the specific projects are unknown at this time, the 2007 selection process provides a more rapid delivery of capabilities than the traditional, incremental programming and budgeting methods that are supported by the deliberative Planning, Programming, Budgeting and Execution (PPBE) process. The JCTD process is adaptive and provides an agile technology development and demonstration program to better address a quickly changing threat. The JCTD model is an agile process spanning of two to four years. The concept falls between the Joint Rapid Action Cell (JRAC) "urgent needs" process of less than two years with little or no development, and the traditional, more deliberate, formal acquisition process that can stretch five to ten years.				



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<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Medical Situational Awareness in Theatre (MSAT)		0.000	0.000	2.500	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for MSAT as a FY05 new start. The outcome is to provide improved capabilities for medical situational awareness to commanders with integrated and timely health information fused with non-medical operational information incorporating a tailored decision support tool to make critical strategic and tactical decisions in a deployed environment. This capability will provide a fusion of medical data, personnel location information and health threat intelligence for situational awareness in theater. The capabilities include technologies for a web services environment fusing intelligence, chem.-bio threat, environmental health, unit location information; risk assessment; and decision support tools. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are 1) ability to perform surveillance of medical threats in deployed environments, 2) model threat dynamics, and 3) conduct risk assessment using decision support tools. The efficiencies to be gained are 1) the ability to provide commanders with a more complete medical situational awareness in an actionable time-frame, 2) the ability to make knowledge-based decisions with an automated decision-making tool tailored to medical operations. The transition strategy is to incorporate MSAT system tools and operational concepts, tactics, techniques and procedures into theater medical operations through the Global Combat Support System and Theater Medical Information Program programs of record. The sponsoring Combatant Command (CoCom) is U. S. Pacific Command (PACOM). Other organizations involved as participants, users of capabilities, and/or observers include: Armed Forces Medical Intelligence Center; OSD Health Affairs; Joint Staff Surgeon and the Defense Information Systems Agency. The executive agent is the Joint Staff, Logistics Directorate, Health Services.</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Refer to the ACTD R2a.</li> <li>• FY 2007 Planned Output - Refer to the ACTD R2a.</li> <li>• FY 2008 Planned Output - Conduct final spiral demonstration and assessment with inclusion of medical unit readiness, adaptive planning capabilities and decision support tools, with integration of mapping tools into the GCSS and Theater Medical Information Program web services environment. In FY 2009 transition to the Theater Medical Information Program and GCSS programs of record and ACTD completion.</li> </ul>					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Tactical Service Provider (TSP)		0.000	1.200	3.700	3.800
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for TSP as a FY07 new start. The TSP ACTD focuses on taking full advantage of emerging commercial technologies to significantly enhance and improve C2 and Net-Centric capabilities to meet critical present and near-term requirements until DoD's next generation communication systems (JTRS, TSAT, GBS, IP SATCOM) are at Full Operational Capability (FOC). TSP is planned for a final demonstration in the fourth quarter of FY08, with sustainment of the demonstrated capabilities by DISA through FY09 until transition to programs of record in FY10. TSP outcome will enable broadband communications between strategic information sources and tactical users as well as between tactical users. The expected output is wideband communications supporting two-way, high-bandwidth services for tactical users using a hybrid architecture of emerging, standards-based SATCOM and wireless technologies by delivering robust lightweight commercially available applications, DoD tactical applications, and emerging Net Centric Enterprise Services (NCES) applications through demonstration and testing in a simulated, mobile tactical environment. The expected efficiency is substantial increase in delivery of tactically relevant command and control and intelligence-related information products to land mobile troops, and the near real time delivery of tactically generated information to operational and strategic echelons. TSP is a two year ACTD co-sponsored by USCENTCOM and USJFCOM. The Defense Information Systems Agency (DISA) is the lead agency.</p> <ul style="list-style-type: none"> <li>• FY 2007 Planned Output: The technical focus for TSP in FY07 will be on implementing emerging digital broadcast protocol standards for forward SATCOM link, using emerging Joint Internet Protocol (IP) Modem standard and a new satellite protocol standard for return SATCOM link, achieving two-way Bandwidth on Demand, and the addition of a Global Broadcast Service (GBS) terminal appliqué using IEEE standard 802.16 for two-way wireless communications extension. TSP expected efficiencies include a 38% improved bandwidth efficiency over existing digital broadcast standard in use today, decreased size and weight of equipment required by mobile tactical sources to send and receive relevant information, and measurable real- or near-real-time transmission of intelligence collection products from deployed forces back to operational and strategic users. Two demonstrations are planned for the fourth quarter of FY07: the first two-way IP SATCOM communications over the improved GBS terminal prototype; the second a "WiMax" (802.16) wireless extension of communications connectivity from the improved GBS terminal. From an operational viewpoint, these demonstrations will establish the new baseline for bi-directional high bandwidth satellite communications, and provide early limited military utility assessment of the technologies. Programmatically, the operational and technical teams will be obtaining approval of the Implementation Directive and developing the Concept of Operations (CONOPS) and the integrated assessment plan.</li> </ul>					

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<p>• FY 2008 Planned Output: There are two additional demonstrations are planned for FY08: the first showing the use of "lightweight" commercial applications of tactical utility over the SATCOM-wireless extension; the second and final demonstration will show Defense Information System Network (DISN) tactical Net Centric Enterprise Services (NCES) over the SATCOM-wireless extension. Operationally, TSP will ratify the planned migration to services architecture in tactical implementation by providing wirelessly extended broadband communications to the mobile, dismounted Warfighter. The efficiencies expected include enhanced situational awareness, real- or near-real-time intelligence sharing, a more agile and effective combat force with collaborative capabilities at the "tactical edge" to and from mobile troops. Measurable reduction in the weight and volume of equipment required to provide the improved situational awareness is expected.</p> <p>• FY 2009 Planned Output: DISA will sustain the demonstrated and militarily useful capabilities while finalizing the documentation and transition of functionality to programs of record. The ACTD concludes at the end of FY09.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Large Data	8.671	1.745	9.100	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for the Large Data (LD) Joint Capability Technology Demonstration (JCTD) as an FY-06 new start. The outcome of Large Data is to 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. Large Data is a three-year project under the sponsorship of the United States Strategic Command. The primary outputs and efficiencies to be demonstrated in the JCTD Military Utility Assessment are: 1) Synchronized databases across all major operational storage nodes, i.e. cache coherency; 2) Timely delivery and sharing of data - instant real time access and collaboration; 3) Intuitive way for users to navigate large data sets (petabytes to exabytes); 4) Ability to easily visualize huge amounts of data that is being generated; 5) Capability to perform "trackback" or change analysis on an unprecedented scale.</p> <p>The user sponsor is the U. S. Strategic Command and the lead agencies are the National Geospatial Agency (NGA) and Defense Systems Agency (DISA). Transition is planned for FY 09 after successful JMUA to National Geospatial Agency (NGA) and Defense Systems Agency (DISA). Both agencies are participating in the JCTD as Co-Transition Managers. The Large Data JCTD is scheduled to complete in December 2008.</p> <p>• FY 2006 Output - Spiral 1: Develop a large data fast file system, high performance search engine &amp; distributed cache coherent database. Spiral 1: Design and demonstrate the Large Data 3 CONUS node prototype. Begin OC192 network certification of Enterprise Storage Network. Procure touch-based visualization and collaboration tool suite, develop CONOPS.</p> <p>• FY 2007 Planned Output - Spiral 2: Develop holistic target characterization prototypes and deploy to USFK mini node. Add 4th CONUS node. Install Trans-PAC link. Develop capability for geotemporally indexed multi-agency data, with security, identity management, and Continuity of Operations features. Perform multi-node testing on classified and unclassified networks. Provide large geospatial visualization displays and advanced data integration. Refine CONOPs and TTPs. Plan JMUA. Conduct demonstration in USFK and JEFX.</p> <p>• FY 2008 Planned Output - Spiral 3: Provide capability to the edge -- from COCOMs to low bandwidth users. Refine software with advanced geospatial and temporal search capabilities. Add a Zoomable User interface. Apply for JWICS accreditation. Add metadata tagging enhancements. Provide large data capacity to xESSA, JCRE ACTD and other net-centric capabilities. Conduct JMUA. Complete the JCTD.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Precision Air Drop System (JPADS)	0.000	0.000	1.200	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JPADS as an FY-04 new start. The outcome of JPADS is to demonstrate a fast, flexible, direct projection-based distribution system to sustain rapidly deployed forces at any global destination - strategically, operationally, and tactically. The primary output and efficiencies are to demonstrate a high-altitude (25,000 ft. Mean Sea Level (MSL)) autonomous offset airdrop capability (goal 8-25 miles offset) with the option to deliver separate and distinct payloads (up to 10,000 lb total, full rigged weight, minimum of 8.5Klbs of usable payload) to multiple locations from one release point to within a 250 meter (threshold) Circular Error Probable (CEP) (50 meter CEP objective). This effort focuses Army and Air Force programs and initiatives on meeting joint airdrop requirements. JPADS will provide a seamless and flexible system, providing materiel resupply capabilities to meet the dynamic operational requirements of the CoComs worldwide no later than 24 hours from the request. JPADS is a four-year project with completion of development and demonstration by end of FY 2008 transitioning to United States Army Program Manager Force Sustainment Systems (FSS) and U.S. Air Force Mobility Systems Wing systems by FY 2008. Transition accomplished to date: Ongoing integration of U.S. Air Force (USAF) Mission Planner (MP) into</p>				

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

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**0603648D8Z - Joint Capability Technology Demonstrations**

PROJECT

**P648**

the Marine Corps C130J and into USSOCOM navigational aid for Military Free Fall (MFF).

Planned Transition: Transition high-altitude, aircraft deployable, autonomous, airdrop systems, and in-flight mission planning with wireless communication to guidance, navigation, and control systems to Army Product Manager - Force Sustainment Systems and Air Mobility Command's Combat Operations. The user sponsor is U.S. Joint Forces Command. The lead Service is U.S. Army.

- FY 2006 Output - Refer to the ACTD R2a.
- FY 2007 Planned Output - Refer to the ACTD R2a.
- FY 2008 Planned Output - Continue to execute interim transition with users in conjunction with PORs to include training and numerous weeks of airdrops. JPADS scheduled completion date is September 2008.

**Accomplishment/Planned Program Title**

FY 2006

FY 2007

FY 2008

FY 2009

Chemical Unmanned Ground Reconnaissance (CUGR)

0.000

0.000

1.700

0.000

The Joint Requirements Oversight Council (JROC) validated the capability need for CUGR as an FY05 new start. The outcome of CUGR is to 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 providing an unmanned capability. The first of these new systems (Thrust One) will replace the Double Wheel Sampling System (DWSS), currently in use, with a mobile Mass Spectrometer, using RAMAN technology. Since the DWSS can only be used when the vehicle is moving at a fast walk, replacing it with the RAMAN detector, which is producing reliable results at maximum vehicle speed, greatly increases mobility and flexibility for these units. The second technology (Thrust Two) is the incorporation of a small, remote controlled, sensor-equipped robot to be the recon crew's "point man" in high risk contamination reconnaissance. The efficiency of CUGR will be to utilize a machine rather than put a soldier at risk. CUGR addresses the capability gaps identified in the CBRN Baseline Capability Assessment, the JRO-CBRN Defense Mobilization Plan, and the supporting JCIDS Functional Area Analysis. Thrust One will transition as part of the Reconnaissance and Platform integration sensor block upgrade program and replace DWSS on Stryker, HMMWV and LAV vehicles. Thrust Two will become part of the Joint CBRN Dismountable Reconnaissance System (JCDRS). 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. ACTD will complete in FY 07. Outputs will be: to increase maneuver speed to 45 kph vice 11-22 kph: allow detection/identification of various classes of substances simultaneously vice one at a time; reduce mission consumables; enable reconnaissance into areas that otherwise would be inaccessible by manned vehicles; can be deployed into hazardous environments; offer a point detection capability; and provide the ability to collect liquid, solid and aerosol samples.

- FY 2006 Output - Refer to the ACTD R2a.
- FY 2007 Planned Output - Refer to the ACTD R2a.
- FY 2008 Planned Output - Provide two JCSD equipped CBRN Reconnaissance platforms and 2 CUGR's 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 and complete the ACTD.

**C. Other Program Funding Summary**

FY 2006

FY 2007

FY 2008

FY 2009

FY 2010

FY 2011

FY 2012

FY 2013

To Compl

Total Cost

ACTD PE 0603750D8Z (RDT&amp;E/DW BA-3/Line #44)

168.755

158.471

0.000

0.000

0.000

0.000

0.000

0.000

0.000

327.226

JCTD Transition PE 0604648D8Z (RDT&amp;E/DW BA-4/Line #83)

2.778

4.084

2.960

4.970

8.996

8.974

10.013

10.055

0.000

52.830

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<p>Comment: In FY08 all ACTD funding transfers to the JCTD program. This will complete the transtion to the JCTD model that began in the FY06 President's Budget. The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines (program elements (PE)) are outlined in the table below. The PEs in the table (with the exception of the ACTD BA3 PE which will fully transfer to the JCTD BA3 PE in FY08) represent the JCTD model. The model contains a BA3 development arm as well as BA4 transition arm. Under the new JCTD process, the pace of development will be accelerated to two to three years. Only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in the JCTD BA4 Transition PE. Not all JCTDs require transition funding, many projects have a very clear transition path, however, some projects that demonstrate significant military utilitly require transition funds to "bridge" them to a program of record. Promising ACTDs may receive transition funding during the transition period to the JCTD program. Beginning in FY07 all new starts will be JCTD only. Refer to the specific Budget Exhibit for more details on each funding line.</p> <p><b><u>D. Acquisition Strategy</u></b> 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 in the demonstration phase. 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. Many JCTDs will transition smoothly into a well identified program of record and not require funding from the transition PE (the transition arm of the JCTD model). Promising ongoing ACTDs may also receive transition funding from the JCTD Transition arm as the ACTD program completes. All ACTD funding will transfer to the JCTD program element in FY08. Beginning in FY07 all new starts will be JCTD only. Some initiatives that are successful but are having smaller problems transitioning to an identified program of record may receive "pre-transition" funding from the JCTD BA3 PE.</p> <ul style="list-style-type: none"> <li>• Capability Based: Greater CoCom influence looking at nearer term joint/coalition needs</li> <li>• Provide Spiral Technologies - 25% will provide an operationally relevant product demonstration within 24 months of ID signature.</li> <li>• Agile Demonstration - 75% complete final demonstration within three years of ID signature.</li> <li>• OSD provide significantly more funding (often greater than 30%). In some exceptional cases a majority of project funding, especially during the first two years</li> <li>• JCTDs not necessarily tied to an exercise. Greater flexibility to establish military utility via operational "real-world" demonstration or specifically designed test/venue</li> <li>• 80% of JCTDs transition at least 50% of their products to sustainment.</li> </ul> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603662D8Z - Networked Communications Capabilities**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	0.000	40.000	40.000	29.000	26.562	26.956	27.530
P662 Airborne Network Gateway	0.000	0.000	20.000	20.000	9.000	0.000	0.000	0.000
P663 Network Communications Analysis	0.000	0.000	20.000	20.000	20.000	26.562	26.956	27.530

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

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)				
Current BES/President's Budget (FY 2008/2009)	0.000	0.000	40.000	40.000
Total Adjustments	0.000	0.000	40.000	40.000
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			40.000	40.000

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PE NUMBER AND TITLE

**0603662D8Z - Networked Communications Capabilities****C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.**E. Performance Metrics:**

<b>FY</b>	<b>Strategic Goals Supported</b>	<b>Existing Baseline</b>	<b>Planned Performance Improvement / Requirement Goal</b>	<b>Actual Performance Improvement</b>	<b>Planned Performance Metric / Methods of Measurement</b>	<b>Actual Performance Metric / Methods of Measurement</b>
08						

Comment: Network Communications Analysis comprises multiple research efforts. Metrics for success for the overall effort will be in the modes of infrastructure development and knowledge generation, and be measured according to the quality and relevance to the topic. Metrics for individual research initiatives will vary according to the mode, but will include performance, quality, relevance and the generation of human capital at a minimum. Lastly, technology selection and transition will be assessed according to success or failure for each of the sub-project areas.

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603662D8Z - Networked Communications Capabilities</b>					PROJECT <b>P662</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P662 Airborne Network Gateway	0.000	0.000	20.000	20.000	9.000	0.000	0.000	0.000	
<p><b><u>A. Mission Description and Project Justification:</u></b> Airborne Tactical Relay - (U) An airborne tactical relay capability enables Beyond Line of Sight (BLOS) range extension for tactical mobile communications. Within the current deployed forces there is no airborne network tier to support locally distributed ground and naval forces at lower tactical levels. The need to increase the capability to support tactical forces at lower levels is highlighted in the 2006 Naval Research Advisory Committee (NRAC) Distributed Operations Study. The current lack of an airborne tactical relay limits BLOS tactical communications to available satellite communications. This research will develop, integrate and demonstrate airborne tactical relay technology to support locally distributed tactical forces and achieve improved near-term networked communications capability. Focus will be placed on the transition from research to acquisition for accelerated fielding. Several candidate payloads and platforms will be investigated to meet the needs of the tactical military user at the lower tactical network tiers, for example, small unit relay. Upon the selection of candidates, the technologies will be integrated, matured and demonstrated to support transition. Research and development will include the development and integration of the payload to include Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Position Location and Reporting (EPLRS), and Soldier Radio Waveform (SRW) for example; the payload to platform integration to support demonstration; and the development of a small unit Concept of Operations (CONOPS) to demonstrate operations supported by the range extension for tactical units. Demonstrations will be used to support technology maturation and verify technology transition criteria.</p> <p>Airborne Network Gateway - (U) An airborne network gateway interconnects dissimilar networks among tactical forces and also interconnects tactical forces with higher headquarters and command centers. In general, gateways interconnect networks with different, incompatible communications protocols. Gateways are commonly used commercially in the wired internet world to bridge between different networks. The Department of Defense (US Air Force) has initiated a program, Objective Gateway, to develop a family of modular, scalable airborne and ground-based gateways based on the reduction/demonstration efforts, Battlefield Airborne Communications Node (BACN) and Rapid Attack Information Dissemination Execution Relay (RAIDER). As an airborne network gateway, the Objective Gateway program will bridge between disparate data links and voice networks, integrate sensors into the network and provide Internet Protocol (IP) connectivity to the tactical edge. The Airborne Network Gateway research will develop, integrate and demonstrate airborne network gateway technology to facilitate near term networked communications capability that will be transitioned to the Objective Gateway program. Specifically, this research will investigate the data links (eg. Link-16), networks (eg. Tactical Targeting Network Technology (TTNT)), and voice (eg. cellular) candidates for an airborne network gateway, assess technology issues and maturity, and develop enhancements that will overcome shortfalls that preclude the ability to more broadly network the force through an airborne network gateway. One specific area of emphasis will be the analysis of the airborne network gateway effectiveness across sensor to weapon scenarios. Demonstrations will be used to support technology maturation and verify technology transition criteria.</p> <p>Gateway Interoperability - (U) As discussed above, the Objective Gateway program will develop a family of modular, scalable airborne and ground-based gateways. Additionally, there will be gateway functions performed by other components within the network. Gateways as a general term include relays (range extension), bridges (connect across networks), message translation (connect across data links), and guards/cross domain security (connect across security domains). This research will define, develop, integrate, demonstrate, and assess technology that provide standards to perform gateway functions from the tactical edge to the core Global Information Grid network. Many technologies and components exists to perform the variety of gateway functions discussed. These would be assessed to identify desirable aspects to be leveraged as the foundation for providing improved interoperability. Emphasis will be placed on demonstrating capabilities to support airborne tactical relays and airborne network gateways. The research will be expanded to provide the technical basis for standards and</p>									

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603662D8Z - Networked Communications Capabilities</b>			PROJECT <b>P662</b>
policies that can be applied across DoD, specifically in support of the Global Information Grid.				
<b><u>B. Accomplishments/Planned Program:</u></b>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Airborne Tactical Relay	0.000	0.000	5.000	5.000
Increase the understanding of airborne tactical relays. Demonstrate the network communication technology required to support small unit distributed operations. Establish the concept of operations for how these technologies will be operationally used and supported.				
FY 2008 Plan - (U) Select the payloads and platforms to be demonstrated for the airborne Tactical Airborne Relay. Develop, integrate and test the payloads; procure platforms (UAV, ground terminals and portable equipment); and initiate payload to platform integration for operational demonstration. Establish the concept of operations and operational scenario to be evaluated at the military utility assessment. Initiate technology transition criteria.				
FY 2009 Plan - (U) Complete integration for operational demonstrations. Conduct military utility assessment. Assess technology maturity and validate technology transition criteria. Continue the development for follow on assessment and technology maturation.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Airborne Network Gateway	0.000	0.000	10.000	10.000
Evaluation of the technology maturity of the data link, networks, and voice capabilities to be integrated into a form factor with size, weight, and power design constraints. Development of enhancements to improve networking across the battlespace. Incorporation of standards that will lead to improved interoperability. Increased understanding of the operational concepts that will use this integrated capability.				
FY 2008 Plan - (U) Assess technology maturity of data link, network and voice communications capability to be used for airborne network gateway candidates. Initiate the development of enhancements to support shortfalls discovered. Initiate the development of technology transition criteria.				
FY 2009 Plan - (U) Conduct operational field demonstration of enhancements developed for the airborne network gateway capability. Continue to assess technology maturity of candidates. Conduct military utility assessment. Continue development for follow on assessment and technology maturation.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Gateway Interoperability	0.000	0.000	5.000	5.000
Increase understanding of gateways, a complex area of networking within DoD. Establish the technical basis for DoD policy and standards for the Global Information Grid, specifically in the area of the tactical edge attachment to the Global Information Grid core networks.				
FY 2008 Plan - (U) Evaluate gateway technologies and program candidates. Define the criteria for acceptable gateway technical and operational performance criteria. Initiate the integration of gateway				



<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603662D8Z - Networked Communications Capabilities</b>	PROJECT <b>P662</b>
<p>candidates for testing and assessment. Produce initial technical report for gateway standardization and interoperability. Initiate the development of technology to fill shortfalls for airborne tactical relay and airborne network gateway.</p> <p>FY 2009 Plan - (U) Complete gateway testing and assessment. Finalize gateway technical report recommendations. Establish gateway technology transition plan.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

UNCLASSIFIED								
OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)							Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603662D8Z - Networked Communications Capabilities</b>				PROJECT <b>P663</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P663 Network Communications Analysis	0.000	0.000	20.000	20.000	20.000	26.562	26.956	27.530
<p><b><u>A. Mission Description and Project Justification:</u></b> Tactical Mobile Networking - (U) As studies have suggested, for instance, the National Research Council's Network Science Report (2005) and Army Mobile Ad-hoc Network (MANET) Jason Report (January 2006), the type of networking projected to meet military tactical requirements are not supported by network theory, network design and analysis tools. This research will define those technical parameters important to military tactical mobile networking environments, investigate the status of network design and analysis tools, and evaluate how modeling and simulation is conducted to support tactical mobile networking environments. The role of network experimentation with respect to network modeling will be explored. Further development and analysis will be conducted to improve the awareness of the condition of tactical mobile networking technologies. Design tools, architectures and technical approaches will be recommended to acquisition programs as a result of this research.</p> <p>Network Management Tools and Analysis - (U) Network management in the commercial world is a highly organized, synchronized activity that has excellent tools to monitor activity and repair disrupted networks as needed. These same tools are ill-matched for management in the wireless world, and specifically for military tactical mobile networking. In addition, the military tactical mobile networking environment lack the infrastructure (connectivity) and support (helpdesk) because resources (spectrum, people, equipment) are scarce (not in harms way). As the complexity of networking grows and as network capabilities are introduced, improved network management is required. For military operations, assured delivery may be needed for specific information and operations. This requires management tools to be in place to ensure continued secure and robust operations, which is not achieved with commercial wireless technologies. This research will assess network management tools in place for the military tactical mobile networking environment, develop technology and tools to address shortfalls with the goal to transition technology to operational systems.</p> <p>Spectrum Management Tools and Analysis - (U) For wireless, tactical mobile networking, the management of the use of spectrum effects network operations. The demand for spectrum is increasing due to the expanded use of sensors, imagery and voice. This demand increases the pressure on the limited shared radio frequency (RF) spectrum for military tactical networking. The current DoD frequency planning and management infrastructure will have a limited ability to cope with this demand through operational planning, Coalition Joint Spectrum Management Planning Tool (CJSMPT) Joint Capability Technology Demonstration (JCTD) and the Global Electromagnetic Spectrum Information System (GEMSIS). Advanced spectrum management concepts such as sense and adapt, spectrum sharing, and dynamic reallocation are under investigation but not yet mature support operations. This research will evaluate opportunities for more efficient and effective use of the frequency spectrum within DoD. Technology advances are expected to advance the concept of cognitive radio devices to sense and adapt operations based on spectrum policy and usage, the management of multiband and multifunction apertures, and the use of spectrum efficient waveforms for use in military environments. This research will develop the models and tools to demonstrate capabilities for operational planning and monitoring of spectrum as these technologies are introduced.</p> <p>Integrated Network Management Capability - (U) Network management becomes more complex as more and differt types of networking capability becomes available. Integrated network management across heterogeneous systems, especially wireless systems, requires definition, design and development. Operationally, network management assumes all functions required to share networking resources and ensure proper operation for participants. This research will define integrated network operations tools for all aspects of network resource management and to prioritize across operational spectrum management, security management, network management, and information management. This research will also develop testbeds specially</p>								

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
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to validate models and simulations used to develop and test network management tools, and conduct experimentation on approaches developed.				
<b><u>B. Accomplishments/Planned Program:</u></b>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Tactical Mobile Networking	0.000	0.000	3.500	3.000
Increased understanding of the condition of tactical mobile networking technologies. Improved specification of technical standards and policy for tactical mobile networking. Finer fidelity modeling and simulation to support operations analysis and the articulation of operational requirements and performance parameters.				
FY 2008 Plan - (U) Define the technical parameters to be met for tactical mobile networking. Evaluate modeling and simulation along with design and analysis tools to support tactical mobile networking. Initiate the development of an improved set of tools to support tactical mobile networking. Initiate experimentation to evaluate tools				
FY 2009 Plan - (U) Continue the development of an improved set of tools. Develop testbeds and demonstrate tools in a laboratory testbed environment.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Network Management Tools and Analysis	0.000	0.000	5.000	5.500
Increased understanding of the complexity of the tactical network management. Determination of the support required for tactical network operations. Evaluation of technology to support transition and fielding to operational capability.				
FY 2008 Plan - (U) Assess network management tools for the military tactical mobile networking environment in operational and laboratory testbed environments. Develop technology and tools to address shortfalls.				
FY 2009 Plan - (U) Demonstrate management tools developed to evaluate technical maturity and military utility. Initiate technology transition planning.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Spectrum Management Tools and Analysis	0.000	0.000	4.000	4.000
Technical basis to support changes regarding the operational use of spectrum both within the military and among spectrum regulatory bodies.				
FY 2008 Plan - (U) Develop the spectrum technology strategy for the introduction of advanced capability beyond operational mission planning. Demonstrate technologies to support monitoring and plan adjustments as spectrum conditions allow. Assess emerging spectrum technologies for inclusion to support military operations.				
FY 2009 Plan - (U) Demonstrate concepts and technologies to support a more efficient and effective use of spectrum.				

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007	
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<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Program Outputs and Efficiencies - (U) Technical basis to support changes regarding the operational use of spectrum both within the military and among	0.000	0.000	7.500	7.500
<p>Common integrating framework to support interoperability among various aspect of developmental network operations and management to include: spectrum management, network management, security management and information management. Reduce the cost to develop, procure and support networks through the integration across networks and functions within networks.</p> <p>FY 2008 Plan - (U) Establish testbed to explore how individual network management tools work together in heterogeneous networks. Establish the integrating framework for network management. Demonstrate network managers to assess technical shortfalls. Initiate development of integrated management tools.</p> <p>FY 2009 Plan - (U) Continue the definition of an integrated network management framework. Demonstrate tools that provide integrated network management.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>				

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603665D8Z - Biometrics Science and Technology**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	0.000	8.000	10.600	11.300	12.100	12.300	15.200
P665 Biometrics Science and Technology	0.000	0.000	8.000	10.600	11.300	12.100	12.300	15.200

**A. Mission Description and Budget Item Justification:** (U) The Deputy Secretary of Defense on October 4, 2006, designated the Director of Defense Research and Engineering (DDR&E) as the Principal Staff Assistant (PSA) for biometrics. The scope of the responsibilities is to fully address and exercise control over all facets of the Department's biometrics programs, initiatives, and technologies. This includes requirements, doctrine, organization, training, materiel, logistics, architecture, standards and funding.

(U) DDR&E established a senior-level Biometrics Executive Committee (ExCom) in mid-October to chart the way forward. The committee includes key stakeholders within OSD and across Department and invites interagency participation (e.g., DHS, DoJ (FBI), DoS, DoC, NSAm and Intelligence Community).

(U) The Department is implementing a synchronized, integrated, and coordinated approach for developing, procuring, supporting, and fielding biometrics capabilities.

(U) Key issues include the coordination of policy issues for sharing of data across the Department, with other agencies, and with our coalition partners; funding, and the need for consolidated program and spend plans. The Joint Staff Capabilities Based Assessment (CBA) addressed near-term operational gaps. The CBA identified gaps include base access and security, joint training, software interoperability, and communication equipment (regarding the speed of transaction and data sharing).

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)				
Current BES/President's Budget (FY 2008/2009)	0.000	0.000	8.000	10.600
Total Adjustments	0.000	0.000	8.000	10.600
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			8.000	10.600

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3PE NUMBER AND TITLE  
**0603665D8Z - Biometrics Science and Technology****C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.**E. Performance Metrics:** Not Applicable.

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007																			
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603665D8Z - Biometrics Science and Technology</b>					PROJECT <b>P665</b>																				
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013																				
P665      Biometrics Science and Technology	0.000	0.000	8.000	10.600	11.300	12.100	12.300	15.200																				
<p><b><u>A. Mission Description and Project Justification:</u></b> (U) Military applications of biometrics exploitation to date have largely focused on the use of fingerprints to identify personnel for entry into controlled areas. During the past three years the military value of biometrics technology in counter terrorism, combating terrorism, and counter insurgency operations has been repeatedly demonstrated in forensics application in support of irregular warfare operations and in the identity verification of foreign nationals working in support of U.S. Forces. (U) The Department of Defense (DoD) does not currently have a strategic, synchronized, integrated, and coordinated research and development approach to expand the forensic exploitation for the broad range of biometric markers to exploit all biometrics information available for identification of personnel. DoD is developing a comprehensive biometrics Science and Technology (S&amp;T) program to address all aspects of identity management ranging from information security to forensic analysis. This effort initiates a comprehensive biometrics S&amp;T plan that addresses all facets of intra-DoD and interagency coordination, including standards and develops common data bases to share biometric data across agencies at the federal, state and local levels. (U) Implementation of the S&amp;T plan enables the continued growth of biometrics to enable capabilities beyond current fingerprint management areas and benefits irregular warfare, force protection, and identity management efforts.</p> <p>(U) Funding will be used to implement a comprehensive biometrics Science and Technology (S&amp;T) plan that will include Stand-Off Capabilities.</p>																												
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Stand-Off Capabilities</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">1.000</td> <td style="text-align: center; padding: 5px;">2.300</td> </tr> </table> <p>FY 2008/FY2009 Plan - Use near infrared laser and inverse SAR / LIDAR to enhance video / camera images to enable stand-off, covert and overt detection and identification capabilities including:              -Iris-At-A-Distance for tactical operations and Tagging, Tracking, and Locating (TTL).              -Facial Recognition for positive ID of individuals from regional / national face recognition data bases. Goal is enable 100-200 meters initial stand-off, then spiral to 500 meter capability with a longer term recognition approaching 1 kilometer. Monitoring approaches to facilities, borders, ports of entry and other high traffic areas.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Non-Obtrusive Biometrics</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">1.000</td> <td style="text-align: center; padding: 5px;">1.000</td> </tr> </table> <p>FY 2008/FY 2009 Plan - Develop inconspicuous means to identify evasive behavior such as voice recognition capabilities for use in identification and screening of personnel. For example, during interrogations or interviews, exploitation of subtle markers such as facial expressions and voice inflection can identify when interviewees are not being truthful. Markers may be covertly collected without the subject being physically connected to monitors.</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Stand-Off Capabilities	0.000	0.000	1.000	2.300	<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Non-Obtrusive Biometrics	0.000	0.000	1.000	1.000
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009																								
Stand-Off Capabilities	0.000	0.000	1.000	2.300																								
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009																								
Non-Obtrusive Biometrics	0.000	0.000	1.000	1.000																								

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)				Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603665D8Z - Biometrics Science and Technology</b>			PROJECT <b>P665</b>
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Rapid Capture of Fingerprints	0.000	0.000	1.000	1.000
FY 2008/FY 2009 Plan - Use of optical 3-D imagery and hyperspectral technology to rapidly capture fingerprints to support time-compressed special operations and maritime interdiction, checkpoint operations, drug interdiction and humanitarian services. Metric is to reduce time for fingerprint assessment & identification from minutes to seconds.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Enhanced Latent Fingerprint Detection	0.000	0.000	1.000	1.000
FY 2008/FY 2009 Plan - Use mass spectrometry to identify latent fingerprints on post-blast IED fragments (or empty plastic narcotic bags) that are otherwise undetectable with current technology				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Natural Forensics for Backtracking Terrorists	0.000	0.000	1.000	2.300
FY 2008/FY 2009 Plan - Use stable isotopes (e.g., in water, food, or environment) as natural forensic taggants to determine geographical regions through which humans have traversed or resided. Begin compiling data bases in high risk geographical areas to provide chronological record of geographic movements and travel histories of personnel of interest.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Biometrics Operational Exchange	0.000	0.000	1.000	1.000
FY 2008/FY 2009 Plan - Establish a prototype, interoperable data base for DoD enabling rapid collection, processing, and correlation of biometrics information and sharing of data between agencies, and with state & local law enforcement agencies, particularly "red force" data. Provide timely exchange of formatted biometric data enables military, law enforcement and security personnel to identify and monitor persons of interest.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Multimodal Biometrics Fusion	0.000	0.000	1.000	1.000
FY 2008/FY 2009 Plan - Rapidly adaptable and changing threats require a capability for more finite identification and authentication of red and gray force personnel. Goal is move from single point capabilities such as fingerprinting, iris scans, speech and voice recognition into formats providing multimodal biometrics common formats using intelligence fusion technologies. Execute rapid transition of emerging biometrics knowledge to the warfighter.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Forensic Exploitation of Biometrics	0.000	0.000	1.000	1.000
FY 2008/FY2009 Plan - Establish capabilities to exploit forensic information derived from weapons, evidence and human identifiers. Develop forensic, interoperable and modular databases and establish a training program for biometrics users.				



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<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603670D8Z - Human, Social and Culture BehaviourModeling (HSCB) Advanced Development**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	0.000	9.000	9.400	11.800	12.200	20.400	23.200
P370 Human, Social and Culture BehaviourModeling (HSCB) Advanced Development	0.000	0.000	9.000	9.400	11.800	12.200	20.400	23.200

**A. Mission Description and Budget Item Justification:** (U) Current military operations need and future operations will demand the capability to understand the social and cultural terrain and the various dimensions of human behavior within these terrains. Behaviors in the social and cultural terrain context extend across the spectrum from adversaries to our Joint U.S. forces, with our coalition partners, and with government and non-government organizations. USG and DoD capstone policy and guidance are driving this need -- as articulated in NSPD-44, QDR 2006, and DoDD 3000.05 (Stability, Security, Transition and Reconstruction (SSTR)). Science and resulting technologies form a resource and enabler for success in this area. Advanced Development in Human Social Culture Behavior Modeling (HSCB) and its counterparts in BA2 and BA4, will demonstrate technologies that enhance existing toolsets and create new toolsets for human terrain understanding and forecasting in 4 application pillars: intelligence analysis; operations analysis/planning; training; and joint experimentation. Early priorities will include an emphasis on demonstration in relevant operational systems (e.g. Mapping of the Human Terrain JCTD). The program will demonstrate visualization toolsets, modeling systems, and training systems capable of mapping the complex human terrain that will be encountered in both current and future military and stability operations.

<b>B. Program Change Summary</b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)				
Current BES/President's Budget (FY 2008/2009)	0.000	0.000	9.000	9.400
Total Adjustments	0.000	0.000	9.000	9.400
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			9.000	9.400

**C. Other Program Funding Summary:** Not Applicable.

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603670D8Z - Human, Social and Culture Behaviour Modeling (HSCB) Advanced Development****D. Acquisition Strategy:** Not Applicable.**E. Performance Metrics:** Not Applicable.

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603670D8Z - Human, Social and Culture BehaviourModeling (HSCB) Advanced Development</b>						PROJECT <b>P370</b>
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P370	Human, Social and Culture BehaviourModeling (HSCB) Advanced Development	0.000	0.000	9.000	9.400	11.800	12.200	20.400	23.200
<p><b><u>A. Mission Description and Project Justification:</u></b> (U) This project is focused on demonstrating general-use , cross-domain capabilities/tools to support all HSCB applications. The project will develop: Computational modeling capabilities; Visualization software toolsets; and Training/mission rehearsal systems that provide forecasting capabilities for socio-cultural (human terrain) responses at the strategic, operational and tactical levels. This project will develop, integrate and demonstrate technologies that provide cultural understanding/overlays in existing intelligent, influence operations, and operations planning systems. This project will develop, integrate and demonstrate training and mission rehearsal capabilities that go beyond strategic level planning tools (to the operational and tactical level), providing broader, more in depth training/retention capability.</p> <p>Modeling Capabilities that will generate and demonstrate validation of synthetic adversaries to populate "what if" analyses for forecasting reactions to a defined class of adversaries to U.S./coalition miStrategic decision making tools that account for political, religious, cultural, and other factors. Integration of a common architecture visualization tool that vertically integrates cultural information into a military operational environment.</p> <p>Visualization software toolsets that will be used as a strategic decision making tool that will account for political, religious, cultural, and other factors. Integration of a common architecture visualization tool that vertically integrates cultural information into a military operational environment.</p> <p>Training/Mission rehearsal systems capable of using flexible underlying cultural models to train at the operational/tactical level. Integration and demonstrations of social, cultural and human behavior/cognition skills training systems for operational and strategic planning personnel in a coalition force context.</p>									
<b><u>B. Accomplishments/Planned Program:</u></b>									
<b>Accomplishment/Planned Program Title</b>			FY 2006	FY 2007	FY 2008	FY 2009			
Modeling Capabilities			0.000	0.000	3.000	3.000			
<p>Generation and demonstration of validated synthetic adversaries to populate "what if" analyses for forecasting reactions to a defined class of adversaries to U.S./coalition military, economic, or political actions. Integration and demonstration of decision making support tools within Battle Command Planning/Execution/Re-Planning systems for political, religious, cultural and other factors. Development of tools and software products to integrate socio-cultural models and information into existing intelligence, and Command and Control systems.</p> <p>FY 2008 Plan: Integration and demonstration of validated, human terrain forecasting models that enable examination of 2nd, 3rd, and higher order effects of kinetic and non-kinetic actions within a theater in support of Effects Based Operations. Current integrated software for human social, cultural and behavior modeling (HSCB) is focused on intelligence applications using existing social network modeling tools</p>									

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603670D8Z - Human, Social and Culture BehaviourModeling (HSCB) Advanced Development</b>			PROJECT <b>P370</b>
and relatively data poor/outdated theory based models. This work will begin to provide a more robust, generalizable set of DoD centric models to support decision aids and toolsets for command and control, intelligence, influence operations and operational planning.				
FY 2009 Plan: Synthetic forces are useful for doing 'what if' exercises for planning purposes during Phase 0, and during ongoing contingency planning. The synthetic forces used for these wargames/planning exercises are often not an accurate representation of adversary or green forces, and their reactions to U.S./coalition actions. This project will demonstrate validated regional/cultural models in planning exercises.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Visualization Software Toolsets	0.000	0.000	4.000	4.000
Visualization software toolsets that will be used as a strategic decision making tool that will account for political, religious, cultural, and other factors. Integration of a common architecture visualization tool that vertically integrates cultural information into a military operational environment.				
FY 2008 Plan - Demonstration of integrated process and tool suites that allow for planning at the strategic level using real-time human, social, culture, and behavior models focused on conflict resolution and regional stability. DoD strategic planning requires accurate representation of the full range of national power, including multi-agency and non-military actions. It also requires the ability to accurately represent the outcomes of those actions in the target region/population. This project will demonstrate a decision-making toolset that includes HSCB factors				
FY 2009 Plan - Common, generalizable (strategic to tactical) tools for visualization of DIME-PMESII or HSCB factors on the battlefield, or during Security, Stability, Transition and Reconstruction phases do not exist. This project will do an initial demonstration of a common architecture for visualization of these effects, with the ability for commanders to "drill down" from regional to local views, and vice versa.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Training/Mission Rehearsal Systems	0.000	0.000	2.000	2.400
Training systems capable of using flexible underlying cultural models to train at the operational/tactical level. Integration and demonstrations of social, cultural and human behavior/cognition skills training systems for operational and strategic planning personnel in a coalition force context.				
FY 2008 Plan - Current methods and procedures for integrating cultural information into military operations do not satisfy the requirements for ongoing operations and are not flexible enough to rapidly deliver Just In Time training for complex new regions of interest, and relatively new mission areas (e.g. transition and reconstruction). This project will integrate and demonstrate training technologies to deliver socio-cultural understanding and skills needed by individuals, small units, and coalitions in current and future military operations.				
FY 2009 Plan - Socio-cultural factors impact not only U.S.-adversary actions and reactions, but also impact the capability of U.S forces to work effectively with coalition/multi-national forces in the global war on terror. Virtual training and mission rehearsal/exercises provides leaders with some opportunity to develop teamwork with coalition forces who are physically separated from U.S. forces. However, the events do not provide the opportunity to develop teamwork with forces who are culturally, or socially separate from our own forces. Cultural and language barriers can create problems with understanding operational orders. This project will demonstrate distributed training technologies to speed the development of socio-cultural skills in coalitions in current military operations.				

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**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

PROJECT

**0603670D8Z - Human, Social and Culture Behaviour Modeling (HSCB) Advanced Development****P370**

<b><u>C. Other Program Funding Summary</u></b>			FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
R&D BA 2	0602670D8Z	HSCB Applied Research	0.000	0.000	0.007	0.007	0.009	0.010	0.016	0.019	0.000	0.070
R&D BA 4	0604670D8Z	HSCB Research and Engineering	0.000	0.000	0.005	0.006	0.007	0.007	0.013	0.015	0.000	0.055

Comment:

**D. Acquisition Strategy:** Not Applicable.**E. Major Performers** Not Applicable.

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603680D8Z – Defense-Wide Manufacturing Science and Technology Program**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	0.000	10.000	10.000	10.000	15.000	15.000	20.000
P680 Manufacturing Science and Technology Program	0.000	0.000	10.000	10.000	10.000	15.000	15.000	20.000

**A. Mission Description and Budget Item Justification:** The Manufacturing Science and Technology (S&T) Program was mandated by Congress in Section 241 of the National Defense Authorization Act of 2006, under the authority of Section 2521 of Title 10, to identify and transition advanced manufacturing processes and technologies that would achieve significant productivity and efficiency gains in the defense manufacturing base. A March 2005 GAO study cites immature technology and unstable manufacturing processes and readiness as major drivers in cost, schedule, and technical overruns of acquisition program. The challenge of designing and producing affordable weapon systems is long-standing. A robust manufacturing technology (ManTech) program is critical to developing and delivering affordable capabilities. The Manufacturing S&T Program budget provides DoD with the ability to invest and advance pervasive joint manufacturing issues that are currently driving the high cost of advanced weapon systems.

The Manufacturing S&T program provides investments that focus on cross-cutting military manufacturing needs for critical enabling technologies in the areas of specialty materials, electronics, and manufacturing processes that require maturation to expedite transition across multiple platforms, are deployable in 3-10 years, and can provide game-changing capability or faster and affordable production of DoD weapon systems. This program compliments the Service ManTech programs, which are generally focused on more near term (1-3 year) technology maturation for service specific requirements. Investment opportunities identified through roadmapping activities, conducted in concert with industry, data calls, and service/agency technologies that can be transferred across multiple platforms with additional ManTech assistance, are considered for investment.

In anticipation of the establishment of the ManTech S&T Program, the JDMTP, using seed funds provided by the Component ManTech programs, launched and funded road-mapping activities for power and energy and Radio Frequency (RF) modules, and initiated a data call through the sub-panels for candidate technology initiatives and projects. The JDMTP received more than 60 proposals in response to the call that will be used as the initial candidate pool for selection and funding execution. Areas of interest included a low observable initiative, a propulsion initiative for advanced turbine engines to included advanced machining and advanced material development, an RF module initiative, system-on-chip electronic investments, composite investments for prosthetics, and directed energy technology.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)				
Current BES/President's Budget (FY 2008/2009)	0.000	0.000	10.000	10.000
Total Adjustments	0.000	0.000	10.000	10.000
Congressional Program Reductions				
Congressional Rescissions				

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## OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603680D8Z – Defense-Wide Manufacturing Science and Technology Program**

Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			10.000	10.000

**C. Other Program Funding Summary:** Not Applicable.

**D. Acquisition Strategy:** Not Applicable.

**E. Performance Metrics:** Not Applicable.



<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603680D8Z – Defense-Wide Manufacturing Science and Technology Program</b>					PROJECT <b>P680</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P680      Manufacturing Science and Technology Program	0.000	0.000	10.000	10.000	10.000	15.000	15.000	20.000	
<p><b><u>A. Mission Description and Project Justification:</u></b> The ManTech S&amp;T program has a two-pronged approach: 1) technology initiatives and 2) single specific projects. Technology initiatives, in collaboration with industry, identify and develop investment strategies, to advance the manufacturing processes and technologies needed to support the technology development in the area identified. Single specific projects address investment opportunities not associated with selected technology initiatives. Single projects enable the program to respond to urgent, compelling manufacturing needs and provide seed funding to more high risk-high payoff technologies.</p> <p>Data calls will be launched annually by the Joint Defense Manufacturing Technology Panel (JDMTP) to identify technology initiatives and single specific issues requiring investment. The JDMTP is comprised of the ManTech Directors from the Services, Defense Logistics Agency, Missile Defense Agency (MDA) and Office of Secretary of Defense (OSD). The call will be distributed through the JDMTP sub panels and Broad Agency Announcements (BAAs) as required. Potential candidates will be evaluated by the JDMTP based on criteria set forth in the call and announcements and down-selected for further development prior to final selection. Priority will be given to those initiatives and single projects that support affordability and producibility of critical enabling manufacturing technologies that cut across multiple platforms. Investments will also balance defense priorities in specialty materials, electronics, propulsion and power, and manufacturing processes including "above the shop floor" (lean and business technologies facilitating interoperable manufacturing). Final projects are selected by the OSD ManTech Director in collaboration with the JDMTP and in consultation with the Director, Defense Research &amp; Engineering. Technology initiatives and projects will be executed at the Component level.</p> <p>Industry Wide Propulsion - Turbine engines are the main propulsion system for virtually all DoD aircraft and helicopters and also power an array of ships and tanks. Improvements in manufacturing process technology must be achieved with each new generation of engines for these challenging new designs to be manufactured with acceptable quality, cost, and delivery rate to meet the warfighter needs. This initiative seeks to advance and establish the manufacturing technologies and US industrial base capabilities needed to support the development, production and sustainment of advanced gas turbine engines. \$5-7 billion projected life cycle cost avoidance could be realized with successful maturation.</p> <p>Manufacturing Readiness Level (MRL) Assist: Tool Development - A March 2005 GAO report cited immature manufacturing processes and the lack of knowledge regarding the maturity of those processes as major drives in cost and schedule overruns. "MRL Assist" is a web based knowledge management tool that can be used from the shop floor to executive level leadership to understand manufacturing readiness and risk within a program This project will complete the development of "MRL Assist," a knowledge-based manufacturing risk assessment tool for use by industry and government programs. "MRL Assist" provides a rigorous set of questions within the ten major cross threads for each MRL. A composite overview of the responses provides a quick visual feedback as to where risks are located within the process.</p> <p>System-On-Chip (SOC)- ManTech investments will provide leap ahead communication and sensor capability by maturing technologies that move heavy, high volume/power demand systems to small, power efficient SOC packaging technology.</p>									

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007																															
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603680D8Z – Defense-Wide Manufacturing Science and Technology Program</b>			PROJECT <b>P680</b>																														
<p>Affordable Manufacturing and Rapid Prototyping for Custom Composite Orthotics and Prosthetics - New manufacturing technologies are required for the development of custom composite orthotics and prosthetics for injured men and women of the armed services. Orthotics and prosthetics present a two-fold challenge in that they contain a high degree of customization in design and a labor intensive means of manufacturing. Recent advances in solid modelling, reconfigurable tooling, room temperature resin chemistry, automated fabrication of custom fiber architectures, and novel resin infusion methods have created the potential to develop a highly integrated, low cost, custom orthotic and prosthetic technology to address the unique requirements and needs of the armed services. Rapid prototyping technologies and new composite manufacturing solutions have shown the potential to provide a 24-hour turn around time for component fabrication. The current state of the art for orthotics is to thermoform plastic materials such as polypropylene to create a custom fit orthotic. New manufacturing techniques integrated with advanced polymer composite technologies have allowed for initial prototyping work using woven glass reinforced Adiprene. These new materials are compliant, but sufficiently rigid for use with prosthetics. The integration of composite materials could provide up to a 20% weight savings and an approximate 40% reduction in skin contact over current thermoform plastic solutions.</p>																																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Accomplishment/Planned Program Title</th> <th style="width: 10%;">FY 2006</th> <th style="width: 10%;">FY 2007</th> <th style="width: 10%;">FY 2008</th> <th style="width: 10%;">FY 2009</th> </tr> </thead> <tbody> <tr> <td>Industry Wide Propulsion Initiative</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">5.000</td> <td style="text-align: center;">5.000</td> </tr> <tr> <td colspan="5" style="padding: 5px;"> <p>Demonstrate the advancement of manufacturing technologies for advanced turbine engines that result in: 1) percentage increase in reduced weight, 2) percentage increase in engine performance, 3) percentage decrease in maintenance, 4) increasing production flow through, 5) increased non destructive evaluation (NDE) techniques, and 6) increased safety. Advanced manufacturing processes materials will reduce re-work, increase production capacity, and enable production rate requirements for engine components. Projected LCC avoidance for this initiative is projected between \$5-12 billion, with technology maturity within 3-5 years.</p> <p>FY 2008 Plan - Initiate Phase 1 for optimizing and validating manufacturing, machining, and non-destructive inspection techniques for Organic Matrix Composites (OMC) and Ceramic Metal Matrix Composites (CMC). Initiate Phase 1 for processing and Non-Destructive Evaluation (NDE) of Ceramic Hybrid Bearing to mature reliability and repeatability of manufacturing processes.</p> <p>FY 2009 Plan - Continue Phase 1 for CMC activity. Advance technologies to increase production rate for CMC by 50% of end-point goals. Advance Phase Ceramic Hybrid Bearing manufacturing processes by 25% of end-point goals.</p> </td> </tr> <tr> <td>Accomplishment/Planned Program Title</td> <td style="text-align: center;">FY 2006</td> <td style="text-align: center;">FY 2007</td> <td style="text-align: center;">FY 2008</td> <td style="text-align: center;">FY 2009</td> </tr> <tr> <td>Manufacturing Readiness Level (MRL) Assist: Tool Development</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.850</td> <td style="text-align: center;">0.250</td> </tr> <tr> <td colspan="5" style="padding: 5px;"> <p>Three key areas: 1) increased knowledge of manufacturing risks related to acquisition programs and technology transition, 2) disciplined process for determining risk, and 3) program that will be made available to public and private industry.</p> <p>FY 2008 Plan- Complete beta testing. Launch final Version 1.0 of tool on website and maintained by BMPCOE</p> </td> </tr> </tbody> </table>					Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009	Industry Wide Propulsion Initiative	0.000	0.000	5.000	5.000	<p>Demonstrate the advancement of manufacturing technologies for advanced turbine engines that result in: 1) percentage increase in reduced weight, 2) percentage increase in engine performance, 3) percentage decrease in maintenance, 4) increasing production flow through, 5) increased non destructive evaluation (NDE) techniques, and 6) increased safety. Advanced manufacturing processes materials will reduce re-work, increase production capacity, and enable production rate requirements for engine components. Projected LCC avoidance for this initiative is projected between \$5-12 billion, with technology maturity within 3-5 years.</p> <p>FY 2008 Plan - Initiate Phase 1 for optimizing and validating manufacturing, machining, and non-destructive inspection techniques for Organic Matrix Composites (OMC) and Ceramic Metal Matrix Composites (CMC). Initiate Phase 1 for processing and Non-Destructive Evaluation (NDE) of Ceramic Hybrid Bearing to mature reliability and repeatability of manufacturing processes.</p> <p>FY 2009 Plan - Continue Phase 1 for CMC activity. Advance technologies to increase production rate for CMC by 50% of end-point goals. Advance Phase Ceramic Hybrid Bearing manufacturing processes by 25% of end-point goals.</p>					Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009	Manufacturing Readiness Level (MRL) Assist: Tool Development	0.000	0.000	0.850	0.250	<p>Three key areas: 1) increased knowledge of manufacturing risks related to acquisition programs and technology transition, 2) disciplined process for determining risk, and 3) program that will be made available to public and private industry.</p> <p>FY 2008 Plan- Complete beta testing. Launch final Version 1.0 of tool on website and maintained by BMPCOE</p>				
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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603680D8Z – Defense-Wide Manufacturing Science and Technology Program</b>			PROJECT <b>P680</b>
FY 2009 Plan - Complete field testing of Version 1.0 and make final improvements				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Manufacturing Scale-up for Low Observable Materials and Platforms	0.000	0.000	1.500	1.500
Three key areas: 1) precision component fabrication (no gaps and seams), 2) multi-spectral LO integration, and 3) minimize sustainment cost and cycle time drivers. Investment in the three key areas are projected to have a payback of \$90 million within the FYDP and billions over 2-3 FYDPs. Technology is expected to mature beginning in 2-3 years.				
FY 2008 Plan - Conduct and complete BAA and proposal solicitation. Establish technology teams and associated technology metrics for new-start Low Observable (LO) projects. Initiate selected material projects for advancement of precision component fabrication. Measured increase in component fabrication for scale up processes.				
FY 2009 Plan - Measured increase in component fabrication processes approaching 50% of target end point				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
System-On-Chip (SOC)	0.000	0.000	1.500	1.500
ManTech will move the basic packaging technology from Technology Readiness Level (TRL) 3 to qualification for application in on-board SATCOM capable platforms. ManTech investments will refine the fabrication process, develop design rules for complex integration of non optimized mixed devices on same silicon, and accelerate the development and integration of the transmit and receive module.				
FY 2008 Plan - Baseline technical milestones. Advance manufacturing processes for fabrication processes by 15% of technical goals. Conduct Phase 0 study on the requirements integration of mixed, non-optimized components				
FY 2009 Plan - Advance manufacturing fabrication processes by 30% of technical goals.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Affordable Manufacturing and Rapid Prototyping for Custom Composite Orthotics and Prosthetics	0.000	0.000	1.150	1.750
New rapid prototyping and affordable manufacturing processes resulting in 20% weight savings and 40% reduction in skin contact. Improved reliability of new composite prosthetics.				
FY 2008- Plan - Coordinate with the National Naval Medical Center (NNMC) and Walter Reed Hospital (WRH) to establish a team to develop manufacturing technologies. Conduct Phase 1 - Integration of fiber performs with new fabrication prototyping of prosthetics and orthotics and conduct proof-of-concept of rapid custom composite prosthetics.				
FY 2009 Plan - Full-scale manufacturing capability for custom composite orthotics and prosthetics. Train NNMC and WRH on prototyping technology.				

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603680D8Z – Defense-Wide Manufacturing Science and Technology  
Program**

PROJECT

**P680**

<b><u>C. Other Program Funding Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
Air Force ManTech (BA7)	57.498	66.373	27.559	27.667	28.068	28.227	28.919	29.633	0.000	293.944
Army ManTech (BA7)	112.405	113.475	68.639	69.603	70.081	70.635	72.189	73.777	0.000	650.804
Navy ManTech (BA7)	57.745	61.048	56.127	56.235	58.420	59.372	60.018	60.659	0.000	469.624
DLA ManTech (BA7)	35.867	21.748	20.114	20.627	20.978	21.475	21.880	22.207	0.000	184.896

Comment:

**D. Acquisition Strategy:** Not Applicable.**E. Major Performers** Not Applicable.

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603711D8Z - Joint Robotics/Autonomous Systems**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	8.775	11.256	14.202	14.626	14.825	15.020	15.231
P710 Joint Robotics Program/Autonomous Systems	0.000	8.775	11.256	14.202	14.626	14.825	15.020	15.231

**A. Mission Description and Budget Item Justification:** (U) This program element (PE) supports the advanced technology development activities of the Joint Ground Robotics Enterprise (JGRE) with a focus on the development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in simulated environments. Projects deliver advanced technology with direct relevance to enhancing warfighters' capabilities that have been identified during operational assessments and field feedback of current unmanned systems. The PE enables Joint Service coordination and provides for interoperability and commonality among unmanned systems. The primary purpose of this PE is to support efforts to overcome technology barriers in the thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground Systems, and Technology Transition/Transformation. The technologies in the PE are generally at Technology Readiness Levels (TRL) of 4, 5, or 6 making transition and transformation activities critical to closing the requirement to capability gap.

<b>B. Program Change Summary</b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	0.000	7.700	11.600	14.600
Current BES/President's Budget (FY 2008/2009)	0.000	8.775	11.256	14.202
Total Adjustments	0.000	1.075	-0.344	-0.398
Congressional Program Reductions		-0.055		
Congressional Rescissions				
Congressional Increases		1.125		
Reprogrammings				
SBIR/STTR Transfer				
Other		0.005	-0.344	-0.398

**C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

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

<b>FY</b>	<b>Strategic Goals Supported</b>	<b>Existing Baseline</b>	<b>Planned Performance Improvement / Requirement Goal</b>	<b>Actual Performance Improvement</b>	<b>Planned Performance Metric / Methods of Measurement</b>	<b>Actual Performance Metric / Methods of Measurement</b>
07						
08						

Comment: Metrics for the Joint Ground Robotics Enterprise (JGRE) funded RDT&E are articulated in individual project plans and overview quad charts used to form the basis of funding justification and program assessment. These decisions are supported by the JGRE Technology Advisory Board (TAB). The TAB provides technology to capability matrix assessments to inform funding decisions, provide inputs to unmanned system (UMS) roadmaps and ensure technology transitions. In all document sets, project descriptions include task schedules with associated milestones, against which progress toward end goals can be measured. At the level of the performer, efforts are tracked using project technical and management milestones that have been appropriately defined and agreed upon in the project plans. At the enterprise level, the JGRE management structure and process tracks deliverables and examines the transition of technologies and ideas from the performer to DoD programs. The JGRE management structure and process includes a mid-year in progress review (IPR), annual funding justification and prioritization, technology assessments, an O-6 Council and a Senior Steering Group (SSG) overview. These DoD participant reviews include cost, schedule and technical progress assessment against the project milestones. Metric evaluations for the funded actions include, where appropriate, controlled trials, demonstrations, quasi-experimental evaluations, and direct/indirect analysis.

# OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE  
**0603711D8Z - Joint Robotics/Autonomous Systems**

PROJECT  
**P710**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P710 Joint Robotics Program/Autonomous Systems	0.000	8.775	11.256	14.202	14.626	14.825	15.020	15.231

**A. Mission Description and Project Justification:** (U) This program element (PE) and associated projects support the advanced technology development activities of the Joint Ground Robotics Enterprise (JGRE) with a focus on the development of subsystems and components and efforts to integrate subsystems and components into system prototypes for field experiments and/or tests in simulated environments. The PE and subsequent project management enables Joint Service coordination and provides for interoperability and commonality among unmanned systems. The primary purpose of this PE and subsequent projects is to support efforts to overcome technology barriers in the thrust areas of unmanned ground system technologies to include Autonomous & Tactical Behaviors, Manipulation Technologies, Collaborative Operations, Interoperability, Man-portable Unmanned Ground Systems, and Technology Transition/Transformation. The technologies in the PE are generally at Technology Readiness Levels (TRL) of 4, 5, or 6 making transition and transformation activities critical to closing the requirement to capability gap. Within this PE, projects will deliver responses to advanced technology needs directed at enhancing the warfighters' capabilities identified during concept development, operational assessments and field feedback of current unmanned systems.

## B. Accomplishments/Planned Program:

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
(U) Autonomous & Tactical Behaviors	0.000	1.265	2.440	2.663

FY 2007, 2008 and 2009 Plans: Support the development of vehicle onboard intelligence and tactical behaviors to allow the fielding of advanced autonomous unmanned systems. Baseline user identified mission scenarios to develop operational behaviors enabling unmanned operations within the conduct of mission tasks. Increase the warfighter's capability by transferring and developing technologies that will have an immediate impact on the autonomy and functional capabilities of current and future robotic systems. Enable transitioning of technologies appropriate for small robots from the technology transfer program to fielded systems.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
(U) Collaborative Operations	0.000	1.303	1.846	2.162

FY 2007, 2008 and 2009 Plans: Integrate communication, mission planning, interface technologies, and advanced intelligence capabilities to support collaborative operations between manned and unmanned systems. Develop and assess several strategies to enhance tele-operation of current UGVs and collaborative UAV teams. Collaborative and tactical behaviors include system convoying, teamed obstacle avoidance, area perception and relative position information sharing.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
(U) Interoperability	0.000	1.044	1.268	1.535

FY 2007, 2008 and 2009 Plans: Promote and guide technology development to meet joint requirements and promote ground as well as air unmanned systems interoperability. Support the bridging of

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>								Date: February 2007			
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3				PE NUMBER AND TITLE <b>0603711D8Z - Joint Robotics/Autonomous Systems</b>				PROJECT <b>P710</b>			
currently incompatible robots and controllers from various manufacturers, using different communications channels and hardware. Optimize best features of prior/ongoing research efforts into a maturing, standardized system that can be easily ported to robotic platforms used DoD-wide.											
<b>Accomplishment/Planned Program Title</b>				FY 2006		FY 2007		FY 2008		FY 2009	
(U) Man-Portable Unmanned Ground System Technologies				0.000		1.442		1.383		2.755	
FY 2007, 2008 and 2009 Plans: Increase the warfighter's capability by transferring and developing technologies that will have an immediate impact on the functional capabilities of man-portable robotic systems. Enable transitioning of technologies appropriate for small robots from the technology transfer program to fielded systems. Specific technologies include obstacle detection/obstacle avoidance (ODOA) and collaborative behaviors for small vehicles.											
<b>Accomplishment/Planned Program Title</b>				FY 2006		FY 2007		FY 2008		FY 2009	
(U) Technology Transition/Transformation				0.000		2.034		2.913		3.382	
FY 2007, 2008 and 2009 Plans: Facilitate integration of and ensure the ultimate transfer or transformation of technologies to ongoing programs. Exploit the best features of past and on-going efforts while supporting the development of technologies that have low risk to transition. Technologies of interest include: Interface Technologies (Human Robot Interaction), Autonomous Operations (Information Fusion, Perception, and Navigation), Autonomous Technologies (Positioning), and Platform Technologies.											
<b>Accomplishment/Planned Program Title</b>				FY 2006		FY 2007		FY 2008		FY 2009	
(U) Manipulation Technologies				0.000		1.687		1.406		1.705	
FY 2007, 2008 and 2009 Plans: Incorporate existing technologies into systems representative to those in use, demonstrate ease of robotic manipulation, support the development of mobile manipulation, expedite the transition and integration of corresponding robotic technologies to enhance the current fielded systems with more functionalities, autonomy and state-of-the-art behavior with interface methods from the RTD&E environment.											
<b>C. Other Program Funding Summary</b>		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
PE 0603709D8Z Joint Robotics Program (BA4)		27.264	12.210	11.860	11.867	12.119	12.389	12.711	13.041	0.000	113.461
PE 0604709D8Z Joint Robotics Program (BA5)		20.464	6.004	2.911	0.000	0.000	0.000	0.000	0.000	0.000	29.379
<p>Comment:</p> <p><b>D. Acquisition Strategy</b> The Joint Ground Robotics Enterprise (JGRE) utilizes several contracting and management strategies to achieve its objectives. JGR has established relationships with the several agencies to include the National Center for Defense Robotics (NCDR) and the Army's Rapid Equipping Force (REF) to support the rapid acquisition and evaluation of promising unmanned system technologies. Funding is provided to Service lab partners and other developers to promote common technology solutions across platforms and Services.</p>											



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**0603711D8Z - Joint Robotics/Autonomous Systems**

PROJECT  
**P710**

**E. Major Performers** Not Applicable.

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3		PE NUMBER AND TITLE <b>0603716D8Z - Strategic Environmental Research and Development Program (SERDP)</b>						
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	65.541	63.682	68.874	69.173	71.107	72.094	73.041	74.068
P470 Strategic Environmental Research and Development Program (SERDP)	65.541	63.682	68.874	69.173	71.107	72.094	73.041	74.068

**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.

<b>B. Program Change Summary</b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	75.429	67.149	70.977	71.111
Current BES/President's Budget (FY 2008/2009)	65.541	63.682	68.874	69.173
Total Adjustments	-9.888	-3.467	-2.103	-1.938
Congressional Program Reductions		-3.467		
Congressional Rescissions				
Congressional Increases				
Reprogrammings	-8.750			
SBIR/STIR Transfer	-1.138			
Other			-2.103	-1.938

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PE NUMBER AND TITLE

**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
08	DoD Environmental Requirements					

Comment: Performance in this program is monitored at two levels. At the lowest level, each of the more than 160 individual projects is measured against both technical and financial milestones on a quarterly and annual basis. At a program-wide level, progress is measured against DoD's environmental requirements and the development of technologies that address these requirements as well as the transition of these technologies to either to demonstration and validation programs or to direct use in the field.

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3		PE NUMBER AND TITLE <b>0603716D8Z - Strategic Environmental Research and Development Program (SERDP)</b>						PROJECT <b>P470</b>	
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P470	Strategic Environmental Research and Development Program (SERDP)	65.541	63.682	68.874	69.173	71.107	72.094	73.041	74.068

**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.

**B. Accomplishments/Planned Program:**

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Munitions Management (MM):	14.877	14.224	16.399	16.470

**(U) FY 2006 Accomplishments:**

Investments 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. Investigators continued to use the two standardized test sites for the demonstration and evaluation of UXO technologies. New start projects concentrated on underwater UXO characterization technologies, wide area assessment, improved sensor designs, and improving detection and discrimination methods.

**(U) FY 2007 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. New start efforts will focus on wide area assessment on active DoD ranges, precision geolocation tools to collect geophysical data to characterize sites with munitions and explosives of concern (MEC).

**(U) FY 2008 and 2009 Plans:** Continuing efforts will include technologies to eliminate or mitigate future UXO contamination, and advanced electromagnetic sensor development. New initiatives will continue to focus on wide area assessment technologies, advanced sensors, signal processing, and supporting technologies and protocols.

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**0603716D8Z - Strategic Environmental Research and Development  
Program (SERDP)**PROJECT  
**P470****Accomplishment/Planned Program Title**

FY 2006

FY 2007

FY 2008

FY 2009

Environmental Restoration:

19.955

18.754

18.858

18.940

(U) FY 2006 Accomplishments:

In FY 2006 SERDP-funded research continued to address major contaminants of concern at DoD facilities including munitions constituents (explosives, propellants and pyrotechnics) found on ranges and chlorinated solvents (TCE, PCE) found at over half of DoD remediation sites. Efforts continued to: 1) investigate cost-effective in-situ remediation and in place management strategies for contaminated sediments; 2) improved understanding of the delivery and distribution of remedial materials in the subsurface; 3) technologies to assess the impact of processes on fate and transport of contaminants in sediments; and 4) new technologies for containment and/or treatment of energetic materials on ranges. Congressional additions included \$1,000,000 to continue work at Texas Tech University on risk based approaches for improved toxic chemical management and \$1,000,000 for the remediation of environments contaminated by ammonium perchlorate at the University of Idaho.

(U) FY 2007 Plans: Researchers will 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. Work will continue to: characterize the source term of energetic compounds in aquatic environments; and develop new, cost-effective methods for the in-situ treatment of perchlorate in ground water. New research will begin on improving our understanding of the performance of remediation technologies in fractured geological settings. SERDP will focus on improving the scientific understanding and development of 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.

(U) FY 2008 and 2009 Plans: SERDP will continue to pursue initiatives 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. Work will continue on understanding how groundwater remediation technologies perform in fractured geologic settings; assessing ecosystem risk and recovery at sites with contaminated sediments and the use of molecular biological tools for groundwater remediation.

**Accomplishment/Planned Program Title**

FY 2006

FY 2007

FY 2008

FY 2009

Sustainable Infrastructure:

14.770

15.292

17.219

17.293

(U) FY 2006 Accomplishments:

SERDP continued to focus efforts on sustaining the use of military ranges including: efforts to understand and manage invasive plant species that negatively affect training activities; characterizing military activities that contribute to the transport of non-indigenous species; monitor migratory bird species on military lands; predicting marine mammal population densities; and develop remote sensing technologies to identify threatened/endangered species habitats to meet requirements of the Endangered Species Act and Migratory Bird Treaty Act. New initiatives included 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. A new initiative begun in FY 2006 is the Defense Coastal and Estuarine Research Program (DCERP) at Camp LeJeune, an estuarine and coastal research land/resources management initiative to assess the impacts of military training operations in these environments.

(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 efforts will 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.

(U) FY 2008 and 2009 Plans: SERDP will continue and initiate new efforts to address persistent issues that severely impact installation sustainability and readiness and their ability to support force training and

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PE NUMBER AND TITLE

**0603716D8Z - Strategic Environmental Research and Development  
Program (SERDP)**PROJECT  
**P470**

testing including assessment of the impact of military noise sources and innovative monitoring systems for impulse noise. Continuing efforts will include ecological forecasting models to assess the impacts of military training activities on endangered species; methods to control the spread of invasive species on military training lands; watershed management models for training ranges; and assessing human annoyance from military noise and reduction of military aircraft noise.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Weapons Systems and Platforms:	15.939	15.412	16.398	16.470

**(U) FY 2006 Accomplishments:**

SERDP continued to 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 included development of a chromium and VOC free paint systems for platforms, reduction of packaging waste and the development of compostable packaging for military items, and environmentally benign synthesis of energetic materials and their precursors. The Congressional appropriation included \$1,800,000 for ChemNet enviromax 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. New work will begin in environmentally benign repair of military composite components and advancement of fundamental combustion science to reduce particulate matter emissions from military platforms.

**(U) FY 2008 and 2009 Plans:**

SERDP will continue to pursue efforts to develop new propellants, pyrotechnics, and explosive materials that will reduce or eliminate the release of toxic materials to the environment yet still meet mission performance requirements. SERDP also plans to fund research for technologies and/or materials that eliminate, reduce, or control environmentally damaging VOCs, hazardous air pollutants (HAPs), particulates, and ODSs from DoD platforms, weapons systems, and industrial processes. Environmentally benign alternatives will include new materials to replace these compounds, new processes that eliminate use of these compounds, and new processes that reduce or eliminate the production of these compounds as a byproduct.

**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 2007

APPROPRIATION/ BUDGET ACTIVITY  
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PE NUMBER AND TITLE

0603727D8Z - Joint Warfighting

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	9.757	10.580	11.060	11.120	11.447	11.623	11.775	11.941
P727 Joint Warfighting	9.757	10.580	11.060	11.120	11.447	11.623	11.775	11.941

**A. Mission Description and Budget Item Justification:** Centralized funding for Defense Joint Experiment (JE) was established in FY 2000 in Navy PE 060372N. US Joint Forces Command (USJFCOM) was designated as executive agent for this funding. A smaller residual experimentation account for was deliberately maintained under the aegis of the Office of the Secretary of Defense (Acquisition, Technology, and Logistics - AT&L) to provide leverage over the larger USJFCOM account, and to establish an independent capability for joint warfare analysis. This OSD Joint Warfighting Program (JWP) account supports the Joint Advanced Warfighting Program (JAWP) concept development, the Defense Adaptive Red Team (DART), and Technology Feeder Support (TFS).

- The Joint Advanced Warfighting Program (JAWP) is strongly supported by the Office of the Secretary of Defense (OSD) Policy and AT&L, with the continuing concurrence of the Vice Chairman of the Joint Chiefs, to serve as a catalyst for critical analysis and development of innovative concepts on an accelerated basis. This program fuses a team of operational analysis experts with mid-grade and senior military officers to provide first-hand research into topics of pivotal importance to current and future joint campaigns. These analyses serve as a basis for formulation and assessment of advanced concepts and capabilities, identifying enabling technologies and operational integration options for the Department. Resultant concepts drive changes in the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) of the Services. The JAWP serves an essential, expert, and independent feedback role in identifying, exploring and evaluating breakthrough war fighting capabilities. It captures 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 recommending design and conduct of joint experiments, and helps streamline implementation processes. Its work complements and supports the activities of Joint Forces Command, the Joint Staff, Combatant Commanders (CoComs), and OSD.

The Defense Adaptive Red Team (DART) 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. Attuned to CoCom analysis requirements, DART proved very successful by providing an independent team of experts to challenge emerging operational concepts from their origin through the experimentation process. DART is particularly effective when applied to areas where immature operational and technical concepts require the sharp focus of critical appraisal before applying funds for experimentation and demonstration. 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) direct interaction with CoCom staffs on customer-nominated topics; (3) support of joint demonstration program efforts; and (4) development and refinement of red teaming best practices. The DART develops and provides adversary roles for joint analysis wargames and other activities as appropriate, and provides independent reports documenting lessons learned and recommendations. A senior advisory group meets annually under OSD sponsorship to review DART activities and accomplishments, and to recommend future areas of emphasis.

This PE also underwrites the Technology Feeder Support (TFS) process for joint experiments. TFS directly empowers CoComs to conduct joint experimentation within their theaters of operation. It reinvigorates experimentation by joint commanders as an effective means to develop and explore options for assigned missions. The CoComs employ this limited funding to

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**0603727D8Z - Joint Warfighting**

address regional capability gaps and unique mission area requirements, often leveraging the on-going joint exercises and a variety of Service- and OSD-sponsored technology capability demonstrations. Indirectly, TFS encourages USJFCOM to incorporate Limited Objective Experiments serving CoCom purposes into the larger over-arching agenda of joint experimentation.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	10.043	10.641	11.398	11.431
Current BES/President's Budget (FY 2008/2009)	9.757	10.580	11.060	11.120
Total Adjustments	-0.286	-0.061	-0.338	-0.311
Congressional Program Reductions	-0.162	-0.061		
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer	-0.124			
Other			-0.338	-0.311

**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
08						

Comment: Performance of Joint Experimentation systems is measured through metrics including (1) objective validation of enhanced CoCom capabilities to perform joint missions in their assigned theaters and areas of responsibility, (2) documented delivery effective joint operational concepts, (3) confirmed production of refined and validated capability descriptions.



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PE NUMBER AND TITLE  
**0603727D8Z - Joint Warfighting**

PROJECT  
**P727**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
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- The Joint Advanced Warfighting Program (JAWP) is strongly supported by the Office of the Secretary of Defense (OSD) Policy and AT&L, with the continuing concurrence of the Vice Chairman of the Joint Chiefs, to serve as a catalyst for critical analysis and development of innovative concepts on an accelerated basis. This program fuses a team of operational analysis experts with mid-grade and senior military officers to provide first-hand research into topics of pivotal importance to current and future joint campaigns. These analyses serve as a basis for formulation and assessment of advanced concepts and capabilities, identifying enabling technologies and operational integration options for the Department. Resultant concepts drive changes in the doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF) of the Services. The JAWP serves an essential, expert, and independent feedback role in identifying, exploring and evaluating breakthrough war fighting capabilities. It captures 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 recommending design and conduct of joint experiments, and helps streamline implementation processes. Its work complements and supports the activities of Joint Forces Command, the Joint Staff, Combatant Commanders (CoComs), and OSD.

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PROJECT

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address regional capability gaps and unique mission area requirements, often leveraging the on-going joint exercises and a variety of Service- and OSD-sponsored technology capability demonstrations. Indirectly, TFS encourages USJFCOM to incorporate Limited Objective Experiments serving CoCom purposes into the larger over-arching agenda of joint experimentation.

**B. Accomplishments/Planned Program:**

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Advanced Warfighting Program (JAWP):	5.335	5.850	5.755	5.707

JAWP serves as a catalyst for innovation and change. This effort focuses on formulation and assessment of advanced concepts and capabilities, plus identifying enabling technologies and integration options for the Department. Annual JAWP activities are reviewed and approved by a Board of Directors chaired by USJFCOM, including Joint Staff (J7), and OSD(Policy).

FY2006 Output: The JAWP analysis teams contributed timely inputs providing objective, third-party assessments on topics of critical interest to CoComs. Many of these efforts served as the conceptual core of USJFCOM products executed at the request of theater CoComs. JAWP projects included:

- "Improving Capabilities for Irregular Warfare Including Security, Stability and Reconstruction Operations, and Transition (Customer: OSD)
- "Quantum Leap" Technologies for Irregular Warfare" (Customers: OSD, Defense Advanced Research Project Agency - DARPA, USJFCOM)
- "Iraqi Perspectives" (Customer: US Joint Forces Command Joint Center for Operations Analyses - Lessons Learned - USJFCOM JCOA-LL) - continuing effort
- "Lessons from the Global War on Terrorism" (Customer: USJFCOM JCOA-LL)
- "Terrorist Perspectives" (Customer: USJFCOM JCOA-LL and OSD)
- "Fallujah Battle Reconstruction (Customer: USJFCOM JCOA-LL)
- "Urban Resolve" (Customer: USJFCOM)
- "Support to Multi-National Force - Iraq" (Customers: OSD, USJFCOM)
- "Joint Command Structure: (Customer: Joint Staff)
- "Exploiting Discovery" (Customer: OSD)

FY 2007 Planned Output - The JAWP will continue support of full spectrum transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align Department processes in ways that make them more responsive to the needs of CoComs and their subordinate forces. Topics undertaken for analysis in FY07 include:

- "Iraqi Perspectives" (Customer: US Joint Forces Command Joint Center for Operations Analyses - Lessons Learned - USJFCOM JCOA-LL) - continuing effort
- "Global War on Terrorism - Africa" (Customers: USJFCOM JCOA-LL)
- "Terrorist Perspectives" Customers: USJFCOM JCOA-LL) - continuing effort
- "Support to Multinational Force - Iraq" (Customer: Multi-National Force - Iraq) - continuing effort
- "Improving Capabilities for Irregular Warfare (Customer: OSD, USJFCOM)
- "Urban Resolve Experimentation" (Customer: USJFCOM) - continuing effort
- "Adaptive Planning" (Customer: OSD, USJFCOM)
- "Joint Command and Control Management" (Customer: Joint Staff, USJFCOM)

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**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
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**0603727D8Z - Joint Warfighting**PROJECT  
**P727**

- "Joint Command and Control Combat Development (Customer: USJFCOM)
- "Exploiting Discovery" (Customer: OSD) - continuing effort

FY 2008 Planned Output - The JAWP will continue support of full spectrum transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align Department processes in ways that make them more responsive to the needs of CoComs and their subordinate forces.

FY 2009 Planned Output - The JAWP will continue support of full spectrum transformation objectives addressing irregular, catastrophic, and disruptive challenges. It will design, conduct, and support joint experimentation, joint concept development, and analysis of joint operations, with the intent to inform and effect resource allocation and acquisition. It will continue efforts to align Department processes in ways that make them more responsive to the needs of CoComs and their subordinate forces and coalition partners.

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Technology Feeder Support (TFS):	3.396	3.313	3.605	3.713

TFS activities support Combatant Commanders (CoComs) by promoting the use of joint experimentation to address challenges specific to their theater or functional missions. TFS provides a "trial and error" experiment to understand a concept or technology that addresses a specific CoCom challenge." TFS activities are selected through an annual candidate nomination review and selection process.

FY 2006 Output - (1) Supported USNORTHCOM by providing a low cost, responsive reconnaissance platform delivering actionable intelligence for USNORTHCOM Defense support of civil authorities and homeland defense missions; (2) Supported USPACOM's requirement for rapid planning, coordination, implementation, and effective assessment of innovative technologies and procedures to improve readiness and effectiveness for joint and combined operations; (3) Supported USTRANSCOM's need for fast identification for arms, ammunition and explosive (AA&E) drivers entering depot and DoD installations. Through a joint initiative with DHS, DOD and the private sector a common biometric-based driver identification process is being developed; and (4) Supported USSOUTHCOM's requirement to conduct a Combined Crisis Management in PKO demonstration experiment. The experiment's objective as to identify and demonstrate the capabilities and equipment required for crisis management by peacekeeping forces facing an unforeseen crisis; a major chemical and/or biological incident.

FY 2007 Planned Output - TFS will 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. A special request from US Pacific Command to re-establish a regional joint experimentation capability received early funding from FY07 program resources.

FY 2008 Planned Output - Through the FY 2008 annual selection process, TFS will 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.

FY 2009 Planned Output - Through the FY 2009 annual selection process, TFS will 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 2006	FY 2007	FY 2008	FY 2009
DoD Adaptive Red Team (DART):	1.026	1.417	1.700	1.700

DART supports four activities: (1) planning implementation of JFCOM and Joint Staff Concept Development and Experimentation (CD&E); (2) Support to other CoCOMs; (3) Support development of

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Exhibit R-2A  
Project Justification

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technologies and operational concepts underpinning joint and coalition capabilities; and (4) development and refinement of red teaming best practices. DART activities are selected through an annual candidate nomination review and selection process.

FY 2006 Output - DART efforts focused on:

- Global Operations Task Force experimentation development associated with the "New TRIAD" (Customer: US Strategic Command)
- Unmanned Air Vehicle "Precision View" assessment of alternative concepts for pixel registration and operational impact (Customer: US Strategic Command)
- US Strategic Command Strategic Deterrence Assessment Lab red team review (Customer: US Strategic Command)
- Irregular Warfare (IW) concept development red team (Customer: US Special Operations Command)
- Crisis Management in Peace Keeping Operations exercise development and execution red cell (Customer: US Southern Command)
- Global Operations Task Force tabletop assessment support (Customer: US Strategic Command)
- Wargame red team support (Customer: US Strategic Command)
- Theater strategy value function development (Customer: US Central Command)
- Joint Operations Concept red teaming (Customer: Joint Staff)
- Regional experiment design support (Customer: US Southern Command)

FY 2007 Planned Output - Periodic re-competition for the DART support contract will occur mid-year in FY2007, with a full agenda of work undertaken after completion. Meanwhile, the DART staff is completing multi-year efforts initiated in FY06. Candidate selections will be made by mid-March 2007. Through the FY 2007 annual candidate selection process, 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. Specific projects authorized for execution include:

- Unmanned Air Vehicle "Precision View" assessment of alternative concepts for pixel registration and operational impact (Customer: US Strategic Command) - continuing effort
- Crisis Management in Peace Keeping Operations exercise development and execution red cell (Customer: US Southern Command)
- Joint Operations Concept red teaming (Customer: Joint Staff) - continuing effort

FY 2008 Planned Output - Through the FY 2008 annual candidate selection process, 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.

FY 2009 Planned Output - Through the FY 2009 annual candidate selection process, 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.

**C. Other Program Funding Summary:** Not Applicable.

**D. Acquisition Strategy:** Not Applicable.

**E. Major Performers** Not Applicable.

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603745D8Z - Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	0.000	6.500	8.000	5.000	0.000	0.000	0.000
P745 Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)	0.000	0.000	6.500	8.000	5.000	0.000	0.000	0.000

**A. Mission Description and Budget Item Justification:** The Synthetic Aperture Radar (SAR) Coherent Change Detection (CCD) Initiative encompasses four phases to develop deployable systems capable of achieving real time strip SAR with coherent change detection processing imagery for tactical intelligence. The first phase will validate the utility of strip SAR CCD for intelligence gathering and address CONOPS and exploitation approaches. Phase two will overlap in part with the first phase and will demonstrate a manned platform system with radar and processing capability that can produce real time SAR CCD, together with a design for a deployable objective system. Phase three will develop the engineering enhancements necessary for an unmanned aircraft, such as an Air Warrior platform, to integrate a real time strip SAR CDD capability, and develop exploitation tool enhancements. The fourth phase will extend the capability to an affordable Class III unmanned aircraft with a miniaturized SAR system. The goal is to develop deployable systems capable of achieving real time strip SAR with coherent change detection processing imagery for tactical intelligence with the objective of deployment in a UAV to be tested by the tactical commander.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)				
Current BES/President's Budget (FY 2008/2009)	0.000	0.000	6.500	8.000
Total Adjustments	0.000	0.000	6.500	8.000
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			6.500	8.000

**C. Other Program Funding Summary:** Not Applicable.

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OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603745D8Z - Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)</b>	
<b>D. Acquisition Strategy:</b> Not Applicable.		
<b>E. Performance Metrics:</b> Not Applicable.		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603745D8Z - Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)</b>					PROJECT <b>P745</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P745      Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)	0.000	0.000	6.500	8.000	5.000	0.000	0.000	0.000										
<p><b><u>A. Mission Description and Project Justification:</u></b> The Synthetic Aperture Radar (SAR) Coherent Change Detection(CCD) Initiative encompasses four phases to develop deployable systems capable of achieving real time strip SAR with coherent change detection processing imagery for tactical intelligence.</p> <p>Phase one will validate the utility of strip SAR CCD for intelligence gathering and address CONOPS and exploitation approaches.</p> <p>Phase two will overlap in part with the first phase and will include a demonstration of a manned platform system with radar and processing capability that can produce real time SAR CDD, together with a design for a deployable objective system.</p> <p>Phase three will develop the engineering enhancements necessary for an unmanned aircraft, such as an Air Warrior platform, to integrate a real time strip SAR CCD capability and develop exploitation tool enhancements.</p> <p>Phase four will extend the capability to an affordable Class III unmanned aircraft with a new miniaturized SAR system in FY 2010. Phase IV will also decrease procurement costs of a Class III UAV with the strip SAR CCD capability to \$500K per platform. This compares to a current cost of approximately \$1.2M for a spot SAR system.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left; padding: 5px;">Accomplishment/Planned Program Title</td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Validate the utility of strip SAR CCD</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">3.500</td> <td style="text-align: center; padding: 5px;">0.000</td> </tr> </table>									Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009	Validate the utility of strip SAR CCD	0.000	0.000	3.500	0.000
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009														
Validate the utility of strip SAR CCD	0.000	0.000	3.500	0.000														
<p>Real-time SAR CCD will have the ability to detect and geolocate the following kinds of activities:</p> <ul style="list-style-type: none"> <li>- Vehicle tracks due to a vehicle recently driving off-road, such as across a median strip, or adjacent to a paved road;</li> <li>- Human(s) having recently traversed a path on soft soil, underbrush or vegetation;</li> <li>- Detection of linear structures newly-emplaced, such as a small diameter pipe or coaxial cabling;</li> <li>- Ground displacement due to trench having been dug, or the movement of dirt along a path in order to conceal a length of wire placed along the ground;</li> <li>- The addition or subtraction of a significant object visible to the sensor, covering a half square meter, or providing a significant change in radar cross section (reflectivity);</li> <li>- Ground displacement due to digging operations, or digging and soil replacement, or repaving operations, where the ground area of the displaced earth covers a square meter or more;</li> <li>- The displacement of guard barriers, or other objects, due to manual manipulation, or vehicle crashes;</li> </ul>																		



<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603745D8Z - Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)</b>			PROJECT <b>P745</b>
<p>- Ground level subsidence due to underground excavation activities when the surface subsidence amounts to a few millimeters.</p> <p>The first phase will validate the utility of strip SAR CCD for intelligence gathering, and address CONOPS and exploitation approaches.</p> <p>FY 2008 Plan: Validate the utility of strip SAR CCD for intelligence gathering, and address CONOPS and exploitation approaches. The goal is to develop deployable systems, capable of achieving real time strip SAR, with coherent change detection processing imagery for tactical intelligence with the objective of deployment in a UAV to be tested by the tactical commander.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Demonstration of a manned platform system	0.000	0.000	3.000	0.000
<p>Phase two will overlap in part with the first phase and will demonstration of a manned platform system with radar and processing capability that can produce real time SAR CCD, together with a design for a deployable objective system.</p> <p>FY 2008 Plan: This phase will continue with first phase efforts, in addition, will demonstrate a manned platform system with a radar and processing capability that can produce real time SAR CCD, together with a design for a deployable objective system.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Develop the engineering enhancements	0.000	0.000	0.000	4.200
<p>Phase three will develop the engineering enhancements necessary for an unmanned aircraft, such as an Air Warrior platform, to integrate a real time strip SAR CDD capability, and develop exploitation tool enhancements.</p> <p>FY 2009 Plan: Improved Resolution will detect ground displacements and similar ground features of three millimeters, which is more than an order of magnitude better than the optical or SAR resolution of other current systems. Provide the SAR CCD capability to existing SAR radar systems for an added cost per platform of less than \$100 thousand per system.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Extend capability	0.000	0.000	0.000	3.800
<p>The fourth phase will extend the capability to an affordable Class III unmanned aircraft with a miniaturized SAR system. Increased Collection Rate - Collection rate for SAR data will be 50 to 100 square kilometers per hour, as opposed to spot SAR capabilities which produce at most several square kilometers per hour.</p> <p>FY 2009 Plan: This phase of the program will develop engineering enhancements necessary for an unmanned aircraft, such as the Air Warrior platform, to integrate a real time strip SAR CCD capability, and develop exploitation tool enhancements.</p>				

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603745D8Z - Synthetic Aperture Radar (SAR) Coherent Change Detection (CDD)</b>	PROJECT <b>P745</b>
<b>C. Other Program Funding Summary:</b> Not Applicable.		
<b>D. Acquisition Strategy:</b> Not Applicable.		
<b>E. Major Performers</b> Not Applicable.		

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3		PE NUMBER AND TITLE <b>0603750D8Z - Advanced Concept Technology Demonstrations</b>						
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	168.851	162.201	0.000	0.000	0.000	0.000	0.000	0.000
P523 Advanced Concept Technology Demonstration (ACTD)	168.851	162.201	0.000	0.000	0.000	0.000	0.000	0.000

**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 FY06, DoD has started 150 ACTDs, a total of 70 ACTDs were in process, and 22 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 transition 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. However, in FY08 all ACTD funding is being transferred to the JCTD program to complete this transition more quickly than anticipated. Beginning in FY07 all new starts will be JCTDs (replacing ACTD new starts). This will implement 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"). The remaining ongoing ACTDs that were started in previous years but not yet complete will be funded to completion in the JCTD program element and will complete in two to three years. Beginning in FY07 there will be only JCTD new start projects. In FY 2006, the 13 ACTD/JCTD new start projects consisted of six ACTDs and seven JCTDs. To better support the rapid transition of joint, CoCom/coalition operational capabilities, the JCTD business model includes a JCTD Transition program element. While not all ACTDs and JCTDs require transition funding, these resources provide a "transition bridge" to enable sustainment for innovative, "joint-peculiar" and Combatant Commander (CoCom)/coalition capabilities until traditional programming and budgeting can provide a permanent solution.

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

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APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603750D8Z - Advanced Concept Technology Demonstrations**

- JCTD PE 0603648D8Z (RDT&E/DW BA-3)
- JCTD Transition Funding PE 0604648D8Z (RDT&E/DW BA-4)

In FY 2006, DUSD(AS&C) shifted an initial allocation of resources (\$40 million) from the ACTD PE 0603750D8Z into the JCTD program element (PE)s. In FY08 all remaining ACTD resources will be shifted into the JCTD BA 3 PE 0603648D8Z. This will initially establish a funding stream to support approximately five to ten new JCTDs each year. The BA-3 JCTD PE will replace the current ACTD BA-3 PE in FY08, all ACTD funding transfers to the JCTD program in FY08; The JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs in FY07. In FY08 and out ongoing ACTDs will be supported with funding from the JCTD PE until completion in two to three years. JCTDs may be funded from both the ACTD and JCTD PEs during in FY07 as the JCTD model shift reaches completion. 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, new 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 by DUSD(AS&C) will support demonstration of military utility and deployment of interim capability including a transition period to a program of record, 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 new model for Department of Defense acquisition with the addition of a transition arm through funding in the JCTD Transition BA4 which will provide a path for rapid fielding of successful, transformational capabilities that may require additional transition resources to "bridge" to a program of record.

FY 2007/2008 General Program Plan: DUSD (AS&C) will maintain oversight of the JCTD/ACTD program. The FY 2007 review and validation process began in February 2006, with JROC validation in June of 2006. Congressional notification followed in December 2006 with seven "new start" JCTDs and five potential "rolling starts". Rolling start projects were selected because they represent important warfighter concerns and potential capabilities. Three of the proposals, address issues with emerging technologies that could be significant "game changers". While these projects have been successfully vetted through the JCTD selection process, some additional proposal development must be addressed with the stakeholders, prior to project initiation. Funding available for initiating new FY 2007 JCTDs and Rolling Starts is be approximately \$47 million. For FY 2008, the selection process will begin in March 2007 and it is anticipated approximately \$50 million will be available for JCTD new/rolling start initiatives.

<b><u>B. Program Change Summary</u></b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Previous President's Budget (FY 2007)	170.275	158.334	164.696	177.936
Current BES/President's Budget (FY 2008/2009)	168.851	162.201	0.000	0.000
Total Adjustments	-1.424	3.867	-164.696	-177.936
Congressional Program Reductions		-5.000		
Congressional Rescissions		-0.937		
Congressional Increases	2.600	9.800		
Reprogrammings	-0.390			

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603750D8Z - Advanced Concept Technology Demonstrations**

SBIR/STTR Transfer	-3.634			
Other		0.004	-164.696	-177.936

In FY06 there was a net congressional increase of \$9.4 million and congressional rescissions and other taxes such as Section 8125 and FFRDC of \$2.9 million that were reported in the FY07 President's Budget in February 2006. Since February changes to the ACTD FY06 budget year are shown above and include: Supplemental funding of \$2.6 million for two ACTDs directly impacting the GWOT, below threshold reprogrammings of a net reduction of \$390 thousand, and the SBIR and STTR tax \$3.6 million. The FY07 budget year shows congressional increases of \$9.8 million and a congressional decrease of \$5.0 million. The congressional increases fund the following enabling technologies: Processing Fuel Cell Components for Lightweight, Low Cost Transportation System; Special Operations Command Target Tracking and Knowledge Discovery System; Crossed-Field Radiation Technology (CFRT); Masking Shunt; and Spartan Advanced Composite Technology. There was a congressional reduction of \$5.0 million for "Reduction to New Start Projects". There were congressional rescissions of \$937 thousand for Section 8106 (1% reduction) and Section 8023 (FFRDC). Finally in FY08 and FY09 all ACTD funding is transferred to the JCTD Program (PE 0603648D8Z).

**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	Selection focus					
07	Ability to spiral technologies					
07	Independent assessment of the technology					
07	Adequately resourced projects					
07	Complete a final demonstration					
07	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

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**0603750D8Z - Advanced Concept Technology Demonstrations**

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.

A comparison of ACTD and JCTD metrics are:

1) Project Selection Focus:

a. ACTD - Threat based: shared military service and CoCom influence.

b. JCTD - Capability Based: Greater CoCom influence looking at nearer term joint/coalition needs.

2) Sprial Technologies:

a. ACTD - No metric

b. JCTD - 25% will provide an operationally relevant product demonstration within 24 months of ID signature.

3) Final Demonstation Completed

a. ACTD - 3 to 4 years after initiation

b. JCTD - 75% of projects complete final demonstration within three years of ID signature.

4) Shared Funding and Viability of resources:

a. ACTD - OSD provides no more than 30% of the budgeted resources. Funding provided form many different program elements.

b. JCTD - OSD provides significantly more funding, greater than 30% in some cases a majority of projected funding, especially in the first two years.

5) Military Utility Assessment (MUA)

a. ACTD - MUA traditionally tied to a specific planned execise for evaluation.

b. JCTD - JCTDs not necessarily tied to an exercise. Greater flexibility to establish military untility via operational "real-world" demonstation or specifically designed test/venue.

6) Transition of Technology

a. ACTD - 70% of ACTDs transition at lease one product to sustainment.

b. JCTD - 80% of JCTDs transition at least 50% of their products to sustainment.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603750D8Z - Advanced Concept Technology Demonstrations</b>					PROJECT <b>P523</b>	
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P523	Advanced Concept Technology Demonstration (ACTD)	168.851	162.201	0.000	0.000	0.000	0.000	0.000	0.000

**A. Mission Description and Project 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 FY06, DoD has started 150 ACTDs, a total of 70 ACTDs were in process, and 22 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. However, in FY08 all ACTD funding is being transferred to the JCTD program to complete this transition more quickly than anticipated. Beginning in FY07 all new starts will be JCTDs (replacing ACTD new starts). This will implement 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"). The remaining ongoing ACTDs that were started in previous years but not yet complete will be funded to completion in the JCTD program element and will complete in two to three years. It is anticipated that all ongoing ACTDs will be complete by FY09. Beginning in FY07 there will be only JCTD new start projects. In FY 2006, the 13 ACTD/JCTD new start projects consisted of six ACTDs and seven JCTDs. To better support the rapid transition of joint, CoCom/coalition operational capabilities, the JCTD business model includes a JCTD Transition program element. While not all ACTDs and JCTDs require transition funding, these resources provide a "transition bridge" to enable sustainment for innovative, "joint-peculiar" and Combatant Commander (CoCom)/coalition capabilities until traditional programming and budgeting can provide a permanent solution.

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

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<ul style="list-style-type: none"> <li>JCTD PE 0603648D8Z (RDT&amp;E/DW BA-3)</li> <li>JCTD Transition Funding PE 0604648D8Z (RDT&amp;E/DW BA-4)</li> </ul> <p>In FY 2006, DUSD(AS&amp;C) shifted an initial allocation of resources (\$40 million) from the ACTD PE 0603750D8Z into the JCTD program element (PE)s. In FY08 all remaining ACTD resources will be shifted into the JCTD BA 3 PE 0603648D8Z. This will initially establish a funding stream to support approximately five to ten new JCTDs each year. The BA-3 JCTD PE will replace the current ACTD BA-3 PE in FY08, all ACTD funding transfers to the JCTD program in FY08; The JCTD and ACTD projects will use the combined resources of both the JCTD and ACTD PEs in FY07. In FY08 and out ongoing ACTDs will be supported with funding from the JCTD PE until completion in two to three years. JCTDs may be funded from both the ACTD and JCTD PEs during in FY07 as the JCTD model shift reaches completion. 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, new 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&amp;E funding managed by DUSD(AS&amp;C) will support demonstration of military utility and deployment of interim capability including a transition period to a program of record, 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 new model for Department of Defense acquisition with the addition of a transition arm through funding in the JCTD Transition BA4 which will provide a path for rapid fielding of successful, transformational capabilities that may require additional transition resources to "bridge" to a program of record.</p> <p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="width: 60%;">Accomplishment/Planned Program Title</th> <th style="width: 10%;">FY 2006</th> <th style="width: 10%;">FY 2007</th> <th style="width: 10%;">FY 2008</th> <th style="width: 10%;">FY 2009</th> </tr> <tr> <td>Crossed Field Radiation Technology</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">3.200</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> </tr> </table> <p>Since 2006 Congress has provided additional resources for the Cross Field Radiation Technology (CFRT) project to explore antenna design concepts which may prove revolutionary in reducing antenna size and weight for possible application in manned and unmanned communications systems. The 2007 Congress had provided resources for CFRT in 2007. The expected outcome of CFRT is verification of antenna design concepts and limitations with respect to frequency band use, power versus range as a function of antenna pattern, and radio equipment interface characterization. CFRT efficiencies include performance measurements for comparison to existing antenna designs, manufacturability constraints for life cycle cost analysis, and power requirements and potential savings. While this enabling technology project is not yet directed at a specific Joint Capability Technology Demonstration, there are a number of low profile sensor and unmanned systems for which the technology may make a direct contribution if successful.</p> <ul style="list-style-type: none"> <li>FY 2006 - Output Year: CRFT focused on near and far-field testing of representative prototype antennas implemented with the CRF technology in test chambers. A prototype configuration was also field tested with the National and U.S. Coast Guard in June with significant performance enhancements achieved in power-to-transmission efficiencies. An early result showed potential efficiencies that may lead to extended battery life for a given desired communication range, an important consideration for remote, unmanned sensor systems. Further exploration of power efficiencies are planned in FY07, if Congress provides additional funds.</li> <li>FY 2007 - Planned Output: CRFT technical focus will be on performance measurements in field conditions for refined characterization of directivity and polarization; frequency response; linearity</li> </ul>				Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009	Crossed Field Radiation Technology	0.000	3.200	0.000	0.000
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009									
Crossed Field Radiation Technology	0.000	3.200	0.000	0.000									



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and harmonic distortion; and omni-directional radiation pattern analysis. Goals include further refinements to the prototype antenna design of a tunable antenna for application across a wider range of base radios. The design of the CFR antenna will continue to evolve in FY07 to designs for autonomous multi-sensor platform integration. Efficiencies will be measured in power required for given communications ranges or achievable bandwidth or throughput for digital communications. Programmatically, the technical team will use the results of the tests and field trials to identify potential projects or programs that may use the CRFT in future development spirals.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Platform Test bed for Advanced Sensors (PTAS)	3.000	3.000	0.000	0.000
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. <ul style="list-style-type: none"><li>FY 2005 - Program initiation, commence flight hour program for demonstrations and testing.</li><li>FY 2006 - Approximately 200 planned flight hours for technology demonstrations and testing.</li><li>FY 2007 - Approximately 200 planned flight hours for technology demonstrations and testing</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Processing Fuel Cell Components	0.000	3.000	0.000	0.000
This congressional adjustment 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 2006	FY 2007	FY 2008	FY 2009
SOC Target Tracking	0.000	1.000	0.000	0.000
USSOCOM intelligence analysts face unique challenges in the prosecution and support of the Global War on Terror. Critical needs include the capability to positively identify and track leadership and key individual targets, pinpointing specific individuals that pose a threat. The global nature of the terrorist threat overwhelms current internal resources; improved capabilities to access key intelligence data at the operational level are needed; getting digital "actionable data" to operators on the ground.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Masking Shunt	0.000	1.300	0.000	0.000
Masking Shunt provides a capability to hide Media Access Control (MAC) addresses. In computer networking a Media Access Control address (MAC address) is a unique identifier attached to most network adapters (NICs). It is a number that acts like a name for a particular network adapter, so, for example, the network cards (or built-in network adapters) in two different computers will have different names, or MAC addresses, as would				

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an Ethernet adapter and a wireless adapter in the same computer, and as would multiple network cards in a router. SPAWARSCEN Charleston, SC, Critical Infrastructure Protection Center, will use the funding provided to integrate the Masking Shunt into first responder and other networking environments to develop the concepts, procedures and protection profiles to use the Masking Shunt to increase security for wireless and other highly vulnerable networks. The expected integration, trial and implementation approach will be complete in FY2007.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Advanced Tactical Laser (ATL)		1.200	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for ATL as a FY 2001 new start. The outcome, which specifically addresses emerging QDR GWAT and stability operations force requirements, is to develop and integrate an airborne, clandestine, day/night, multi-aspect, ultra-precision, effects based Chemical Oxygen Iodine (COIL) laser system. Coincident with laser development will be the design and testing of the integral battle management, optics, and fire-control subsystems onboard a specially modified C-130 aircraft. This capability will be used for bomber defense, concepts of operation (CONOPS) and tactics development, ground attack of non-personnel targets, assessing target vulnerability data, and possible operational use in the low threat environments typically encountered in special operations and anti-drug scenarios. Examples of low threat targets include; stopping fast boats, hostage release, and WSA defense. ATL ACTD will also provide the pathway for the laser of the future and greatly shorten the time needed to get this transformational capability to the battlefield. There are two main areas of efficiencies and outputs in ATL. The first being the integration of the COIL Laser into a fully integrated package (e.g. beam director, command and control, human in the loop) on a C-130 aircraft. This is a direct advancement of this technology. The second is the ability to destroy selected targets designated by USAF Special I Operations command; end product performance is measured by CPI and SPI classified values as defined in the Integrated Program Plan. End product performance measured by effects generated during two design reference missions. The user sponsor is U.S. Special Operations Command and AFSOC is the lead service.					
• FY 2006 Output - Completed low power flight test configuration build-up, integration, and ground test and integrated the low power system on the C-130 test aircraft. Initiated low power flight tests. Continued high power laser assembly, integration, and subsystem test. Demonstrated high power laser "first light". Completed integration and test facilities modifications. ATL ACTD will complete in FY 2007. The program will: Complete low power tests; Complete high power flight test module build up; Ensure the integration of ground test and high power systems on the C-130 test aircraft; Complete high power ground and flight tests; and demonstrate system performance in design reference missions. The ACTD will complete the Military Utility Assessment and deliver the system to SOCOM and Air Force operational forces for an extended user evaluation. Transition program responsibility to the Air Force and support planning future ATL system applications and transition into System Development and Demonstration.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Coalition Combat Identification (CCID)		4.100	7.200	0.000	0.000
The JROC approved the capability need for CCID as an FY-01 new start. The outcome of CCID will demonstrate and transition CCID solutions that significantly reduce fratricide and enhance combat effectiveness of allied and coalition forces operating in both traditional and ad-hoc coalitions through the core ACTD, FY01-06 and Extension FY06-08. CCID addresses both Cooperative Target Identification (CTI) and Non-Cooperative (NCTI) technologies and systems focused on ground to ground and air to ground mission areas. The core ACTD culminated with the successful 2005 Operational Demonstration of CTI technologies / systems at Salisbury Plain Training Area, U.K. The objective of the Extension is to assess the coalition military utility (CMU) of the designated non-cooperative target identification (NCTI) technologies for coalition operations, and further inform U.S. and allied investment in the optimal CTI and NCTI combat identification capability. The CMU Assessment (CMUA) of technologies / systems will consider, as required, other relevant fielded or emerging devices in the Combat Identification-Blue Force Tracking/Joint Blue Force Situational Awareness (CID-BFT/JBFSa) family of systems. The Extension Coalition Military Utility Assessment (CMUA) will focus on the NCTI technologies rather than systems that have been previously assessed or fielded in the core. The ACTDs output and efficiencies will be correctness of ID, time to ID, range to ID, enemy targets engaged, fratricide minimized and the impact on the tempo of operations, specifically, demonstrate interoperability of U.S., U.K., and French vehicle-to-vehicle time to ID of 3 seconds (threshold)/ 1 second (objective), and range to identification (ID) of 3 kilometer (km) (threshold)/5 km (objective); demonstrate rotary-wing-to-ground beyond-line-of-sight (BLOS) and forward observer/forward air Controller time to ID of 10 seconds (threshold)/3 seconds (objective) and range of 5 km (threshold) (15 km for BLOS) / 10 km (objective) (25 km for BLOS). The User Sponsor is the U. S. Joint Forces Command (JFCOM) and the lead service is the Air Force. The Transition Strategy will be via a two-pronged					

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approach consisting of an Extended User Evaluation (EUE), and Follow-On Development, Production and Sustainment through the JSTARS and select fixed wing aircraft programs. The strategy builds on the currently approved CCID ACTD Transition Plan and Strategy. <ul style="list-style-type: none"><li>• FY 2006 Output - Completed core ACTD operational demonstration and CMUA of the NATO BTID, RBCI and RF Tags. Initiated Extension of ACTD including non-cooperative technologies (NCTI) as part of optimal mix of cooperative and NCTI systems. Developed and finalized requirements definition and architecture. Continued development of CONOP / TTP and training package, and updated transition plan in support of Extension objectives. Conducted technical tests of NCTI technologies.</li><li>• FY2007 Planned Output - Continue development of CONOP / TTP and training package. Complete technical tests and demonstrations. Conduct operational demonstration of optimal mix of CTI and NCTI technologies and systems. Planned NCTI technologies will be assessed at Exercise Bold Quest in Sep 07. In FY2008 the CCID ACTD will complete as it implements its transition plan including Extended Use of the residual package. The program will finalize CONOPs, TTPs and training package during this period.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Hunter Standoff Killer Team (HSKT)	1.500	0.000	0.000	0.000
The JROC approved the capability need for HSKT as an FY-01 new start. The outcome of HSKT is to integrate and demonstrate joint precision targeting of time sensitive targets at extended standoff ranges, while reducing sensor-to-shooter timelines using manned/unmanned aircraft teams and cognitive decision-aiding/battle management technologies, and transition capabilities into Programs of Record (POR). The User Sponsor is the U. S. Pacific Command (USPACOM) and the U. S. Forces Korea (USFK). The lead service is the Army. The outputs and efficiencies include increased identification range for manned rotorcraft systems and increased standoff range for weapons engagement; reductions in mission planning, execution and battle damage assessment timelines; increased lethality and survivability; and development of manned-unmanned (MUM) teaming, specifically: increase target identification range for manned helicopters to 30km; increase range of Level IV control of unmanned vehicles by tactical rotary wing manned aircraft out to 30km; reduce en route mission planning timeline by 35%; reduce battle damage assessment (BDA) timelines by 50%. Planned Transition status: Warfighter Associate (WA) is programmed for transition to the AH-64D Longbow Apache and some of the Mobile Commander's Associate (MCA) functionality will transition to the A2C2S Blackhawk. Tactical Common Data Link (TCDL) is planned for transition to AH-64D Block III, Hunter and Extended Range Multi Purpose UAV, and A2C2S. Link 16 capability is programmed in the A2C2S platform, and Link-16 J35C3 message (precision target) is being fielded in F/A-18C/D/E/F aircraft. <ul style="list-style-type: none"><li>• FY 2006 Output - Completed systems integration, ground and flight testing. Conducted manned/unmanned team warfighter training, and operational exercise/demonstrations while executing warfighter assessments involving Hunter Unmanned Airborne System, AH-64D Warfighter's Associate, Army Airborne Command and Control X Maneuver Commander's Associate, JSTARS and multiple close air/strike platforms (A-10, F-15E, F-16B30, F/A-18E/F). Completed Joint Military Utility Assessment (JMUA). Continued 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. Implemented and coordinated acquisition transition plan and recommendations for the various HSKT capabilities. Completed Extended User Evaluation (EUE) of residuals. Finalized CONOPS, TTPs and training plan. Completed the ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Network-Centric Collaborative Targeting (NCCT)	0.700	0.000	0.000	0.000
The JROC validated the capability need for NCCT as an FY-01 new start. The outcome of NCCT is to network operational intelligence, surveillance, and reconnaissance sensors to significantly improve the capability to detect, identify, and geo-locate time-critical targets. Transition milestones: Based upon the successful JEFX04 Interim Joint Military Utility Assessment (JMUA) results, the Air Force initiated NCCT transition to a Program of Record. Transition is funded for USAF's RC-135 RIVET JOINT; SIGINT components of the Distributed Common Ground System (DCGS), including the U2; the FALCONER Combined Air Operations Center (CAOC), and related Airborne Overheard Interoperability Office (AOIO) elements. Navy is considering FY2009 transition activities. The United Kingdom is also considering transition options. The user sponsor is U.S. Central Command, and the lead service is the Air Force. <ul style="list-style-type: none"><li>• FY 2006 Outputs - Successfully completed final the final Military Utility Assessment (MUA) in December 2005, to include integration of coalition assets and US Navy and Army systems. Final MUA report in staffing. Continued support to fielding activities for the RC-135 RIVET JOINT, SENIOR SCOUT, FALCONER Combined Air Operations Center (CAOC), SIGINT components of the</li></ul>				

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Distributed Common Ground System (DCGS), including the U-2, and related Airborne Overheard Interoperability Office (AOIO) elements. Complete the ACTD. In FY 2007 the planned output will include Extended User Evaluation (EUE) and transition support.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Theater Integrated Planning Subsystem (TIPS)	0.300	0.000	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for TIPS as a FY01 new start. The outcome of TIPS will automate and network the current manual processes to produce decision documents to assist in weapons of mass destruction targeting for the theater Combatant Commanders (CoComs). TIPS will provide preplanned and adaptively planned options for CoCom nominated weapons of mass destruction (WMD) and nuclear/biological/chemical (NBC) targets, using nuclear and/or conventional weapons. TIPS has demonstrated: 1) dedicated/optimized suite of tools and equipment for planning; 2) web-based development of the support documents; web-based, interactive decision support and collaboration software. The TIPS ACTD has completed Final Report, Final ACTD demo conducted April 2005. TIPS transition status: Incorporated TIPS for inclusion into the USSTRATCOM Integrated Strategic Planning and Analysis System (ISPAN) modernization effort, beginning FY 2005. Outputs and efficiencies include: 1) Completion of "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); 2) Create Theater-specific objectives; 3) Select weapon combinations from pre-defined lists; 4) Delete targets from tree, selectively; 5) Incorporated Course of Action (COA) build and decision matrix tool. The user sponsor is U.S. Strategic Command (STRATCOM) and the lead service is Air Force.</p> <ul style="list-style-type: none"><li>• 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 complete the TIPS ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Active Denial System (ADS)	3.500	0.300	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for ADS as an FY-02 start. The outcome is to demonstrate a non-lethal, counter-personnel directed energy standoff weapon capable of producing non-lethal effects at ranges beyond effective small arms range. ADS functions by projecting a focused, speed-of-light millimeter-wave energy beam that induces an intolerable heating sensation on an adversary's skin, causing him to cease any military actions and be repelled without injury. The sensation immediately ceases when the individual moves out of the beam or when the system operator turns it off. Despite this sensation, the beam does not cause injury because of the shallow penetration depth of energy at this wavelength and the low energy levels applied. Thousands of shots involving hundreds of subjects have resulted in no more than minor, transitory effects, never requiring continued medical attention. Bio-effects have been validated by the USAF Surgeon General and also by independent assessments by experts outside DOD. Operationally, ADS will enable our forces to stop, deter and turn back an advancing adversary without applying lethal force. The ACTD produced a HMMWV-mounted field prototype and provided it to operational forces from all the services. The Services developed concepts of operation (CONOP's), and tactics, techniques, and procedures (TTP's), for employing the system and then evaluated its utility in representative military environments which included open terrain, urban environments, and over water operations. In addition to rigorous bio-effects testing, ADS has successfully undergone weapons legal and treaty compliance reviews, none of which identified any prohibitions to the employment. Outputs and efficiencies include: to demonstrate adequate reliability and discrete support requirements over multiple 2-3 day periods; over a 12-16 month period, the system must have remained available over 25% of time and must have demonstrated the ability to be used effectively and safely; provide operators with a non-lethal counter personnel capability that out-ranges effective small-arms fire using directed energy from a mobile platform; extension in the range of non-lethal capability over conventional non-lethal munitions greater than a factor of 10; a lower probability of damage than kinetic non-lethal munitions; performs line-of-sight targeting, and engages targets at light speed, enabling high probability of hit. The Technical Manager for ADS is the USAF Research Laboratory at Kirtland, AFB, NM. Combat Command sponsor is USJFCOM and the lead Service is the USAF/ACC. The Transition Manager is the USAF/ESC, Hanscom, AFB, MA.</p> <ul style="list-style-type: none"><li>• FY 2006 Output- Human effects testing completed. The third of three military utility assessments (MUA's) completed for the US Navy and Coast Guard. Independent assessment by AFOTEC continues. Work continues to optimize system/operator interfaces, and CONOP's and TTP development is ongoing. Review of legal, treaty, human effects, and exposure limits complete. Overall CONOPS approved by JROC. Initial planning for possible deployment completed.</li></ul>				

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<ul style="list-style-type: none"><li>FY 2007 Planned Output - ACTD extended one year to accommodate testing of smaller, prototype, 30 KW, system. Second, truck mounted and containerized ADS System (System 2), scheduled for delivery in January, 2007. ACTD will end and residual will be delivered to transition manager for extended user evaluation.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Contamination Avoidance at Seaports of Debarkation (CASPOD)	1.200	0.000	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for CASPOD as an FY 02 start. The outcome of CASPOD is to determine the capabilities that can be used prior to, during, and after an attack to mitigate the effects of chemical or biological agents, and/or toxic industrial chemicals/materials (TIC/TIM's) during the initial stages of power projection operations at sea ports with limited US presence. Mitigation is assumed to be on a 24/7 basis and will include workers on-and-off duty. The ACTD developed the essential concepts of operation (CONOP's), tactics, techniques, and procedures (TTP's) for deployment, employment, and redeployment worldwide. The military utility was assessed using "war fighting" personnel in realistic scenarios. Off-the shelf, prototype, and developing equipment was identified and procured for use by operational units during and after the extended user evaluation (EUE). The ACTD ended in FY04 with EUE extending into March FY07. Procured equipment involved 13 different items ranging from GL1800 "cherry pickers" to a command and control (PORTWARN) suite for use before, during, and after CB attack, to medical readiness equipment. 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 to recover from Chemical/Biological attack. Combat Command sponsor is USCENTCOM. Executing Agent is DTRA and Transition Manager is JPEO/CBD. Operational evaluations were conducted by AFOTECH/ATEC/CNA.</p> <ul style="list-style-type: none"><li>FY 2006 Output - The Extended User Evaluation (EUE) further refined existing CONOP's and TTP's. Several rotations of new personnel were trained. Equipment was propositioned and sustained as required. Consumables were replenished as needed. In FY07 the ACTD completes. During this timeframe the Extended User Evaluation (EUE) will end. Modifications to CONOP's, TTP's, and equipment will occur as needed at the field activity.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Homeland Security Command and Control (HLS C2)	2.000	0.000	0.000	0.000
<p>The Joint Requirements Oversight Council validated the capability need for HLS/D C2 as an FY-02 new start. The outcome of HLS/D C2 is demonstration and transition of collaboration, visualization, and alerting tools for HLS/D mission participants; mobile command and control capability for incident responders; and a common operational picture capability for HLS/D applications. HLS/D C2 is a 5-year effort, originally sponsored by U.S. Joint Forces Command, then moved to U.S. Northern Command when U.S. Northern Command was created. The Lead Agency is the Defense Information Systems Agency (DISA). The outputs of this project are (1) mobile command and control capability for event responders, interoperable with existing military and civilian communications systems; (2) enhanced common operational picture capability for U.S. Northern Command support to civil authorities missions; and (3) web-based Area Security Operations Command and Control (WebASOCC) capability for event alerting and reporting. HLS/D C2 also supported the development of the Louisiana Regional Emergency Command Operations Network (LA RECON), for emergency wireless communications capability in key Louisiana areas. LA RECON provides a wireless network infrastructure for voice, video, and data communications in rural areas with significant critical national infrastructure. This effort, funded by Congressional direction, enables significant redundant communication capability, facilitating coordination between Department of Defense and civilian response partners.</p> <ul style="list-style-type: none"><li>FY 2006 Output - With concurrence of the user sponsor, the HLS/D C2 project concludes with the completion of FY 2006 activities. Conducted InfraLynx mobile command and communications operations during Hurricane Katrina and Hurricane Rita relief operations. Supported Homeland Defense common operational picture operations during hurricane relief. Completed transition of the InfraLynx mobile command and control van to Joint Task Force North. Completed transition of successfully demonstrated homeland defense common operational picture capability into a Department of Defense program of record. Executed an operational assessment of the WebASOCC capability, and additional validation testing. A viable transition for WebASOCC has not been identified.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Hyperspectral Collection and Analysis (HYCAS)	2.600	0.000	0.000	0.000

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<p>The Joint Requirements Oversight Council (JROC) validated the capability need for HyCAS as an FY02 new start. The outcome of HyCAS is to demonstrate the utility of a deployable hyperspectral system. HyCAS will showcase the ability of an airborne sensor to collect hyperspectral intelligence (HSI) and spectral data in a tactical environment. The primary outputs and efficiencies to be demonstrated in the ACTD Military Utility Assessment are (1) percent decrease in timelines for a Predator sensor operator to identify potential targets; (2) percent increase in Predator sensor operators ability to identify targets hidden by Camouflage, Concealment, and Deception (CC&amp;D); (3) new capability for Predator sensor operators to identify targets using taggant paint; (4) identification of impacts associated with new sensor technology on DCGS Concept of Operations; and (5) percent decrease in intelligence resources required to meet CENTCOM EEI's by utilizing hyperspectral technology. HyCAS development will conclude with an operational demonstration in FY07, then transition to the Air Force Distributed Common Ground System (AF DCGS) and Predator UAB programs of record beginning in FY08. HyCAS is a five-year project which is being sponsored by the U. S. Central Command (CENTCOM). The lead service is the U.S. Air Force.</p> <p>• FY 2006 Output - Finalized development of the real-time processor and algorithms used to process the HSI data. Continued building the hyperspectral sensor for integration into the Predator UAV. Executing a demonstration of a high-altitude hyperspectral sensor which can support some of CENTCOM's GWOT requirements. The ACTD will complete in FY 2007 with the Final operational demonstration of the HyCAS sensor and real-time processor. The scenario will show how hyperspectral technology can make the Predator UAV a more effective weapons system. Begin Extended User Evaluation (EUE) of HSI capability.</p> <p>and begin the transition of HyCAS sensor to operational Predator UAV and USAF DCGS programs of record. The Air Force is the Transition manager of the HyCAS ACTD.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Joint Distance Support and Response (JDSR)		4.600	0.000	0.000	0.000
<p>The JROC approved the capability need for JDSR as an FY02 new start. The outcome of JDSR will demonstrate and transition joint, common, interoperable, tele-maintenance environment using a collaborative knowledge center and tool suite, with reach-back capability. The JDSR ACTD focuses on timely employment of information, both automated and live, to the different service maintainers. Outputs and efficiencies 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. Transition accomplishments to date: JDSR capabilities and products have transitioned to Navy's Distance Support Program for joint management and configuration control; the Navy and Marine Corps are procuring and fielding capability onto ships and Light Armored Vehicles (LAV) platforms. JDSR capability is fielded in the Air Force ATCALS system, Army CH-47, Marine Corps Third Echelon Test Sets (TETS). 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 U. S. Joint Forces Command (JFCOM), the lead service is the Navy.</p> <p>• FY 2006 Output - Completed Extended User Evaluation. Finalized CONOPs, TTPs, training package and DOTML-PF recommendations. Continued transition of JDSR products to the POR. Established Joint JDSR Steering Group for post ACTD configuration management. Complete the JDSR ACTD.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Joint Explosive Ordnance Disposal (JEOD)		1.900	0.000	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JEOD-KTOD as an FY-02 new Start. The outcome of JEOD-KTOD has demonstrated 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 JEOD ACTD demonstrated a Global Information Grid-compliant transport mechanism (JEODnet) to enable net-centric EOD capabilities with a supporting enterprise Knowledge Management Decision Support System. Outputs and efficiencies include: 1) existence of new CONOPS; 2) degree to which in-theater operatives can achieve operational reach-back connectivity to a JEOD MSC; 3) extent to which connectivity can be achieved to Subject Matter Experts (SME) and web sites; and 4) operational feasibility of CONOPS, TTP, and integrated equipment. Transition Accomplished to date: The JEOD ACTD has provided a 24/7 reach-back capability to EOD subject matter experts of all Services. It has also provided a Level 2 Defense Information Service Agency Domain (JEODnet) within SECRET and UNCLASSIFIED enclaves. JEOD Decision Support System is being established as a Program of Record and will coordinate EOD resources and provide products the tools and technologies demonstrated through this ACTD to the EOD community. The user sponsor is U.S. Pacific Command. The lead Service is the Navy.</p>					

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<p>In addition in FY06 the Congress added \$1.0 million for Anit-Terrorist Explosive Ordnance Disposal Real Time Mission Support to design and develop the required component of the network infrastructure and applications required to increase situational awareness during EOD mission execution, specifically for the underwater mission. The Underwater Hazardous Devices (UHD) and limpet mine mission area are required to access multiple data sources for information. This information can be technical, procedural or mission oriented, including military intelligence. There is a need to make this information available to the diving supervisor and topside dive team during all facets of a mission. The information required by all dive teams consists of dive safety checklists, dive logs, underwater search plans, tactics, procedures, underwater safe blast distance calculators, vessel evacuation recommendations, and overall situational awareness.</p> <p>• FY 2006 Output - Final report which included the results of the Joint Military Utility Assessment (JMUA) was completed. Fielded initial operational capability and provided interim capability support. Established a Program of Record - JEOD Decision Support System - in the Navy. Initial funding for transition \$5.5M was provided. Complete the ACTD.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Micro Air Vehicle (MAV)		1.200	0.000	0.000	0.000
<p>The JROC approved the capability need for MAV as an FY-02 new start. The outcome of MAV is to 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. Outputs and efficiencies of MAV are: 1) provide a backpackable UAV hover and stare capability. This capability currently does not exist in fielded backpackable UAVs. 2) Logistical Efficiency - a UAV that does not add logistics burden to existing small units. The use of JP-8 for the fuel (the DOD's standard for heavy fuel) and an onboard generator to recharge batteries, allow the MAV to function in a small unit. Existing small UAVs require gasoline and/or batteries for operation - items that add logistics burden. The Micro Air Vehicle (MAV) will be transitioned in Fiscal Year 2007 by the Program Manager for Tactical Unmanned Air Vehicles. Planned Transition: 25 transitional (gasoline-powered) MAV (tMAV) systems and 25 diesel-powered dMAV systems (1 system = 2 vehicles + 1 ground station) will remain after evaluation with Army, Pacific 25th ID. DARPA is the executing agency. U.S. Pacific Command is the user sponsor and the lead service is Army.</p> <p>• FY 2006 Output - Conducted laboratory evaluations, trainer training, and test flights of the Phase 1 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. The final demonstration is planned for FY 2006, and the program will complete in FY 2007. Activities that will occur prior to the completion include: Final field experiments of the Phase 1 MAV system; development of small, heavy fuel engine; and Integration of heavy fuel engine and feedback from Phase 1 field evaluations into the Phase 2 MAV system.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Pathfinder		0.800	0.000	0.000	0.000
<p>The JROC approved the capability need for Pathfinder as an FY-02 new start. The outcome of Pathfinder is to integrate 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. 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. Outputs and efficiencies include: 1) preparation of the battlefield and during the assault phase of an urban operation such as an airfield seizure; 2) during assaults provide high speed of action, knowledge and ability to rapidly adapt to fast paced, evolving situations; 3) increased C3 and situation awareness (SA) to achieve real-time SA. provide enhanced lethality, greater speed of action, precision, and reduced probability of friendly fire casualties or unintended collateral damage; 4) real-time information regarding location, movements, and disposition of all enemy forces within the covered geographic area; 5) real-time access to tactical imagery, alerted to potential threat activities in their immediate area by ground sensors, able to remotely identify, observe, and illuminate multiple targets, providing enhanced weapons delivery and immediate damage assessment. Effectiveness of ad hoc networking, offset surveillance, fire support coordination, UAV-directed close air support will be assessed. Transition Accomplished to date: 1) Raven Unmanned Aerial Vehicle (UAV) to USSOCOM PM-Unmanned Vehicles; 2) Raven UAV to U.S. Army PM-Ground Maneuver Unmanned Vehicles; 3) Pathfinder SuperCrumb Network Node fielded under the Rapid Fielding Initiative; 4) U.S. Army Natick Soldier Center Indefinite Delivery Indefinite Quantities contract for the Pathfinder Raven Small UAV (SUAV) in place for all DoD use. Planned Transition</p>					

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will be to integrate Pathfinder Raven SUAV into the Future Force Warrior System. The user sponsor is U.S. Special Operations Command (USSOCOM) and the lead agency is USSOCOM. • FY 2006 Output - 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 2006	FY 2007	FY 2008	FY 2009
Space-Based Moving Target Indicator (SBMTI)	2.200	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the need for SBMTI capabilities as a FY-02 new start. The outcome of SBMTI will be to demonstrate space-based moving target indicator. This will permit development of concepts of operation to verify the collected information and to determine the system's military utility. The outputs, efficiencies and transition information is classified content only. The initial demonstrations and interim MUA was begun in FY05. The user sponsor is the U.S. Strategic Command (STRATCOM). The lead service is Army. • FY 2006 Output - Started MUA and final demonstration activity. • FY 2007 Final MUA activity completed, final report to be delivered, capability transitioned to a baseline system. Complete the SBMTI ACTD.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
SPARTAN	3.700	2.100	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for SPARTAN as a FY02 start. The outcome is to provide 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 whose Operational Manager is the U.S. Third Fleet, lead service is the U. S. Navy. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are 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; and 3) Provide port-protection when launched/operated from shore. The efficiencies to be gained are 1) force multiplication using low-cost deployable sensors and weapons; 2) provide a symmetric response to asymmetric threats; 3) expanded range to provide for a reduced risk to personnel and capital assets during the conduct of dangerous missions. The Transition Strategy: The SPARTAN USV Command and Control system and Concept of Operation (CONOPS) will transition to the U.S. Navy Littoral Combat Ship (LCS) (PEO-LMW, PMW 420) Program of Record (POR) for the LCS USV. Transition is scheduled to begin with LCS Flight Zero, Ship number One production in January 2007.  • FY 2006 Output - Completed the final technical demonstration and final MUA. Begin Residual and Transition Phase. Supporting Navy program offices in the transition of SPARTAN's command and control system to a Program of Record (POR) within the Littoral Combat Ship (LCS) Program.  • FY 2007 Output - The ACTD will officially complete in FY 2006, however transition funding, including a \$1.3M congressional add, is provided in FY 2007 to support Navy and Coalition partner transition efforts to include incorporation into the LCS program of record.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Thermobarics (TB)	2.500	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for Thermobarics (TB) as an FY-02 start. The need to extend the range that lethal effects can be propagated into a tunnel facility was addressed by the TB ACTD. The outcome is to demonstrate an energetic, thermobaric weapon that significantly improves the warfighter's capability to defeat military activities protected in tunnels. The primary outputs and efficiencies were to deliver residual weapons with an increased range-to-effect of 50% as compared to currently fielded weapons. The major demonstration was successfully				



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completed in August 2005. The user sponsor is U.S. Pacific Command. The lead service is US Air Force and the Transition Manager is the Air Armament Center. • FY 2006 Output: Completed a Military Utility Assessment; Delivered residual Thermobaric warhead assets to theater; Provided sustaining support for residual weapons; Investigated alternate manufacturing technology to reduce cost/improve production efficiency for Bomb Live Unit (BLU)-121A/B warhead; Analyzed the suitability of alternate guidance kits for use with the BLU-121A/B warhead. In FY 2007 activities will continue using previous year funding. The ACTD will: Provide sustaining support for residual weapons; Validate alternate warhead manufacturing technology; Conduct interoperability demonstration with BLU-121A/B warhead and alternate guidance kit. The ACTD will complete in FY 2008 and transition to USAF.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Adaptive Joint C4ISR Node (AJCN)	0.800	0.800	0.000	0.000
The JROC approved the capability need for AJCN as an FY-03 new start. The outcome of the AJCN ACTD is to develop, integrate, demonstrate and transition a multi-mission radio frequency system that provides seamless interoperable communications, simultaneously with signal intelligence (SIGINT), electronic warfare (EW), and information operations (IO) capabilities. Outputs and efficiencies include number of simultaneous missions and reconfigurable levels of security, mission reconfigurable timelines, and number of scalable architectures and compliant radio transmissions. Transition accomplishments to date are two AJCN ACTD multi-function test stations transitioned to the Joint Tactical Radio System Joint Program Office. The U. S. Joint Forces Command (JFCOM) is the User Sponsor and the lead service is US Army. • FY 2006 Output - Refined and updated CONOPs/TTPs based on lessons learned in JMUA. Prepared JMUA report based on JMUA results and staffed through JFCOM. Initiated Extended User Evaluation (EUE), and participated in two EUE exercises including C4ISR on the Move at Ft. Dix and Empire Challenge at China Lake. Drafted and began staffing of an MOA between the Army and Air Force supporting planned transition strategy. Drafted and initiated staffing of the Multi-Mission Payload (MMP) Capabilities Development Document (CDD) in support of follow-on acquisition of MMP [AJCN] capabilities. Completed AJCN payload maintenance as required by OM based on JMUA results. • FY 2007 Planned Output - 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 2006	FY 2007	FY 2008	FY 2009
Counter Bomb/ Counter Bomber (CB2)	6.200	2.600	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for CB2 as a FY03 new start. The outcome is to provide improved capabilities for military installations against the threat posed by terrorist delivered bombs and improvised explosive devices (IEDs). The capabilities include technologies for detection, identification, mitigation, and command/ control/ communications (C3); along with tactics, techniques, and procedures, and concepts for operations. The sponsoring Combatant Commands (CoComs) are USSOUTHCOM and USEUCOM. Other organizations involved as participants, users of capabilities, and/or observers include USCENTCOM, Department of Homeland Security, and US Coast Guard. The lead service is the U. S. Navy. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are 1) ability to perform surveillance on the movements of people and vehicles near the installation as possible precursor to the threat, 2) detection and identification of the threat device prior to blast, 3) mitigation of the bomb, and 4) C3 to tie together the people, systems, and data critical to the accomplishment of the mission. The efficiencies to be gained are 1) the ability to perform an important and increasingly critical mission that had little priority until a few years ago, 2) the ability to perform that mission at little or no increase in manpower to military force protection organizations, 3) the ability to reduce the vulnerability and casualties of the force protection personnel while performing this dangerous mission. The transition strategy is to roll CB2 capabilities into existing programs of record (POR) and acquisition program elements of Service force protection projects, and also to utilize the J34 sponsored Combating Terrorism Readiness Initiative fund. User data packages for each of the systems will be developed, along with a users' guide on how to select and introduce new technology for force protection. Four critical products from this ACTD have already been deployed to Iraq: 1) van-mounted backscatter x-ray for vehicle inspection, 2) vehicle under carriage video inspection systems, 3) infra-red imaging system, and 4) off-leash trained canines for explosives detection. Transition plans will include program of records for Anti Terrorism/Force Protection acquisition agencies in each of the 3 services, GSA, and the J34 Combating Terrorism Readiness Initiative Fund.				

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FY2006 Output - Completed the Spiral 2 demonstration at Naval Station Rota, Spain of scenarios supporting fixed base and expeditionary force protection missions. Prepared the Limited MUA report which recommended future action on 13 out of 17 technologies demonstrated. In FY06, also initiated planning of the Spiral 3 demonstration scheduled to be conducted during February, 2007 at Soto Cano Airbase, Honduras. This demonstration will consist of two scenarios for protection of forward operating locations of interest to both USSOUTHCOM and USEUCOM. Planning was also initiated for a demonstration of Counter-Maritime IED (CMIED) capabilities which was conducted in November, 2006 at Patuxent River Naval Air Station, MD with users from the Naval Expeditionary Combat Command. The CMIED demonstration addressed terrorist bomb threats to harbors and restricted waterways delivered by small boats and swimmers. The Extended User Evaluation (EUE) of capabilities demonstrated during Spiral 1 at Headquarters USSOUTHCOM, Miami, FL was initiated.				
FY2007 Planned Output - Execute the final CB2 ACTD Spiral 3 demonstration at the Soto Cano HN, forward operating base. Initiate the Spiral 2 EUE at Naval Station Rota, Spain. Prepare Limited MUA reports and initiate EUE activities for Spiral 3 which will include a SOUTHCOM element and a EUCOM element. Initiate CMIED demonstration EUE activities. Initiate an analysis by the Defense Threat Reduction Agency (DTRA) of the quantitative improvement of introducing CB2 capabilities into one of the CB2 spiral demonstration venues.				
FY08 Planned Output - Refer to the JCTD R-2a.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Deployable Cargo Screening (DCS)	1.400	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for DCS as a FY03 new start Advanced Concept Technology Demonstration. The outcome of the DCS ACTD will provide improved capabilities for military installations transporting cargo to detect explosives hidden in cargo. The capabilities include technologies for detecting trace amounts of several potential threat explosive types and the concepts of operations with associated tactics, techniques, and procedures to implement this new capability. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are: 1) ability to detect at least one pound of specific explosive types when explosives are hidden in a palletized skid of cargo; 2) provide detection capability with minimal impact on aerial port cargo handling operations; 3) provide the detection capability with minimal false positive alarms; 4) provide detection capability without interference of residual explosive particles from cross contamination of the cargo handling environment. The efficiencies to be gained: the ability to screen cargo for explosives in the aerial port operations, since no explosive screening is currently done. The transition strategy is to establish aerial port operating procedures including screening for explosives and make the detection devices part of standard aerial port operating equipment list, purchased by each facilities' operating funds. Critical products from this ACTD include improvements to the explosive-specific polymers used in the amplified fluorescing polymer technology and algorithms and calibration techniques to detect explosives without false positives. The sponsoring Combatant Command (CoCom) is U. S. Transportation Command (TRANSCOM). Other organizations involved as participants, users of capabilities, and/or observers include USAF Air Mobility Command and the Department of Homeland Security's Transportation Security Administration. The lead service is the Air Force.				
FY2006 Output - Planned completion of the military utility assessment and final concept of operations and transition to aerial port operations. Complete the ACTD.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Foliage Penetration Synthetic Aperture Radar (FOPEN)(FOPEN/SAR)	1.400	1.100	0.000	0.000
The JROC validated the capability need for the Foliage Penetrating Radar (FOPEN) ACTD as an FY-03 new start. The outcome of FOPEN is to provide real-time detection and cueing of stationary targets obscured by foliage and under camouflage using tactical sensors, and to document technical requirements to better describe the characteristics and technology needed to develop a fully operational sensor system. The primary outputs and efficiencies for this project are products that locate and help in the generation of actionable information for targets under foliage or camouflage, with significant reduction in the number of sorties or manned patrols currently required. Such output goals are: to provide actionable intelligence within 1 hour of mission completion, and complete analysis of an entire mission within 12 hours; to detect 50% of relocated vehicle-sized targets under double canopy; to geolocate points of interest and targets to within 10 meters; to map concealed terrain and lines-of-communications at rates of 150 km²/hr. Generate bald-earth digital elevation models to accuracies equivalent to NGA DTED Level-II or greater; to measure ability to map man-made infrastructure (roads, paths, etc.) and relevant geographic				

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features (rivers, streams, etc.) through average Central/South American foliage with sufficient fidelity to support military operations; to measure ability to detect and locate relevant narco-terrorist related targets of interest with sufficient fidelity and timeliness to support military operations. The user sponsor is U.S. Southern Command and the lead service is the Army. Due to the immaturity of critical technological components, the start of the ACTD was delayed until FY 2005, when DARPA delivered the necessary advanced software products. The current transition strategy for FOPEN includes: funding to transition in limited quantities (estimated 2) to an unmanned aircraft system is in the Army FY2007 President's Budget. Currently, Predator B is being considered as the primary host. The existing FOPEN-equipped RC-12D will be retained by the Army's Research and Development Command for continued development and operational applications (as needed on a fee-for-service basis).				
<ul style="list-style-type: none"><li>• FY 2006 Output - FOPEN system successfully used in support of real world operations in the SOUTHCOM area of responsibility. Completed system engineering and modifications to remotely operate the radar (elimination of one operator position on aircraft) through the integration of the Tactical Common Data Link (TCDL). Improve the database management system and updated CONOPs to address these changes. Deployment schedule back to theater in 4QFY06 for Final Joint Military Utility Assessment.</li><li>• FY 2007 Planned Output - Provide for 1 operational deployment to theater. Provide refined technical characteristics of an operational FOPEN radar system to the Army for transition to an Unmanned Aircraft System (FY 2007 Army New Start). Return the FOPEN modified RC-12 aircraft to technical applications. Complete the ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Blue Force Situational Awareness (JBFSa)	0.500	0.000	0.000	0.000
The JROC approved the capability need for JBFSa as an FY-03 new start. The outcome of JBFSa is to develop, demonstrate, and transition seamless integration of joint blue force situational awareness tracking device information for display on the Global Command and Control (GCCS) family of supported systems. Outputs and efficiencies 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. Transition status: JBFSa ACTD products have transitioned to the GCCS Family of Systems programs of record, and SMDC/ARSTRAT Mission Management Center. The U. S. Strategic Command (STRATCOM) is the User Sponsor and the lead service is the Army.				
<ul style="list-style-type: none"><li>• FY 2006 Output - Completed Extended User Evaluation (EUE). Finalized CONOPs, TTPs and training package based on EUE. Continued to operationalize the architecture with the support of JFCOM. Produced a JBFSa ACTD Final Report package for distribution to COCOMs and other DOD organizations. Completed the JBFSa ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Night Vision Cave and Urban Assault (NVCUA)	2.600	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for NVCUA as an FY-03 new start. The outcome of NVCUA is to demonstrate a suite of lightweight, soldier-borne sensor technologies, together with new Concepts of Operation (CONOPs) and Tactics, Techniques and Procedures (TTPs), to enable decisive overmatch for dismounted assault in subterranean and urban environments. Five-year project under sponsorship of U.S. Special Operations Command (USSOCOM), with completion of development and final demonstration in FY05, and final completion date in FY08. The lead service is U.S. Army. The primary outputs and efficiencies to be demonstrated in the Night Vision ACTD Military Utility Assessment are: 1) Increased capability for Special Operations Forces (SOF) to identify detected targets during Special Reconnaissance (SR) missions; 2) Increased capability for SOF during Direct Action (DA) missions; 3) Enhanced SOF capabilities to move and identify targets in low/no-light environments; 4) Enhanced SOF capabilities to move and identify targets in urban/restrictive terrain. Current Efficiency Goals: SWIR Standoff Identification Range - 2k = IR Detection Range; UCIR Detection Range (Cave Assault) 150m, 200m ,250m; UCIR Detection Range (Urban UGS) - 15m ,25m; Pd (Approach Sensors) -- 90% - 95%; STTW Detection Range -- 10m, 20m. The Transition status: Long Range Identification (LRID) system was successfully demonstrated and is currently undergoing an Extended User Evaluation in Iraq for consideration for transition to Army Programs of Record (POR). There are also classified capabilities that are being considered for transition. In addition, efforts are underway to provide selected items (e.g., Combat Periscope, ENV Goggles) for operational use on a rapid-equipping basis.				
<ul style="list-style-type: none"><li>• FY 2006 Output- Deputy Chief of Staff G8, U.S. Army Special Operations Command (USASOC) completed the NVCUA ACTD Military Utility Assessment (MUA) report. The MUA covered two demonstrations: Demo I (Cave Operations) was conducted 4QFY04 at the National Training Center, Ft. Irwin, CA and Demo II (Urban Operations) was conducted 4QFY05 at the Joint Experimentation</li></ul>				

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Range Complex (JERC), Yuma Proving Grounds (YPG), AZ. During these demos, teams from the 7th Special Forces Group and the 1st Battalion, 75th Ranger Regiment performed a series of Direct Action (DA) and Special Reconnaissance (SR) missions using the NVCUA ACTD equipment. MUA results identified 8 of the 10 technologies evaluated as having utility for Special Operations Forces (SOF). The Long Range Identification (LRID) system's demonstrated capability to detect, recognize and identify targets exceeded current baseline imagers by a factor of four. Two LRID prototype systems were fielded to U.S. Army Special Operations Command (USASOC) to provide interim operational capability in support of Operation Iraqi Freedom (OIF). Pre-transition activities began in preparation for transition of LRID via Evolutionary Technology Insertion (ETI) into the Special Operations Tactical Video System/Reconnaissance Surveillance and Target Acquisition (SOTVS/RSTA) program. The ACTD Transition Manager is USSOCOM Program Executive Officer for Intelligence and Information Systems (PEO-IIS). The Digital Fusion Goggle demonstrated the best future promise for clear detailed vision in Low Light to "True Dark" operational use. Digital Fusion Goggle transitioned to the Advanced Digital Multi-Spectral Night Vision Goggle (ADM NVG) program, a FY06-07 Technology Transition Initiative (TTI) jointly funded by OSD and USSOCOM. The ADM NVG Transition Manager is Program Executive Officer Special Operations Forces - Warrior (PEO-SOF Warrior). Spiral output - Combat Periscope prototype adopted by U.S. Army Rapid Equipping Force (REF), with 3 systems fielded to OIF in 4QFY05, ten upgraded systems scheduled for delivery in 4QFY06. Remote Observation/Confirming Sensor (RO/CS) and Remote Urban Monitoring System (RUMS) residuals provided to U.S. Army Field Assistance in Science and Technology (FAST) program for quick reaction deployment to OIF in 1QFY06. RUMS prototype provided to U.S. Marine Corps under OSD Technical Support Working Group (TSWG) Counter-Insurgency Program for operational evaluation in OIF 2QFY06. Funding provided in FY 2006 will assist the beginning transition efforts in FY 2007, anticipated transition target is the U.S. Army. <ul style="list-style-type: none"><li>FY 2008 Planned Output - Refer to the JCTD R-2a. ACTD completes in FY 2008.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
OVERWATCH		1.200	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for Overwatch as an FY-03 start. The need to rapidly detect and locate hostile weapons fire was addressed by the Overwatch ACTD. The outcome is to demonstrate a sensor/targeting system that can detect, classify, and locate weapons fire in real time while stationary or on the move. This capability provides ground forces the ability to immediately direct precision fire support during land and urban warfare, peacekeeping, and peace enforcement missions. The primary ACTD outputs are to deploy two residual on-the-move capable sensor/targeting systems that will enhance both force protection and force application for the warfighter. Efficiencies and outputs include: percent of firing signatures detected; percent of firing signatures located; overall percent of successful detections resulting in accurate messages; false target rate; and percent of messages garbled or not received. The user sponsor is U.S. Pacific Command. The lead service is US Army and the Transition Manager is the Program Manager for Night Vision/Reconnaissance, Surveillance, and Target Acquisition (PM NV/RSTA).					
• FY 2006 Output - A major demonstration of stationary and on-the-move capability to locate hostile fire with a HMMWV was completed in June 2006. While the stationary capability was effective, there was degraded performance on-the-move. The ACTD completes in FY 2007. Using FY 2006 funds, the ACTD will: Demonstrate improved on-the-move performance; Prepare to deploy residuals in theater to support military police operations; Complete Military Utility Assessment and interim support phase.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Urban Recon (UR)		0.000	0.300	0.000	0.000
The Joint Requirements Oversight Council validated the capability need for Urban Recon (UR) as an FY-03 new start. The outcome of Urban Recon is to provide advanced airborne and terrestrial 3-D reconnaissance capability to US Army Special Operations Command (USASOC) (Operational Manager) using LIDAR sensor with rapid processing software and decision aid software. Urban Recon will provide enhanced urban warfare survivability to early-entry forces by collecting revolutionary 3D urban databases supporting advanced mission planning and rehearsal, vulnerability assessment, high-fidelity route analysis, field of view, and line of sight. Rapid collection, processing, and visualization of complex urban environments. Outputs and efficiencies 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					

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<p>personnel; and extent to which the Urban Recon Tactics, Techniques and Procedures (TTPs) can be effectively executed in meeting urban reconnaissance objectives. Urban Recon completed the objective laser systems development supporting vehicle-deployed, soldier-deployed, and UAV-deployed (surrogate vehicle) configurations. Finalized the CONOPS for each objective system configuration. Drafted and finalized a Capability Development Document for LIDAR Sensors. Completed the Military Utility Assessment (MUA). MUA results indicated that the data was very useful and beneficial, some additional modifications to vehicle hardware and software were required prior to fielding. Developed transition strategy supporting follow-on development, acquisition and fielding based on MUA results. Urban Recon will transfer to SOCOM. The user sponsor is U.S. Special Operations Command (SOCOM) through USASOC. The lead service is the National Geospatial-Intelligence Agency (NGA).</p> <p>• FY 2007 Planned Output - Complete required capabilities documents (Capabilities Development Document, CDD, and/or Capabilities Production Document, CPD) for high-resolution terrain data acquisition and dissemination system to support programming activities. Complete required program upgrades to satisfy MUA and conclude EUE OCONUS activity. Complete the ACTD and transition capability.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Advanced Tactical Targeting Technology (AT3)		4.900	0.000	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for Advanced Tactical Targeting Technology (AT3) ACTD as an FY04 Air Force ACTD. The objective of the AT3 ACTD is to demonstrate the capability to target mobile and re-locatable surface-to-air missile (SAM) launchers with sufficient timeliness and accuracy to launch a coordinate-seeking weapon or cue another sensor and destroy the SAM, while conducting the normal threat situational awareness function. This capability is being developed using a digital radar warning receiver (RWR), precision position, velocity and time source, and a tactical datalink. The unclassified goal is to target these RF emitting SAMs to an accuracy of 50 meters from 50 miles away within 10 seconds after the enemy's radar turns on. The AT3 ACTD is a four-year project under the resource sponsorship of the U.S. Air Force's Air Combat Command (ACC) and the operational sponsorship of U.S. Central Command (U.S. CENTCOM) with completion of development and demonstration by the end of April 2008 and a military utility assessment (MUA) in June 2008. A residual phase in which approximately twenty Air National Guard F-16C aircraft will be equipped with this capability is planned pending the outcome of the operational assessment of the host AN/ALR-69A RWR and low rate initial production (LRIP) decision in March 2007, and the successful demonstration of the AT3 capability as reflected in the MUA in June 2008. Following the residual phase, during which AT3 tactics, techniques and procedures will be demonstrated and validated, the Air Force will transition this capability to other platforms as part of the FY10 POM process. The lead service is Air Force. The Navy has under development a digital host receiver as an adjunct to the AN/ALR-67(V)3 RWR, which will be installed in forward-fit F/A-18F aircraft. This receiver is capable of receiving the AT3 frequency and timing (FaT) card and the Navy may install this card in future F/A-18F aircraft pending the results of the AT3 MUA. The primary output and efficiencies to be demonstrated in the AT3 ACTD MUA are the percent of mobile and re-locatable Radio Frequency (RF) emitting SAMs that are detected, properly identified, and targeted at (classified) range. The transition manager for the AT3 ACTD is the ALR-69A Program Manager, 542 Combat Sustainment Group, Robins AFB, GA.</p> <p>• FY 2006 Output - Installed and completed Group A (e.g., fiber optic cable and mounting brackets) check of host AN/ALR-69A RWR in first ANG F-16C in October 2005 and the second ANG F-16C in April 2006. Conducted a critical design review (CDR) of the AT3 ACTD instrumentation card hardware and software in January 2006. The first five FaT cards were delivered in December 2005. The remaining 10 FaT cards were delivered in June 2006. Global Positioning System / Inertial Navigation System (GPS/INS) units were characterized within error budget in April 2006. Initial bench integration testing of F-16C ALR-69A and ALQ-213 Countermeasures Control System commenced in January 2006. Laboratory integration of situation awareness datalink (SADL) and brass board AT3 system began in January 2006. Completed FaT card Design Verification Testing (DVT) in April 2006. Initial F-16C ALR-69A Core Operational Flight Program (OFP) was available for laboratory testing in February 2006, and Raytheon-Goleta completed system performance testing on the Core OFP in July 2006. Initial AT3 OFP was built in May 2006. Commenced full system integration testing in the Raytheon-Tucson Host Aircraft Simulator (HAS) in September 2006. Government developmental test and evaluation of F-16 ALR-69A Core system began in August 2006 with testing at the Electronic Warfare Avionics Integration Support Facility (EWASIF) (Robins AFB) and Integrated Demonstration and Application Laboratory (IDAL) (Wright-Patterson AFB) hardware in the loop (HITL) facilities. Multi-ship tactical network and position-velocity-time-frequency lab testing completed in August 2006.</p> <p>Multi-ship software integration lab testing is expected to continue from summer 2006 and complete in April 2007. AT3 Instrumentation Card DVT is planned to complete in January 2007. The host ALR-69A RWR will be tested on the F-16C at the Benefield Anechoic Facility (BAF) in March/April 2007 and DT flight testing is expected to begin in May 2007. AT3 Tower testing at Raytheon-Tucson begins in November 2006 and will continue through August 2007. ALR-69A/AT3 will be tested at the F-16 System Integration Laboratory in January 2007 followed by on aircraft integration ground testing. AT3 hybrid tower/flight testing is planned to commence in February 2007 and will continue through May 2007. The third ANG F-16C was delivered for modification in November 2006 in order to be ready for</p>					

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flight testing in May 2007. Delivery of this third aircraft for modification is key to full assessment of potential operational capability and transition to other Air Force platforms. Developmental flight testing over the Electronic Proving Ground (EPG) at Fort Huachuca with three ALR-69A/AT3 equipped aircraft will commence in October 2007 and will continue through January 2008. The ACTD will complete in FY 2008 using resources provided in FY 2006 During the demonstration phase, AT3 will be flight tested at the Nevada Test and Training Range. The Air Force (Air Combat Command)is planning to include the demonstration of AT3 capabilities in Joint Expeditionary Force Experiment FY08 (JEFX 08). The Air Force Operational Test and Evaluation Command (AFOTEC) will deliver the MUA in June 2008. Pending an LRIP decision and the identification of procurement funding, procurement of twenty AN/ALR-69A residual systems for ANG F-16C aircraft will be placed on contract for delivery fifteen months after receipt of order.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Agile Rapid Global Combat Support (ARGCS)	5.985	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for ARGCS as an FY-04 start which is using advanced technologies to demonstrate a family of testers for electronic components and provide unprecedented interoperability between weapon systems, Services, and levels of maintenance. This will reduce costs and the proliferation of testers while improving the availability and performance of weapon systems. In addition, ARGCS will demonstrate technologies to facilitate net-centric diagnostics by capturing historical logistics data and developing an expert support system that will further reduce repair times and costs, as well as future sparing requirements. Outputs and efficiencies will include increases in performance and test accuracy, interoperability between Services, reduced logistics and weapon system support costs, and reduced proliferation of automatic test systems in the future. (100% interoperability, Time to field - one year or less, 40% reduced time to diagnose and repair, proliferation of systems - reduce footprint by 50%, Scalability of systems - 100%). The ARGCS technology will be transitioned to the Services through existing automated test programs of record. The user sponsor is U.S. Pacific Command and the lead service is the Navy. •FY 2006 Output - Completed fabrication and integration of system hardware/software and began system testing at the contractors facility. Refined Concept of Operations and initiated the development of Independent Assessment Plan that will be used to verify military utility of ARGCS. Transition of ARGCS technologies and products was initiated in select systems. In addition, began the development of a Joint Capabilities Document (JCD) that will guide transition ARGCS technologies and products to the Service's program of records. Using FY 2006 funding, the ARGCS ACTD will continue in FY 2007 completing the following activities: Complete systems integration and testing at the contractors facility; Conduct Limited Military Utilitay Assessment and a Joint Military Utility Assessment; Finalize Concept of Operations; and Initiate Extended User Evaluation (EUE). The ARGCS ACTD completes in FY 2008. •FY 2008 Planned Output: Refer to the JCTD R-2a				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Coalition Shared Intelligence Network Environment (COSINE)	1.200	0.100	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for COSINE as a FY04 new start ACTD. The outcome will provide improved capabilities for coalition operations to share information across Community of Interests (COIs) in an ad hoc coalition member environment. COSINE enforces Need to Know or Need to Share rules by only publishing information to selected communities and preventing access to sensitive documents to members who are not authorized. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are: 1) ability to establish standards, concept of operations and associated tactics, techniques and procedures for sharing information products in NATO and non-NATO environments, while maintaining secure operations; 2) ability to quickly implement the connection of a secure coalition command, control and intelligence system; 3) ability to share intelligence information and coordinate with both allied and coalition partners in a timely secure manner, and 4) ability to rapidly alter the sharing environment when the operational situation changes, coalition membership changes or information release policies change. The efficiencies to be gained are 1) the ability to perform dynamic information security and management for sharing intelligence information in a dynamic coalition environment. The transition strategy is to implement the COSINE system design and standards into the ISAF (International Security Assistance Force) secret network for coalition operations in Afghanistan. COSINE is also a component of the NATO Intelligence Functional Area Service Capability Package as a broader NATO standard capability. The sponsoring Combatant Command (CoCom) is NATO Supreme Headquarters Allied Powers Europe (SHAPE). The lead agency is the NATO Command & Control Consultation Agency. Other participants include Allied Command Operations and Allied Command Transformation.				

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FY2006 Output - Completed demonstration in the Coalition Warrior Interoperability Demonstrations and SHAPE approved action to perform security assessment of COSINE in preparation for ISAF final evaluation. Prepared the operating standards and technical manuals with procedures for implementation. The ACTD completes in FY 2007. Initial operating capability is planned for the ISAF Secret network.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Coalition Reception Staging & Onward Movement (CORSOM)		0.100	0.100	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for CORSOM as an FY04 new start. The outcome of CORSOM is to demonstrate a set of technologies, provide modeling and simulation support, and establish procedures to provide Joint Force Commanders with an enhanced Reception, Staging and Onward-Movement (RSOM) Planning and Execution Monitoring capability for coalition deployment operations. The primary outputs and efficiencies to be realized by CORSOM ACTD deliverables 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 decrease 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.					
Planned Transition: CORSOM products will transition into NATO's Logistics Functional Area Services (LOGFAS) with NATO Communications and Systems Operating and Support Agency providing operations and maintenance. Additional transition into Global Combat Control Systems (GCCS) through Defense Information Systems Agency (DISA) support is also planned. This is a four-year project under the sponsorship of six NATO nations, NATO Strategic Commands and Supreme Headquarters Allied Powers, Europe, are User Sponsors and the lead agency is the NATO C3 Agency.					
• FY 2006 Output - Finalized prototypes and Coalition RSOM Tactics, Techniques and Procedures (TTPs). Final Military Utility Assessment (MUA) was conducted in Jan-Feb 2006 and successfully demonstrated the full range of both planning and execution functionality of software. Additionally, CORSOM was used successfully in Multi-national Experiment 4, as well as a field trial which was conducted in September 2006, taking advantage of one GE-NL Corps field exercise to display CORSOM tracking functionality. In addition, during 2006, began transition to inclusion of CORSOM in the NATO Logistics Functional Area Services of the Bi-Strategic Command Automated Information System, as well as exploring integration into the U.S. Global Combat Support System (GCSS). Transition manager is NC3A.					
• FY 2007 Planned Output - Complete transition to NATO Logistics Functional Area Services, integration into GCSS, and demonstrate capability. CORSOM ACTD scheduled completion date is December 2007.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Future Tactical Truck System (FTTS)		1.200	0.600	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for FTTS as an FY-04 new start. The outcome of FTTS is to demonstrate new and emerging system capabilities for the Maneuver Sustainment Variant (MSV) and for the Utility Variant (UV) derived from Unit of Action concept drivers. The FTTS ACTD demonstrations will have the MSVs replacing two Heavy Expanded Mobility Tactical Truck Load Handling Systems in an Engineering Battalion and two UVs replacing High Mobility Multipurpose Wheeled Vehicles (HMMWV) in a Military Police (MP) Brigade. The demonstration aims to identify key elements of a seamless distribution system that has a reduced logistics footprint and reduced fuel dependency and supports both the current and future force. The primary outputs and efficiencies to be demonstrated in the ACTD Military Utility Assessment (MUA) are: 1) percent increase in fuel efficiency, and as a result increased operational range of up to 600 miles; 2) reduce Materiel Handling Equipment (MHE) from four to one and capable of transloading 463L pallets, flatracks, tankracks, other payloads (e.g. Non Line Of Sight-Container Launch Unit), and containers to/from the MSV, to another MSV, a MSV trailer, an aircraft, Theater Support Vehicle, and other Army and Navy watercraft, a flatdeck railcar, a semi-trailer, or the ground; 3) demonstrate on board exportable power of up to 75 kW; 4) demonstrate integral armor approach with capability to add up armor kit utilizing onboard MHE. Planned Transition Status: The FTTS ACTD is a critical piece of the Army's Tactical Wheeled Vehicle Transformation Strategy. Advanced technologies demonstrated in the ACTD may be incorporated into current and future tactical wheeled vehicles. In addition, PM Future Tactical Systems					

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<p>(FTS) (Provisional) is leveraging the FTTS ACTD to feed the requirements development process for the Joint Light Tactical Vehicle (JLTV). This is a four-year project under sponsorship of US Pacific Command (USPACOM), with completion of development and demonstration by end of FY 2007. The lead service is Army.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Finalized the CONOPS, Tactics Techniques and Procedures, and MUA Plan. Awarded contracts for the UV hardware build phase in February 2006.</li><li>• FY 2007 Planned Output - Completed hardware build and delivered 2 UVs with trailer and 1 MSV and Companion Trailer (CT) in November 2006. Began safety assessment and operator training for theUVs and MSV. Final operational demonstrations of FTTS MSV and FTTS UV are for 2nd Qtr FY07. Initiated transition strategy and preparation for extended user evaluation. Spiral Output Planned - Leverage results from FTTS MSV for potential upgrade to current medium/heavy tactical fleet. Provide operational assessment results from FTTS UV to PM Future Tactical Systems (FTS) which will feed the Joint Light Tactical Vehicle (JLTV) requirements document. MS B decision for JLTV is Nov 2007. Transition manager is PM FTS. FTTS ACTD scheduled completion date is September 2007.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Unmanned Systems Common Control (JUSC2)	0.600	0.300	0.000	0.000
<p>The JROC validated the capability need for JUSC2 as an FY-04 new start. The desired outcome of JUSC2 is to provide a reconfigurable and scaleable common control architecture, capable of concurrently managing large numbers of unmanned systems of all types, leveraging interoperability afforded by existing joint and coalition interfaces and message sets for unmanned systems. The primary outputs and efficiencies to be demonstrated by this project include more efficient management and improved overall operational effect through: (1) the ability to concurrently manage (in some cases, control) all unmanned systems deployed with Littoral Combat Ship (LCS) mission packages; (2) demonstration of NATO STANAG 4586 (UAV Control Standard) Level 3/4 control handoff of STANAG enabled unmanned aircraft between Army and Navy control stations; and (3) demonstrate the ability to hand-off control of unmanned surface vehicles (USVs) and unmanned ground vehicles (UGVs) to other services' Joint Architecture for Unmanned Systems (JAUS)-compliant control stations. Current transition plans include: JUSC2's Unmanned Vehicle Common Control (UVCC) software product - an integral component of the Navy's Littoral Combat Ship Flight 0. JUSC2 Common Unmanned Aerial Vehicle (UAV) Interface Segment (STANAG 4586 compliant ground station) - now a transition product that the Army's UAV Project Office will insert into the One System Acquisition Program. The user sponsor is U.S. Joint Forces Command and the lead service is the Navy.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Completed USV, UAV, and UGV interface segments. Successfully conducted limited at-sea test of Unmanned Undersea Vehicle (UUV) capability in Dec 05. Completed initial concept of operations documentation and initiated review process. Delivered initial UVCC software build to LCS Program Office for LCS Mission Package integration testing. Continue work on STANAG 4586 compliant version of Army "One System" common UAV ground control station.</li><li>• FY 2007 Planned Output - Due to now resolved funding delays, plan for and execute JMUA 2 (Border Patrol scenario - primarily unmanned aircraft based) in Feb-Mar 07. Plan for warfighting utility assessment with full at-sea test of LCS Flight 0 residual Sept-Oct 07.</li><li>• FY 2008 Plans - Complete residual final MUA activities. Complete reporting efforts; provide final engineering packages, software, and evaluation results to LCS program. Complete the ACTD.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Precision Airdrop System (JPADS)	3.200	1.400	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JPADS as an FY-04 new start. The outcome of JPADS is to demonstrate a fast, flexible, direct projection-based distribution system to sustain rapidly deployed forces at any global destination - strategically, operationally, and tactically. The primary output and efficiencies are to demonstrate a high-altitude (25,000 ft. Mean Sea Level (MSL)) autonomous offset airdrop capability (goal 8-25 miles offset) with the option to deliver separate and distinct payloads (up to 10,000 lb total, full rigged weight, minimum of 8.5Klbs of usable payload) to multiple locations from one release point to within a 250 meter (threshold) Circular Error Probable (CEP) (50 meter CEP objective). This effort focuses Army and Air Force programs and initiatives on meeting joint airdrop requirements. JPADS will provide a seamless and flexible system, providing materiel resupply capabilities to meet the dynamic operational requirements of the CoComs worldwide no later than 24 hours from the request. JPADS is a four-year project with completion of development and demonstration by end of FY 2008 transitioning to United States Army Program Manager Force Sustainment Systems (FSS) and U.S. Air Force Mobility Systems Wing systems by FY 2008. Transition accomplished to date: Ongoing integration of U.S. Air Force (USAF) Mission Planner (MP) into the Marine Corps C130J and into USSOCOM navigational aid for Military Free Fall (MFF).</p>				



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Planned Transition: Transition high-altitude, aircraft deployable, autonomous, airdrop systems, and in-flight mission planning with wireless communication to guidance, navigation, and control systems to Army Product Manager - Force Sustainment Systems and Air Mobility Command's Combat Operations. The user sponsor is U.S. Joint Forces Command. The lead Service is U.S Army.					
<ul style="list-style-type: none"><li>FY 2006 Output - Demonstrated airdrops of multiple 10Klb SCREAMER system deployments from both C-17 and C-130 aircraft from 25Kft Mean Seal Level (MSL) during numerous technical tests and exceeded threshold for system offset. Also demonstrated accuracies of within 200M on numerous occasions but not at desired reliability levels. Completed nearly all user desired JPADS Mission Planner (MP) and SCREAMER integration efforts and added built-in wireless communications to SCREAMER Airborne Guidance Unit. Conducted the first of three Joint Military Utility Assessments (First JMUA held in June 2006). JPADS-Mission Planner (MP) used for the first time by USAF aircrews for high altitude Container Delivery System (CDS) drops in the Area of Responsibility (AOR) in August 2006.</li><li>FY 2007 Planned Output - Execute JMUA #2 rehearsal in December 2006, JMUA #2 in January 2007, JMUA #3 rehearsal in April 2007 and final operational demonstration, JMUA #3 in May 2007 based on US Joint Forces Command and user based scenarios. Distribute JMUA final reports and residual JPADS systems to JMUA users. Continue to support and monitor residual system performance and user feedback. Transition all capabilities to transition managers: US Army PM FSS and USAF (Mobility Systems Wing) program of records (PORs) during Third Quarter FY07. Assist in preparation for Milestone B and planned System Development and Demonstration (SDD) programs. Finalize and execute interim transition plan in conjunction with formal JPADS 10Klb PORs.</li><li>FY 2008 Planned Output - Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
MAGNUM		2.300	0.000	0.000	0.000
Classified content only.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Man-Portable Threat Warning System (MANPACK)		5.200	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the need for MANPACK capabilities as a FY-04 new start. The outcome of MANPACK will be to develop 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. Outputs and efficiencies of MANPACK are: 1) meets essential weight, power and size requirements for use by individuals and small units; 2) significant improvement in threat warning information to the individual; 3) provides improved threat warning information to a wireless local area network (LAN)/wide area network (WAN). Quantifiable output: 1) Direction Finding (DF) performance goal is 22 ½ degrees or better; DF performance is measured by comparing lines of bearing (LOB) to a test emitter reported from the system to actual LOB calculated from ground truth information. 2) Total weight goal of the integrated system is 15 lbs. Planned transition: U.S. Special Operations Command (SOCOM) plans to transition MANPACK to the Joint Threat Warning System program of record. The user sponsor and lead agency is the SOCOM.					
<ul style="list-style-type: none"><li>FY 2006 Output - 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.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009

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Multi-Sensor Aerospace/Ground Joint ISR Interoperability Coalition (MAJIIC)	3.100	2.200	0.000	0.000
<p>The JROC approved the capability need for MAJIIC as an FY-04 new start. The outcome of MAJIIC is to 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. MAJIIC will 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. Outputs and efficiencies include: 1) Near real-time MAJIIC ISR mission and sensor data is available for discovery and smart pull within the Collateral Space in near real time (i.e. Post in Parallel); 2) MAJIIC services and data are readily discoverable via portals, C2 Visualization and other applications, and other Global Information Grid (GIG) service providers; 3) MAJIIC data pedigree is trustable by users; 4) MAJIIC service access is assured for authorized users and denied for unauthorized users; 5) MAJIIC data access is provided based on user clearance, country affiliation, and role and protected from those not meeting the minimum policy requirements. 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. Transition already Accomplished: The MAJIIC Full-Motion Video ISR Information Services (ISRIS) capability deployed as part of JIOC-I to OIF, and is transitioning to the Army Distributed Common Ground System (DCGS-A). NATO is deploying the MAJIIC coalition shared database (CSD) as part of the NATO Intelligence Management and Reporting Tool (IMART) to OEF. Remaining transition: NATO, Supreme Headquarters Allied Power—Europe (SHAPE), and the U.S. will adopt demonstrated capabilities and concepts of operation into existing national and coalition systems. MAJIIC technology and lessons learned will transition to the Service 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 Air Force is lead service.</p> <ul style="list-style-type: none"> <li>FY 2006 Output - 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-fire exercise to demonstrate and test interoperability standards.</li> <li>FY 2007 Planned Output - 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.</li> <li>FY 2008 Planned Output - Refer to the JCTD R-2a.</li> </ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Psychological Operations Global Reach (PSYOP)	4.900	2.600	0.000	0.000
<p>The JROC validated the capability need for PGR as an FY-04 new start. The outcome of PGR is to demonstrate a set of technologies, mission planning tools, and CONOPs to provide extended range over which the PSYOP message can be delivered. The primary outputs and efficiencies to be demonstrated are: Capabilities to disseminate products multi-dimensionally across extended ranges into denied areas, including over-the-air and new internet based methods and improved message content and focus through automated planning processes integrated into special operations forces (SOF) planning systems employing collaborative technologies. Specifically, to demonstrate the capability of delivering PSYOP message into simulated (or real if situation warrants) denied areas to a goal depth of 800nm. Transition milestones: The Short Messaging System (SMS) distribution system is currently available for operations. Transition to USSOCOM and components is planned in FY 2009 and out. The operational sponsor and lead agency is U.S. Special Operations Command. Planned ACTD completion is FY 2009.</p> <ul style="list-style-type: none"> <li>FY 2006 Outputs - Continued program management of the incremental design, engineering and technical integration of multiple technologies culminating with two Military Utility Assessments, one for a Spiral 2 FM broadcast payload and the second for a Spiral 3 FM broadcast payload. The Wind Supported Aerial Delivery System (WSADS) was utilized as the first UAV platform in a secession of other planned UAV platforms to include the Predator class vehicle and a High Altitude UAS (Global Observer or HALE). In addition, developed and demonstrated an airborne magnet-less loudspeaker system, along with air droppable loudspeakers on the WSADS UAV. Developed and demonstrated a tethered balloon broadcast system. Developed, demonstrated, and fielded a Short Messaging System dissemination tool. Continued development and spiral release of the PSYOP Planning and Analysis System (POPAS) which ultimately will be integrated into the SOF mission planning environment.</li> </ul>				

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<p>• FY 2007 Planned Output - Continue management of the incremental design, engineering and technical integration of multiple technologies as the variants become more robust. Planned events include demonstrations of advanced broadcast payloads on Predator type UAV platforms; demonstration of TV payload; conducting an Extended User Evaluation (EUE) on WSADS UAV FM and loudspeaker broadcast payloads; transition WSADS FM broadcast payload; demonstration of electronic leaflets and media display systems; performing an EUE for Short Message Service for formal transition; and incremental fielding and software certification of advanced software for PSYOP Target Audience Analysis and PSYOP Worksheets, under the POPAS umbrella. These efforts will culminate in further military utility assessments for UAV payloads, scatterable media, and the POPAS.</p> <p>• FY 2008/9 Planned Output - Refer to the JCTD R-2a.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Theater Effects-Based Operations (TEBO)	1.300	5.100	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for the TEBO ACTD as a new start in FY 04. The outcome of the TEBO ACTD is to 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 TEBO ACTD is a six-year project under the sponsorship of Pacific Command and Combined Forces Command/U.S. Forces Korea (CFC/USFK) as the Operational User. Completion of development and demonstration is planned for by the end of CY 2009 with transition to the Net Enabled Command Capability (NECC) System of Record in 2010. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the TEBO ACTD Military Utility Assessments are (1) Exploit existing knowledge base(s) of strategic, operational and tactical environments (e.g. Operational Net Assessments [ONA] - critical capabilities and vulnerabilities, centers gravity [COG] and nodal analysis, (2) Facilitate collaborative effects-based campaign planning within a combined/Joint environment, (3) Support execution with prioritization of strategic and operational levels of effort, synchronization of actions, and battle tracking, (4) Comprehensively assess and forecast progress toward the desired end state by analyzing observed direct and indirect effects.</p> <p>• FY 2006 Output - 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. A Limited Military Utility Assessment (MUA) was conducted in late August-early September 2006 to successfully demonstrate effects assessment, operational net assessment and planning functionality of the software. Additionally, military utility assessment of CFC EBO CONOPS was successfully conducted in May 2006, taking advantage of General Officer level subject matter experts from Joint Forces Command (JFCOM).</p> <p>• FY 2007 Planned Output - Conduct Operational Demonstration 4 (Reception, Staging, Onward Movement and Integration (RSOI) 07 and Ulchi Focus Lens (UFL) 07) Enhance and integrate COA planning capabilities and EBO execution enabling capabilities into CFC architectures ; enhance and transition ONA capabilities into other COCOMs for use; enhance and integrate DA capabilities into CFC architectures.</p> <p>• FY 2008/9 Planned Output - Refer to the JCTD R-2a.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Actionable Situational Awareness Pull (ASAP)	1.900	0.600	0.000	0.000
<p>The JROC approved the capability need for ASAP as an FY-05 new start. The ASAP output will 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) core service architecture and the Net-Enabled Command Capability (NECC), a "Smart Pull" service will be operationally demonstrated and transitioned into NECC and the Integrated Broadcast</p>				

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<p>System (IBS). ASAP's outputs and efficiencies include (1) increased percentage of useable data available to the user, (2) increased performance through decreased latency of data, (3) percentage of increase in data obtained via "pull" vice "push" procedures, and (4) increased interoperability with coalition forces by use of XML Common Message Format Standards. Expected efficiencies (to be measured and verified) will include response time performance on the return of data as a web service. Planned Transition: Software tools and documentation will transition to Net-Enabled Command Capability (NECC) and the Integrated Broadcast System (IBS) starting in FY 2007. The ASAP User Sponsor is the U. S. Pacific Command (PACOM) and the lead service/agency is the Defense Information Systems Agency (DISA).</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Completed development and demonstration of three software builds around the "Smart pull" capability. Conducted initial Operational Demonstration and Interim Joint Military Utility Assessment (IJMUA). Added 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. Continued training of operational users prior to conducting operational demonstration and JMUA. Initiated transition of ASAP ACTD to NCES architecture, User Defined Operational Picture (UDOP), and Integrated Broadcast System (IBS) programs. Continued development of CONOPs and TTPs.</li><li>• FY 2007 Planned Output - 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.</li><li>• FY2008 Planned Output - Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Coalition Secure Management and Operations System (COSMOS)		5.200	5.300	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for COSMOS as a FY05 new start. The COSMOS ACTD output will be a pilot implementation of the Multilateral Interoperability Program (MIP) specifications for C2 data sharing (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. COSMOS is planned for a final demonstration in the second quarter of FY08, with sustainment of the demonstrated capabilities by DISA through FY09. The expected output is identifying necessary and sufficient conditions for implementing the MIP specifications, leading to rapid, secure protected sharing of critical C2 information to and among coalition partners' organic command and control (C2) systems on a single and secure integrated coalition network. The expected efficiency is substantial reduction of textual message exchange required to establish and maintain situational awareness among coalition commanders, improved collaborative decision making, reduced confusion, uncertainty and delay in combat and crisis operations and effective bridging of coalition sourced information with US Global Information Grid (GIG) Network Centric Enterprise Services (NCES) for two-way information exchange, when approved cross domain solutions are available. Transition to programs of record is planned for FY09, targeted at the emerging Multinational Information Sharing (MNIS) initiative. A policy enforcement capability for discrete rapid information sharing will be implemented in enterprise and theater-level coalition networks (i.e., CENTRIXS migrating to an emerging program based on the Joint Requirements Oversight Council (JROC) approved Multinational Information Sharing (MNIS) Initial Capabilities Document (ICD)). The use of Open Source Code for software-based capabilities will enable improved capabilities to be inserted into programs of record for coalition information sharing, network services, and next generation command and control, including those of Allies and Coalition partners. COSMOS is a three year ACTD co-sponsored by U. S. Pacific Command (PACOM) and U. S. European Command (EUCOM). The Defense Information Systems Agency (DISA) is the lead agency.</p> <ul style="list-style-type: none"><li>• FY 2006 output year: The primary technical focus in FY06 was establishment of a MIP-compliant C2 application collaboration laboratory to interface exemplar C2 suites among participating partners. Through frequent technical exchanges and 'over-the-Internet' system interface testing between established and prototyped national C2 systems, the COSMOS technical team introduced the operational concept of "role- and policy-based protected information sharing" within US and coalition development efforts. A Security Working Group was established to address national concerns regarding information protection, co-led by US National Security Agency (NSA) and Canada. The operational management team observed USPACOM Exercise Cobra Gold '06 to establish understanding of the baseline information exchange capabilities. Planned demonstrations of interim capability were delayed by a lack of fieldable capability amongst the coalition partners. Since the foundational MIP exchange capabilities were not fully constituted, expected initial efficiency measures were not obtained. Programmatically the Management Plan was approved, and the governing project agreement between The Technical Cooperation Program (TCCP) Memorandum of Understanding (MOU) signatories was coordinated. Singapore joined the ACTD at the invitation of USPACOM.</li><li>• FY 2007 Planned Output: The technical focus for COSMOS in FY07 will be on establishing a stable and sustainable MIP specification based information exchange and demonstration of fundamental role- and policy-based sharing amongst coalition partners. US Army planned fielding of Army Battle Command System version 6.4 will provide the basis for technical implementation and assessment. Efficiency will be measured in coalition partner readiness and willingness to participate in MIP specification based information exchange, and improved network performance through reduced</li></ul>					

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textual message exchange for C2 coordination. Coordinate transition of assessed capability to program of record. • FY 2008 Planned Output: Refer to the JCTD R-2a.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
CBRN Unmanned Ground Reconnaissance (CUGR)		3.600	1.800	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for CUGR as an FY05 new start. The outcome of CUGR is to 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 providing an unmanned capability. The first of these new systems (Thrust One) will replace the Double Wheel Sampling System (DWSS), currently in use, with a mobile Mass Spectrometer, using RAMAN technology. Since the DWSS can only be used when the vehicle is moving at a fast walk, replacing it with the RAMAN detector, which is producing reliable results at maximum vehicle speed, greatly increases mobility and flexibility for these units. The second technology (Thrust Two) is the incorporation of a small, remote controlled, sensor-equipped robot to be the recon crew's "point man" in high risk contamination reconnaissance. The efficiency of CUGR will be to utilize a machine rather than put a soldier at risk. CUGR addresses the capability gaps identified in the CBRN Baseline Capability Assessment, the JRO-CBRN Defense Mobilization Plan, and the supporting JCIDS Functional Area Analysis. Thrust One will transition as part of the Reconnaissance and Platform integration sensor block upgrade program and replace DWSS on Stryker, HMMWV and LAV vehicles. Thrust Two will become part of the Joint CBRN Dismountable Reconnaissance System (JCDRS). 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. ACTD will complete in FY 07. Outputs will be: to increase maneuver speed to 45 kph vice 11-22 kph: allow detection/identification of various classes of substances simultaneously vice one at a time; reduce mission consumables; enable reconnaissance into areas that otherwise would be inaccessible by manned vehicles; can be deployed into hazardous environments; offer a point detection capability; and provide the ability to collect liquid, solid and aerosol samples.</p> <p>• FY 2006 Output- Fully developed ACTD Management, Transition and Test Plans. Completed development of Concepts of Operations (CONOPS), Tactics, Techniques, and Procedures (TTP's) and Training Support Packages (TSP). Completed JCSD prototyping, systems engineering, technical testing and integration. Initiated modifications to JSLNBCRS shelter design, fabricate and integrate on HMMWV's. 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.</p> <p>• FY 2007 Planned Output - Complete JCSD/JSLNBCRS design integration, system technical manual and user training plan. Conduct 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). Complete ACTD.</p> <p>• FY 2008 Planned Output - Refer to the JCTD R-2a.</p>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Gunship Standoff Precision Munition (Danger Close CAS - Viper Strike)		6.200	6.400	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the need for Standoff Precision Guided Munitions (SOPGM) capabilities as a FY05 new start. The outcome 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. Outputs for this project include: Initial Proof-of-Concept (IPOC) of the SOPGM weapon 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</p>					

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flight test and deployed OCONUS in an extended user evaluation on an AC-130 to demonstrate the potential military utility of providing the gunship with a precision guided munition capability. Outputs and efficiencies: Modify the Viper Strike munition to integrate GPS, improved warhead lethality and data link capability to enhance target effects and facilitate man-in-the-loop control throughout the kill chain. Demonstrate sub-meter Circular Error Probable from 10-50 kilometer standoff ranges against moving and stationary targets within the Gunship target set with terminal guidance provided by the launch aircraft, ground teams and/or Unmanned Aerial Vehicles (UAVs). Demonstrate ability to accept and act on digital fire commands against multiple targets nearly simultaneously. Demonstrate ability to conduct steep or shallow attack profiles with varied avenues of approach suitable for targets in all terrain including urban environments. Planned transition: Software and hardware configurations have been finalized for first ship installation and initial flight tests in late FY 2006. Military Utility Assessment and initial capability are planned for FY 2007 with subsequent integration into the AC-130 fleet. The Combatant Command/User Sponsor is U.S. Special Operations Command (SOCOM) and the lead service/agency is also SOCOM.					
FY06 Output: Completed SOPGM Initial Proof-of-Concept (IPOC) weapon system development, ground integration and test. The SOPGM IPOC weapon system includes the Viper Strike munition, it's launch canister, a Battle Management System (BMS), munition carriage assembly, and aircraft integration components to support employment from the AC-130U. Verified physical, functional, and communication interfaces between the SOPGM IPOC system and the AC-130U and demonstrated electromagnetic compatibility of the SOPGM IPOC system and aircraft. Successfully validated SOPGM launcher assembly and demonstrated the Viper Strike munition safely separates from the aircraft. Obtained Nonnuclear Munition Safety Board approval of the system design and received flight certification for conducting the SOPGM IPOC weapon system end-to-end demonstrations. Built mass simulant munitions, instrumented SOPGM rounds, and SOPGM all up rounds to support the IPOC demonstration flights. Initiated engineering and ordered long lead parts for an extended user evaluation (EUE) of the SOPGM IPOC weapon system. The EUE will be conducted after successful completion of the IPOC demonstration flights to provide the warfighter an opportunity to refine SOPGM employment tactics in support of the Military Utility Assessment (MUA) and to employ the system in OCONUS operational scenarios in support of the Global War on Terror (GWOT ).					
FY07 Planned Output: Conduct the SOPGM IPOC flight demonstrations to validate end-to-end system performance and support an Initial MUA. Flight demonstrations will include joint operations with ground and 3rd party airborne platforms providing target designation. Following successful validation of the IPOC system in various test scenarios, the system will be turned over to the Air Force Special Operations Command (AFSOC) for an extended user evaluation (EUE). AFSOC will employ the SOPGM IPOC system in conjunction with training and OCONUS flight operations to refine tactics and collect data and gain operational experience in support of the GWOT. Complete the ACTD.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Epidemic Outbreak Surveillance (EOS)		7.400	8.900	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for EOS as an FY 2005 start. The outcome of EOS is to demonstrate and transition solutions that are transformational dual use for operational and clinical medicine as well as bio-defense. 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. Clinically, a practitioner, if faced with 100 cases of flu will assume you also have the flu if you exhibit the same symptoms. EOS will ensure a correct diagnosis more quickly while running a series of pathogen tests in the background to look for biological attack. The overall goal is to develop a business case that makes the technology affordable for and integrated into the command structure for both routine and wartime scenarios. 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. The first spiral of EOS has begun with the initiation of an avian flu (H5N1) warning network to established at 22 USAF sites worldwide. This system should be operational by the Fall, CY-2006, in time for the next flu season. DUSD/AS&C, USJFCOM (warfighter), AF/SG (technical manager), and JPEO/CBD (transition manager) are the principals for this ACTD. The ACTD will end in FY2008. Outputs and Efficiencies: Viral/Bacterial Agents per Chip Assay - 100 vice 20; Total Cycle Time per Individual Assay - 2 hours vice 8; Approximate Cost per Assay - \$40 vice \$500; Portability of Fully Capable System - 40 pounds vice 500; Rapid ID of Bio Agents vs. Backgrounds - 2 hours vice 1 day; Forensic Attribution of Agent Strains - days vice months; contain Outbreak and Reconstitute Forces - 2					

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days vice weeks. <ul style="list-style-type: none"><li>• FY 2006 Output- After an exhaustive due-diligence search, hardware was procured and initial monitoring of basic military trainees at Lackland AFB, TX, for outbreaks of candidate pathogens using level 5 research platforms, was begun. User training and concept of operations (CONOPS) and tactics, techniques, and procedures (TTP's) developed. Planning for technical demonstrations completed. Requirements for Level III prototype platform for small clinic venues (level III) established. Initial planning for avian flu warning network in progress, and interactions with CDC and FDA complete.</li><li>• FY 2007 Planned Output - Continue monitoring military trainees for outbreaks. Refine protocols and collect data for certification of EOS as a diagnostic tool. Continue refinement of CONOPS and TTP's. Continue previous activities and expand demonstrations to Joint arenas to include Carrier Battle Groups, Metro DC (NCR). Establish and monitor avian flu and provide warning as required.</li><li>• FY 2008 Planned Output - Refer to the JCTD R-2a.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Enhanced Explosive Resistant Coating (JEERC)	1.000	0.000	0.000	0.000
<p>The Joint Requirements Oversight Council validated the capability need for JEERCE as an FY-05 new start. The outcome of JEERCE is demonstration and transition of elastomer coating systems for protecting ships, vehicles, and building structures, while reducing personnel injuries from explosive and penetrating ordnance. The elastomer coatings offered the potential for affordable higher levels of personnel and asset protection at system weights comparable to existing approaches. JEERCE was planned as a 3-year project sponsored by U.S. Central Command. The lead Service is U.S. Navy. The outputs intended for demonstration in a JEERCE Military Utility Assessments are (1) cost and weight savings for vehicle, ship, and building protection; (2) increased protection for vehicle occupants against small arms fire, rocket propelled grenades, improvised explosive devices, and buried mines; (3) increased protection of personnel and equipment aboard ships against small watercraft delivered explosives, ballistic threats, and mines; and (4) increased protection of personnel and equipment in buildings against vehicle delivered explosives.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - With the concurrence of the user sponsor, the JEERCE project was concluded in 2006. Testing of vehicle coatings did not show significant protection improvement, nor weight or cost savings, compared to currently fielded vehicle protection capabilities. The ship protection capability will be handled as a Office of Naval Research effort, returning this portion to the technology base. Therefore, the vehicle and land efforts in JEERCE are terminated. The land structure protection capability is mature, but requires demonstration and assessment in harsh environments in the U.S. Central Command area of responsibility. This demonstration and assessment will be conducted in late 2006, and the JEERCE project will be completed. U.S. Central Command will use results of this demonstration to decide on investments for facility protection at key sites associated with Operations Iraqi Freedom and Enduring Freedom.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Coordinated Real-Time Engagement (JCRE)	3.200	2.600	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JCRE as an FY 2005 start. The outcome of JCRE will be to develop the CONOPS and the GIG-enabled software that enables Joint Real-Time Operations and Engagement across multi-Combatant Command (COCOM) Theaters and Echelons. JCRE will support Joint Operations by providing Net-Centric Command and Control Tools that greatly enhance Planning and Execution across multiple COCOMS. These tools will be provided as web services, so they can easily be extended to support 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; Joint Force Engagement Packages; and Joint Force Synchronization Tools. These JCRE technology components will be implemented using a Service Oriented Architecture (SOA) with distributed service orchestration. 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. Output and Efficiencies: % of relevant data that is properly synchronized; % of global operation centers that have Synchronization awareness; % of synchronization problems that go undetected for &gt; 10 minutes; Average time to detect a synchronization problem; Average time to determine impact of synchronization problems on effects; time to assemble and organize global effects; workload to assemble and organize global effects; time to synchronize global actions, capabilities, and resources; workload to synchronize global actions, capabilities, and resources; number of resynchronizations / number of original synchronizations (synchronization robustness); time to create a globally synchronized operational plan. The lead service is the Navy and the lead CoComs are U.S. Strategic Command and U.S. Special Operations Commands.</p>				

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<ul style="list-style-type: none"> <li>• FY 2006 Output - Demonstration #2. (Fall 2006) Demonstration of Joint Force Global Situational Awareness Tools, Joint Force Synchronization Tools, and Joint Force Engagement Packages in a Command Post exercise.</li> <li>• FY 2007 Planned Output - Demonstration #3. (Fall 2007) Demonstration of Joint Force Global Situational Awareness Tools, Joint Force Engagement Packages, and Joint Force Synchronization Tools in a battle staff exercise. A Joint MUA will be performed in conjunction with the final demonstration. Demonstration goals may be changed based on Operational Manager's direction.</li> <li>• FY 2008 Planned Output - Refer to the JCTD R-2a.</li> </ul>			
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008
Joint Force Projection (JFP)	4.600	3.900	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for Joint Force Projection (JFP) as a Fiscal Year (FY) 2005 new start. The outcome of JFP is to provide the joint warfighter the capability to identify, source, schedule, move, maintain visibility of, and close force capabilities across the entire Force Projection process. This capability will support joint deployment planning and execution, and provide emerging adaptive planning and Net-Enabled Command Capability (NECC) capabilities. The primary outputs and efficiencies to be demonstrated are (1) 100% net-centric access to core deployment planning and execution systems; (2) 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; (3) develop, test, and demonstrate a common, joint toolset for Joint Reception, Staging, Onward Movement, and Integration (JRSOI) activities to coordinate the flow of forces and sustainment into a theater during execution; (4) ability to create, manage, and track capability-based force packages and link them to an operational plan (100%); (5) 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 less than 96 hours. (6) Go from less than 5% of a capability in the current systems to 80% ability with the Joint Capabilities Requirements Tool and JFP to create, manage, and track capability-based force packages and link them to an operational plan. (7) Increase the end-to-end visibility of forces as capabilities from zero in the current process to 80% with JFP. (8) Potential of reducing the primary thread of deployment systems from 193 to 34, with an industry standard Return on Investment of 30%.</p> <p>Planned JFP transition: Improved capabilities will be provided to programs of record for the next generation of command and control and network services. JFP is planning a two- phase transition. Phase 1 will be to the Global Combat Support System followed by Phase 2 transition to the Net-Enabled Command Capability when it achieves Milestone B. The user sponsor is US Joint Forces Command (USJFCOM), and the lead Service/Agency is Defense Information Systems Agency (DISA).</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Developed and demonstrated a portal linking together about 25% of Force Projection activities from initial planning and requirements for capabilities generation, through sourcing, movement, and delivery to the Joint Force Commander. Gained access to about 20% of the required authoritative data sources and developed initial data structures to link capabilities to forces and forces to capabilities. Focus was on visibility and integration of existing data through application of advanced net-centric web-technologies. Developed initial concept of operations (CONOPS).</li> <li>• FY 2007 Planned Output - Finalize demonstration activities to complete the end-to-end Force Projection visibility capability; conduct two Joint Military Utility Assessments (JMUA) and an Extended User Evaluation; and begin to transition and deliver the new Force Projection capability into program of record, Global Combat Support System. The Final JMUA is scheduled for March, 2007. Complete the last two spirals of JFP ACTD deployment to include capabilities tracking throughout the deployment process and Joint Reception, Staging, Onward Movement, and Integration activities. After successful completion of the JMUA and subsequent recommendation of acceptance, DISA, as Transition Manager, will follow a two phase approach to transition. Phase one will be loosely coupled with the Global Combat Support System (GCSS) until Net-Enabled Command Capability achieves its Milestone B at which time JFP will begin its transition to DISA. Efficiencies gained are the initial technical development of up to 25% of the capability requirements for the Force Projection mission capability package of NECC. JFP fully integrated (100% of the capability that passed Military Utility Assessment) into NECC baseline capability for Force Projection. Efficiencies gained are the completion of the testing and evaluation and the certification of capabilities for NECC up to two years ahead of the program. The ACTD will complete in FY 2007.</li> </ul>			



OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603750D8Z - Advanced Concept Technology Demonstrations</b>		PROJECT <b>P523</b>	
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Medical Situational Awareness in Theater (MSAT)	5.600	1.900	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for MSAT as a FY05 new start. The outcome is to provide improved capabilities for medical situational awareness to commanders with integrated and timely health information fused with non-medical operational information incorporating a tailored decision support tool to make critical strategic and tactical decisions in a deployed environment. This capability will provide a fusion of medical data, personnel location information and health threat intelligence for situational awareness in theater. The capabilities include technologies for a web services environment fusing intelligence, chem.-bio threat, environmental health, unit location information; risk assessment; and decision support tools. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment (MUA) are 1) ability to perform surveillance of medical threats in deployed environments, 2) model threat dynamics, and 3) conduct risk assessment using decision support tools. The efficiencies to be gained are 1) the ability to provide commanders with a more complete medical situational awareness in an actionable time-frame, 2) the ability to make knowledge-based decisions with an automated decision-making tool tailored to medical operations. The transition strategy is to incorporate MSAT system tools and operational concepts, tactics, techniques and procedures into theater medical operations through the Global Combat Support System and Theater Medical Information Program programs of record. The sponsoring Combatant Command (CoCom) is U. S. Pacific Command (PACOM). Other organizations involved as participants, users of capabilities, and/or observers include: Armed Forces Medical Intelligence Center; OSD Health Affairs; Joint Staff Surgeon and the Defense Information Systems Agency. The executive agent is the Joint Staff, Logistics Directorate, Health Services.</p> <ul style="list-style-type: none"> <li>• FY2006 Output - Completed the Spiral 1 demonstration during the PACOM Cobra Gold exercise using the prototype Medical Support Enhanced system. Reach agreement by principal participants on revised funding strategy and project approach. Plan integration with Global Combat Support System. Use Spiral 1 demonstration assessment in development of spiral 2 capability and integration into the Theater Medical Information Program presence in the GCSS Web Services Gateway.</li> <li>• FY2007 Planned Output - Execute the Spiral 2 demonstration with modeling tools and decision support tools using medical operations, epidemiology, environmental, patient tracking, intelligence and syndromic surveillance information.</li> <li>• FY2008/09 Planned Output - Refer to the JCTD R-2a.</li> </ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Rapid Airborne Reporting & Exploitation (RARE)	1.200	0.400	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for RARE as an FY-05 new start. The outcome of RARE is to enable the production of critical, time-sensitive, thermal IR, advanced geospatial intelligence (AGI) from existing airborne assets under control of theater commanders. The outcome will include documented capabilities to produce special measurements from the U-2 SYERS-2 and the Global Hawk ISS platforms / sensors. The three-year RARE ACTD will complete a JMUA in FY07 and then transition into U-2, Global Hawk and AF DCGS programs of record. The primary efficiency and output to be demonstrated is the increase in number and value of EEI's that can be provided to the users / data exploiters with negligible additional cost in the acquisition, operation and maintenance of the collection systems. In FY 2008 the RARE capability will transition to AF DCGS, U-2 and Global Hawk programs. The planned transition status is to integrate the RARE capability into the Common MASINT Exploitation Tool (COMET) software package and into the concept of operations of the Senior Year Electro-Optical Reconnaissance System-2 and Global Hawk sensor systems. The ACTD will also deliver documentation/lessons learned to enable capability for other airborne platforms. The lead service is the U.S. Air Force, and the ACTD User Sponsor is the U. S. Central Command (CENTCOM). Transition Manager is ACC/A2.</p> <ul style="list-style-type: none"> <li>• FY 2006 Output - Conducted data collection and evaluation activities for both U-2 and Global Hawk systems. Conducted Limited Utility Assessment (LUA) at NASIC. Continued system performance characterization and beta operational activities at NASIC. Conducted planning and three week capability demonstration at DGS-3, leaving behind an initial RARE capability.</li> <li>• FY 2007 Planned Output - Complete system performance characterization and formal exploitation software package. Plan and conduct a concluding Joint Military Utility Assessment. Complete detailed preparations for transition, including CONOPs and operational requirement documents. End beta operational support at NASIC and support stand-up of operations at DCGS locations. Complete the</li> </ul>				

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ACTD.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Sea Eagle		2.100	1.000	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for Sea Eagle as an FY 2005 start. The outcome of Sea Eagle will be to demonstrate and transition technologies to provide persistent, clandestine, and unattended monitoring of maritime areas in a Special Operations Forces (SOF) deliverable "system of systems". These sensors and systems will be deliverable by SOF and networked in a multi-media (sea, air, land) system-of-systems approach. Sea Eagle will greatly increase SOF's ability to clandestinely conduct persistent, intrusive Intelligence, Surveillance, and Reconnaissance (ISR) in maritime areas. The warfighter will tactically emplace Sea Eagle systems to provide targeted, tactical information that complements national and theater intelligence assets to enable a layered intelligence collection strategy. 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. Outputs and Efficiencies: The overarching output for Sea Eagle is persistence. This output incorporates a variety of initiatives such as power management, intelligent triggering, and signal discrimination to optimize system performance and persistence. Measures of persistence will be relevant for individual component, subsystem, and overall system performance. Quantitative metrics are classified. USSOCOM is the COCOM/User Sponsor; Navy is the Lead Service.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Demonstrated the land based network, sensors, clandestine maritime platform and gateway communications in January 2006. Conducted successful technology demonstration of maritime buoy in April 2006. All systems operated according to specification.</li></ul> <p>The land network architecture sensors were demonstrated in a Limited Military Utility Assessment in June 2006. Demonstration was conducted by Seal Delivery Team Two, and evaluated by OPTEVFOR. Obtained valuable user feedback for incorporation into Spiral II. System has shown potential for military utility. Selected underwater networking protocol and acoustic sensor technology. Developed CONOPS and Tactics, Techniques, and Procedures (TTPs). Technologies that demonstrate military utility will be incorporated for transition as a Program of Record under USSOCOM's Global Sensor Network.</p> <ul style="list-style-type: none"><li>• FY 2007 Output: Sea Eagle Security Classification Guide approved. Demonstrate the undersea network and sensors. Demonstrate improved land network capabilities with enhanced networking capability, data rate, and persistence. Upgrade land network protocol and integrated additional land sensors. Incorporate underwater communications and sensors into a clandestine, close access, mesh network: Demonstrate Unattended Maritime System and improved Unattended Ground System. Transition capabilities with immediate military utility. Refine CONOPS and TTPs. Integrate Naval SOF assets (SDV and ASDS) with the Sea Eagle network.</li><li>• FY 2008/09: Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
SOF Long Endurance Demonstrator (SLED)		3.700	5.100	0.000	0.000
<p>The JROC validated the capability need for SLED as an FY-05 new start. The outcome of SLED is to demonstrate an unmanned vertical take off and landing vehicle (the DARPA developed 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. Efficiencies and outputs will be evaluate the A160 for its capability to perform designated functions. Platform performance must be compatible with payload and mission requirements in terms of altitude, endurance, range, weight (platform and payload), and payload power. The payloads must meet mission requirements and be compatible with A-160 capabilities and constraints. Planned Transition is to integrate with USSOCOM components.</p> <p>U.S. Special Operations Command is the user sponsor and lead agency.</p> <ul style="list-style-type: none"><li>• FY 2006 Outputs - Demonstrated LIDAR payload on surrogate vehicle. Successfully demonstrated PSYOP broadcast payload, resupply (hook) capability, JAVELIN missile integration, and video sensor on MAVERICK (A160 surrogate unmanned helicopter). Continued Hellfire payload integration on A160. Continued integration activity to prep for SAR/GMTI, SIGINT, Comm Relay, and Emergency Personnel Recovery (EPR) capabilities on A160. Delay in DARPA returning A160 aircraft to flying operations is pushing demonstration activity into FY 07. Use of MAVERICK surrogate is mitigating</li></ul>					

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impact. <ul style="list-style-type: none"><li>• FY 2007 Planned Outputs - Complete CONOPs development. Select and demonstrate representative support payloads, such as SAR/GMTI, SIGINT, Comm Relay, and EPR. Demonstrate Hellfire on A-160. Develop slide on/slide off payload capability. Plan and perform final MUA. Final MUA activities may slip to first quarter FY 08 as a result of DARPA FY06 grounding and re-certification activity for A160.</li><li>• FY 2008 Planned Outputs - Refer to the JCTD R-2a.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Tactical Satellite (TacSat)-2 (Road-Runner)	2.800	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for Tactical Satellite (TACSAT) II as an FY-05 start. The outcome of TACSAT II is to demonstrate 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. It will demonstrate on-demand, cost-effective augmentation of space forces. Capabilities will be tailored to specific and emerging crises and use the latest, high-payoff technologies to avoid surprise and counter terrestrial and space threats. These attributes help rapidly reconstitute destroyed or degraded space capabilities to continue military action. TacSat-2 will be Internet Protocol addressable and function as a node within a network-centric architecture. Warfighters with Secret Internet Protocol Router Network access can task the satellite's sensors for geo-rectified signals information and one-meter resolution visible imagery on areas of interest. Outputs and efficiencies are: Spacecraft launch site arrival to launch - objective: 7 days, threshold: 14 days. Autonomous rapid on-orbit spacecraft and payload checkout and initialization - objective: 24 hours, threshold: 72 hours. Payload downlink data rate - objective: 274 Mbps, threshold: 1.15 Mbps. Planned transition: The Services will use the ACTD results to update their future operational concepts and to refine National Security Space Office's Responsive Space Operations Architecture. Proven technologies, such as the Common Data Link, will be integrated to increase data transmission rates from space to the warfighter and autonomous state of health processes to reduce satellite operations and maintenance costs. The lead Combatant Commander (CoCom) is the U. S. Strategic Command. The lead service is the Air Force.				
<ul style="list-style-type: none"><li>• FY 2006 Output - Completed satellite testing, integration, launch vehicle construction and preparation. During FY 2007 the funding received in FY 2006 will facilitate the Launch satellite, fund the MUA initiation, and assist TacSAT to participate in military exercises.</li><li>• FY 2008 Planned Output - Refer to the JCTD R-2a.</li></ul>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Weapon Data Link Network (WDLN)	4.900	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the need for WDLN capabilities as a FY-05 new start. The outcome of the Weapon Data Link Network (WDLN) will reduce risk for the integration of network-centric weapons in general, by defining architectures, interfaces, messages and tactics needed to allow weapons to function within the networks of today and tomorrow. 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. Outputs and efficiencies: WDLN will design and exercise a realistic tactical network that enables network-centric weapon operations, demonstrating the following: - Allocation of network time slots to weapons - UHF Satcom and L-band (Link-16) messaging via gateway to network - Inclusion of other network participants (e.g., CAOC, ground forward air controller, shooter) - Information transfer required to implement desired datalink benefits such as weapon inflight health/tracking, Bomb Impact Assessment (BIA), re-targeting, etc. - Candidate weapon specific issues through flight demonstrations of WDL components for Small Diameter Bomb, Joint Air to Surface Standoff Missile and Joint Standoff Weapon. Additional information will				

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be gained for integrating datalink capability on Miniature Air Launched Decoy - Jammer version. Transition Completed: Demonstration residuals including weapons networking message sets and standards were transitioned to the Air Armament Center PEO in FY 2006 for integration into Small Diameter Bomb Phase II, Wind Corrected Munitions Dispenser?Extended Range, Joint Standoff Weapon, Joint Air-to-Surface Standoff Missile, and other future munitions. The Combatant Command/User Sponsor is U.S. Joint Force Command (USJFCOM) and Central Command (USCENTCOM). The Lead Service/Agency is the Air Force.					
• FY 2006 Output - The WDLN ACTD operational demonstration was successfully completed and a Joint Military Utility Assessment has been published. Activities include demonstration of : a viable network architecture including a communication equipment suite that accommodates network enabling hardware; and Line Of Sight (LOS) and Beyond Line Of Sight (BLOS) network configurations including a surrogate Combined Air Operations Center (CAOC) and other C2 platforms. Residual networking standards and message sets for weapons programs transitioned to the Air Armament Center Weapons PEO for incorporation into weapon programs including JASSM, SDB Increment 2, WCMD-ER, JSOW-C, and EW programs such as MALD-J. ACTD completed.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Counter Intelligence - Human Intelligence Architecture Modernization Program, Intelligence Operations Now (CHAMPION)		0.000	6.400	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for CHAMPION as a FY06 new start Joint Capability Technology Demonstration. The outcome will provide improved capabilities for the counter-intelligence, human-intelligence and special forces communities of interest. These improvements will provide an accessible and actionable information system for management of the CI/HUMINT/SOF collection, mission planning and asset management information. The capabilities include technologies for integration of biometrics and geospatial information. The primary outputs to be demonstrated to the users and evaluated in the Military Utility Assessment are: 1) joint data standard for human domain; 2) CHAMPION information collection tool and associated concept of operations (CONOPS), tactics, techniques and procedures (TTPs); 3) CI-HUMINT/SOF source management tools with federated search capability and data replication/access across multiple networks; and 4) integrated language translation collection, CIHUMINT source vetting tool and data access tools for multi-intelligence discipline fusion. The efficiencies to be gained are; 1) improved effectiveness of HUMINT operations; 2) elimination of Human domain data stovepipes; 3) joint human domain data standard; 4) improved web enabled data access across multiple networks and security levels; 5) Joint CONOPS/ TTPs; 6) Biometric and geo-spatially enabled mission and asst management tools. The transition strategy is to incorporate CHAMPION capabilities into the Distributed Common Ground Station program of record (POR). The sponsoring Combatant Command (CoCom) is the U. S. Central Command (CENTCOM). Other organizations involved as participants, users of capabilities, and/or observers include USSOCOM, USJFCOM, Counter-Intelligence Field Activity, Defense Intelligence Agency, National Geospatial Agency, and the National Security Agency. The lead service is the Army.					
• FY2006 Output - Refer to the JCTD R-2a.					
• FY2007 Planned Output - Complete Spiral 1 limited assessment report and Spiral 2 assessment plan. Execute the Spiral 2 demonstration and assessment of Spiral 2 deliverables. Prepare final assessment plan. Complete approval of transition plan. Secure funding for fielding of spiral deliverables and interim capabilities found to have military utility by operational sponsor.					
• FY2008/09 Planned Output - Refer to the JCTD R-2a.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Comprehensive Maritime Awareness (CMA)		0.000	6.400	0.000	0.000
The Joint Requirements Oversight Council validated the capability need for CMA as an FY-06 new start. The outcome of CMA is demonstration and transition of technologies and operations concepts showing the value of information sharing and effective information management for improving global Maritime Domain Awareness. CMA will demonstrate the value of both interagency and international (Republic of Singapore) information sharing. CMA will demonstrate data management techniques such as automated anomaly detection and threat evaluation, and application of the Department of Defense Net-Centric Data Strategy. CMA is a 4-year project sponsored by U.S. Pacific Command, U.S. Northern Command, and U.S. European Command. Initial capabilities will be demonstrated and operated in					

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CY-06, with advanced capability spirals in FY07 and FY08, and transition support in FY09. The lead Service is U.S. Navy. The primary outputs and efficiencies to be demonstrated in CMA Military Utility Assessments are (1) percent increase in the number of maritime tracks and identified tracks in U.S. military, interagency, and coalition maritime operational pictures; (2) percent increase in numbers of maritime contacts with amplifying information (such as crew list, cargo manifest, port-of-call history, etc.); (3) percent increase in numbers of vessels of interest monitored by maritime intelligence analysts; (4) number of automated anomaly detections and threat alerts provided to maritime intelligence analysts; (5) increase in number of agencies (U.S. and international) engaged in information sharing across a common service oriented architecture. • CY 2006 Output - Refer to the JCTD R-2a. • FY 2007 Planned Output - Continue operating FY 2006 spiral capability. Integrate capabilities of the U.S. Coast Guard Vessel Tracking Program, and automated anomaly and threat assessment, at key regional sites determined by architecture decisions. Conduct interim military utility assessment. Complete planning for network services and architecture implementation for FY 2008 for interagency sharing. • FY 2008 Planned Output - Refer to the JCTD R-2a.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Event Management Framework (EMF)		2.500	2.600	0.000	0.000
The outcome of EMF is to demonstrate the ground breaking capability of vertical and horizontal sharing of heretofore stove-piped information among organizations within and outside of DOD by emphasizing EMF policies; operational concepts; and tactics, techniques and procedures. 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. The primary outputs and efficiencies to be demonstrated in the ACTD Military Utility Assessment (MUA) are: 1) Integrated EMF policies; operational concepts; and tactics, techniques and procedures; 2) Improved and more timely incident and information correlation to "connect the dots"; 3) Faster visualization of analytic results to aid decision makers in event assessment; 3) Addition of EMF databases and engine servers to cache data; 4) Capability to share information and analytical results across COCOMs, Coalitions, Services, and its interagency partners; 5) Reduced time required for event based decision making. EMF is a three-year project under the sponsorship of the United States Northern Command. The lead agency is the Defense Information Systems Agency (DISA).  • CY 2006 Output - 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, smart agents, and cryptographic devices. Develop preliminary DOTMLPF required documents. Conduct command post exercise 1.  • CY 2007 Output - Develop Spiral 2 capabilities - incident and event reasoning prototype, ontology and data models. Develop portal interfaces. Add regional partners. Provide advanced cryptographic devices. Refine smart agents. Refine CONOPs and TTPs. Plan Joint Military Utility Assessment (JMUA). Conduct command post exercise 2.  • CY 2008/09 Output - Refer to the JCTD R-2a.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Extended Space Sensors Architecture (ESSA)		0.600	2.800	0.000	0.000

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603750D8Z - Advanced Concept Technology Demonstrations</b>			PROJECT <b>P523</b>										
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for ESSA as a FY06 new start. The ESSA ACTD focuses on creating a joint, distributed, net-centric space surveillance framework. The expected outcome of the ESSA ACTD is a flexible, responsive and scalable command and control family of systems which enhance United States Strategic Command's (USSTRATCOM) Space Situational Awareness (SSA) capability. ESSA is a three-year ACTD sponsored by USSTRATCOM and Commander Joint Forces Component Command Space (CDR JFCC SPACE). ESSA is planned for a final demonstration in mid FY 2009 and transition to a Programs of Record (PORs) will occur by the end of FY 2009. The lead service is the U.S. Air Force. The expected outputs and efficiencies of the ESSA ACTD is to develop and demonstrate net-centric sensor architecture which provides more timely SSA information via the Secret Internet Protocol Router Network (SIPRNET) to decision makers. ESSA efficiencies will include: increased timeliness for delivering data products from sensor to command and control (C2) node; ability of netted sensors to perform more efficient strategies for searching, tracking, identifying and monitoring space object population; ability of C2 node to observe sensor operations in real-time and make rapid decisions in response to space events; and the ability of architecture to support both theater and strategic users. While this ACTD does not answer all of the SSA gaps and shortfalls identified in USSTRATCOM's Space Control Joint Capability Document (JCD), it does address the number one priority identified in the JCD of synergistically exploiting all available SSA data.</p> <p>• FY 2006 Planned Output - There are two main focus areas for FY06: technical and programmatic. The technical has developed the initial ESSA Functional Requirements Document (FRD) and Technology Plan which details the merging of existing technologies into the ESSA sidecar. The technical team, lead by U.S. Army Space and Missile Defense Command (SMDC) is continuing work on Memorandums of Agreement (MOA) with sensor site participants at Reagan Test Site (RTS) - Kwajalein; Ground-based, Electro-Optical Deep Space Surveillance System (GEODSS) - Maui and Haystack Auxillary (HAX) at Westford, Massachusetts and is addressing security accreditation issues with getting access to the SIPRNET. Programmatically the Implementation Directive (ID) was written, coordinated and signed by all participating parties. The ESSA Management Plan is complete and currently in three-letter coordination. The Concept of Operations (CONOPS) and Demonstration Evaluation Documents are both complete for year one of the ACTD. The transition plan is currently under development.</p> <p>• FY 2007 Planned Output - The focus in FY07 is on the first of three demonstrations. The first demonstration is scheduled to take place in Dec 06. This imaging demonstration will validate the ability of an ESSA sensor sidecar to provide web-based access to information and services. The objective is to expose operational-related information and data derived from the Haystack Auxiliary (HAX) radar located in Westford, MA. This will include pre-data collection operational information (e.g., sensor tasking, corresponding data collection plans, sensor status, etc.), real-time sensor data (i.e., imagery, metric observations, and sensor state) and post-data collection (e.g., user defined re-imaging service, archived mission data). From an operational viewpoint, this demonstration will provide Near Real Time (NRT) access to information on the stability of certain satellites and insight into the tasking of a particular sensor. The utility of having radar imagery available to the user along with a wire frame model is to provide a quick indicator as to the stability of the satellite. The demonstration will take place at three locations: The Space Innovation and Development Center (SIDC) at Schriever AFB, The Joint Space Operations Center (JSPOC) at Vandenberg AFB and Massachusetts Institute for Technology Lincoln Labs (MIT/LL).</p> <p>• FY 2008 Planned Output - Refer to the JCTD R-2a.</p>														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 60%;">Accomplishment/Planned Program Title</th> <th style="width: 10%;">FY 2006</th> <th style="width: 10%;">FY 2007</th> <th style="width: 10%;">FY 2008</th> <th style="width: 10%;">FY 2009</th> </tr> <tr> <td>Joint Enable Theater Access - Sea Ports of Debarkation (JETA-SPOD)</td> <td style="text-align: center;">0.200</td> <td style="text-align: center;">4.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> </tr> </table>					Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009	Joint Enable Theater Access - Sea Ports of Debarkation (JETA-SPOD)	0.200	4.000	0.000	0.000
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009										
Joint Enable Theater Access - Sea Ports of Debarkation (JETA-SPOD)	0.200	4.000	0.000	0.000										
<p>The Joint Requirements Oversight Council (JROC) validated the need for JETA-SPOD capabilities as a FY-06 new start. The outcome of JETA-SPOD is to develop and demonstrate: a Lightweight Modular Causeway System (LMCS) transportable by and employable from intra-theater sealift vessels such as the JHSV; and an austere port Decision Support Tool for selection of optimal sites from multiple austere SPOD options. The capabilities proposed for development in this ACTD will optimize the use of the Joint High Speed Vessel (JHSV), current Army/Naval watercraft, and Lines of Communication (LOC) bridging requirements by providing increased and more rapid flow of combat power and sustainment through multiple theater austere seaport locations. This provides to Joint/Combined Force (J/CFC) commanders a means to mitigate threat anti-access activities and increases flexibility to conduct operational maneuver from strategic distances. JETA-SPOD ACTD is a three-year project under sponsorship of U.S. Pacific Command, with completion of development and demonstration by end of FY2008; and transition to U.S. logistics systems by FY2009. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the ACTD Military Utility Assessment (MUA) are: 1) the LMCS will reduce weight, volume, and deployment time compared to existing military causeway and bridging systems; 2) the operational parameters for evaluating the military utility of the LMCS are based on a quantitative and qualitative comparison to the capability provided by the existing Modular Causeway System (MCS); 3) LMCS will result in a reduction in weight and volume by 50% over the MCS; a reduction in deployment time by 50% over the MCS; and elimination of in-water connections; 4) the</p>														

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<p>Decision Support Tool capability equates to an increase in availability of throughput prediction information for 50-80% of worldwide small ports; and 5) the combination of LMCS and the Decision Support Tool includes a five-fold increase in the number of JHSV-compatible ports and doubling of the port throughput rate. LMCS Output includes incorporation of state-of-the-art connector and tensioning technology; innovative emplacement and recovery system applicable to multiple military/civilian platforms; innovative self-locking and strap tensioning technologies; high strength fabrics for robust, lightweight floatation technology that quickly inflates/deflates for rapid LMCS emplacement and recovery; puncture/abrasion resistant floatation components; lightweight decking materials; and common 8x20 rapid transport footprint design. The efficiency is that the transport (land/sea) cost of moving causeway capabilities into austere SPODs will be significantly reduced; and causeway capabilities will arrive in theater more rapidly with a smaller logistics footprint. Austere Port Decision Support Tool Output includes query-able austere world port data; a port characterization model; rapid port enhancement tool; austere port throughput simulation; a comprehensive set of environmental and physical factors affecting ingress/egress throughput rates; and parametric algorithms for throughput rates in small ports and rates for planning and execution of vessel offload operations; developed with an open source tool; user friendly Graphical User Interfaces (GUI); and runs on a laptop computer. The efficiency is that the warfighter will possess flexibility and a broader range of options to establish austere seaports as strategic or operational maneuver entry points with a greater assurance of success. The transition strategy for LMCS and the Decision Support Tool is to establish Programs of Record under the guidance of two Transition Managers: Product Manager, Army Watercraft Systems (PdM AWS) and USTRANSCOM, respectively.</p> <p>• FY 2006 Output - Implementation Directive approved; developed ACTD Management Plan and initial CONOPS; developed engineering design tests and system design; completed prototype modeling and human factor testing; planned transition; developed Demonstration and Assessment Management Plan (DAMP); conducted early user assessment and incorporated key user required design changes; conducted component demonstrations; and identified Decision Support Tool geographic areas and collected small port data.</p> <p>• FY 2007 Planned Output - Conduct early user evaluation and incorporate changes prior to testing; develop Training Plan and begin user training; complete full-scale component demonstration and testing, plan residuals and technical support, update Management Plan and CONOPS; refine DAMP; lock Decision Support Tool data requirements; develop Decision Support Tool Beta Version as Spiral Output to the field; and continue transition planning.</p> <p>• FY 2008/09/10 Planned Output - Refer to the JCTD R-2a.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Modular Intermodal Distribution System (JMIDS)	0.000	8.900	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for JMIDS as an FY06 new start. The outcome of JMIDS is to demonstrate, analyze and transition joint service, all-mode containers and platforms that are equipped with Automatic Identification Technology (AIT). JMIDS will permit efficient, seamless, and visible movement of supplies through the distribution system from CONUS-based depots and vendor locations to tactical end users. This includes movement through the Seabase to support forward operating expeditionary and task force units. JMIDS technologies will enhance the ability to source load supplies that can move from origin to destination without the current intensive and inefficient handling and re-packing caused by: 1) incompatible air and ground cargo systems; and, 2) sorting, storing, and/or reconfiguring cargo. The goal of this JCTD is to improve the agility, flexibility, efficiency, effectiveness, responsiveness, and interoperability of the Joint Distribution System.</p> <p>JMIDS is a three-year project under sponsorship of US Transportation Command, with JCTD completion by the end of FY 2008, and transition to selected Program Manager(s) / Program of Record(s) [Joint Modular Intermodal Platform (JMIP) and Joint Modular Intermodal Container (JMIC)] by FY 2009. The lead service is Army. The primary outputs and efficiencies to be demonstrated in the JCTD Limited and Capstone Military Utility Assessments are: (1) Timeliness of JMIDS technologies to deliver supplies to operating forces as compared to present distribution system; (2) Capability to support transportability across different modes by reducing re-handling/ packing time; (3) Improved supply flow through the available technologies- Tonnage processed per hour, Time per load-out of platform Wait times per load-out; and, (4) Capability to support Command Level Situational Awareness-Accuracy of AIT tracking technology (contents, position), percent of JMICs tracked correctly, overall improvement of situational awareness upon use of AIT.</p> <p>• FY 2006 Output - Refer to the JCTD R-2a.</p>				

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<ul style="list-style-type: none"> <li>• FY 2007 Planned output - Complete acquisition of JMIC, JMIP and AIT demonstration hardware. Conduct two Limited MUA Military Utility Assessments (MUAs) and a Capstone MUA. Conduct cost, weight, producibility trade studies for the JMIP and JMIC prototypes. Complete three Capability Development Documents (CDD) spirals, including Business Case Analysis and Integrated Logistics Support planning drafts. Commence CDD staffing through Joint Staff and Services. Final demonstration date is September 2007. Deliver hardware, conduct engineering tests, and plans for a Coalition Warfare Demonstration of the JMIDS hardware with the United Kingdom.</li> <li>• FY 2008 Planned output - Refer to the JCTD R-2a.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Large Data	0.000	6.400	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for the Large Data (LD) Joint Capability Technology Demonstration (JCTD) as an FY-06 new start. The outcome of Large Data is to 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. Large Data is a three-year project under the sponsorship of the United States Strategic Command. The primary outputs and efficiencies to be demonstrated in the JCTD Military Utility Assessment are: 1) Synchronized databases across all major operational storage nodes, i.e. cache coherency; 2) Timely delivery and sharing of data - instant real time access and collaboration; 3) Intuitive way for users to navigate large data sets (petabytes to exabytes); 4) Ability to easily visualize huge amounts of data that is being generated; 5) Capability to perform "trackback" or change analysis on an unprecedented scale.</p> <p>The user sponsor is the U. S. Strategic Command and the lead agencies are the National Geospatial Agency (NGA) and Defense Systems Agency (DISA). Transition is planned for FY 09 after successful JMUA to National Geospatial Agency (NGA) and Defense Systems Agency (DISA). Both agencies are participating in the JCTD as Co-Transition Managers. The Large Data JCTD is scheduled to complete in December 2008.</p> <p>FY 2006 Output - Refer to the JCTD R-2a.</p> <p>FY 2007 Planned Output - Spiral 2: Develop holistic target characterization prototypes and deploy to USFK mini node. Add 4th CONUS node. Install Trans-PAC link. Develop capability for geo-temporally indexed multi-agency data, with security, identity management, and Continuity of Operations features. Perform multi-node testing on classified and unclassified networks. Provide large geospatial visualization displays and advanced data integration. Refine CONOPs and TTPs. Plan JMUA. Conduct demonstration in USFK and JEFX.</p> <p>FY 2008 Planned Output - Refer to the JCTD R-2a.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
MASINT Tactical Intelligence Fusion (MASTIF)	4.900	6.400	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for MASCOT renamed MASTIF as an FY-06 new start. The outcome of MASTIF is to provide the warfighter with a set of Network Centric Intelligence, Surveillance and Reconnaissance (ISR) collection systems and management applications to employ traditional and non-traditional, distributed sensing against concealed/obscured targets, with the goal of enhancing detection, classification, characterization, and tracking of these targets. This five-year project is under the sponsorship of the United States Special Operations Command (USSOCOM) and United States Southern Command (USSOUTHCOM). The lead DOD agency is the Defense Intelligence Agency (DIA). The primary outputs and efficiencies to be demonstrated are: 1) exploit Measurement and Signatures Intelligence (MASINT) technologies and develop new sources and methods to counter adversary concealment and deception techniques, 2) develop new methodologies for sensor-to-sensor communications to enable tipping and cueing, and 3) seek new fusion processing systems to make maximum use of the data to solve the difficult problem of concealed/obscured targets.</p>				



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<ul style="list-style-type: none"><li>FY 2006 Output - Drafted, coordinated and completed a fully signed Implementation Directive (ID). Drafted, coordinated and refined specific user requirements that are used to identify useful applications and technology. ACTD Management IPT moved forward in understanding the intelligence operational concept and the system CONOPS. Worked with COCOMs and other government agencies to research and leverage ongoing fusion studies, intelligence initiatives/products that could bear on MASTIF ACTD capability leaning toward harmonization of fielded capabilities and a successful transition. Reached tentative agreement with NGA for future MASTIF participation in an Empire Challenge exercise during the Extended User Evaluation Period (EUEP). Began transition planning by examining interoperability requirements. Finalized critical operational issues for operational assessment. Began military utility assessment planning.</li><li>FY-2007 Planned Output - Establish required minimum SETA technical support for Technical and other IPTs. Finalize system design. Establish necessary MOA's for demo and test equipment, and issue contracts to start development of fusion engine and system integration. Coordinate necessary MOA's for testing and demonstrating of single and dual sensors over FY07-08. Secure necessary airborne test platform, sensor systems and integrate systems onto test platform. Explore all-source sensor applications using MASTIF capability. Work with operational COCOM and transition sponsors to continue transition planning for FY 09.</li><li>FY 2008/9/10 Planned Output - Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Node Management and Deployable Depot (NoMaDD)		3.100	2.600	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for NoMaDD as a FY-06 new start which is demonstrating technologies to address critical delays in getting needed supplies to the warfighter. Loss of visibility of items in the distribution pipeline and the inability to provide realistic delivery dates or effectively adjust the flow of commodities for delivery at the right place at the right time continue to impact the effectiveness of our forces. Node Management will provide distribution node managers the visibility needed to make logistics decisions to positively affect the distribution system. Deployable Depot will provide the ability to quickly establish a supply and distribution center in theater to control the physical flow of materiel moving into and through the theater. Together, these capabilities will provide the logistic responsiveness necessary to support our warfighters in any theater of operation. NoMaDD's effectiveness will be measured through its contribution to sustained logistics for major military deployments. Specific outputs and efficiencies will include: 1) increased accuracy in accounting for supplies resulting in reductions in customer wait time; 2) improvements in required airlift to support sustainment; 3) reductions in container demurrage costs and repeat requisitions. The planned transition for NoMaDD: Node Management will transition to the Army's Battle Command Sustainment Support System. The Deployable Depot will become a program of record and be managed by DLA. The Combatant Command/User Sponsor is the U.S. Transportation Command (TRANSCOM) and the lead service/agency is Defense Logistics Agency (DLA).</p> <ul style="list-style-type: none"><li>FY 2006 Output - Developed and demonstrated initial spirals of Node Management tools to monitor in-transit visibility of supplies moving through the pipeline. A Limited User Evaluation was conducted for Node Management. Design and equipment requirements were finalized for the Deployable Depot and the purchase of equipment was initiated. Development of Concepts of Operations, Tactics, Techniques and Procedures, and an Integrated Assessment Plan for both Node Management and Deployable Depot were initiated.</li><li>FY 2007 Planned Output - Continue spiral development and demonstration of Node Management capabilities to include; mode and node capacity, worldwide inventory of supplies, fuels distribution, requisition status, container management, and joint asset visibility. Complete procurement of equipment for the Deployable Depot and deploy field-suitable communications and depot operating software. Concepts of Operations, Tactics, Techniques and Procedures, and Integrated Assessment Plan will be finalized for Node Management and Deployable Depot. Transition plans for both Node Management and Deployable Depot will be developed and transition of proven Node Management capabilities into the Army's Battle Command Sustainment Support System will begin. A Limited Utility Assessment of the Theater Consolidation and Shipping Point component of Deployable Depot will be held in April 2007. In addition, NoMaDD may participate in the Bright Star exercise in November.</li><li>FY 2008/09 Planned Output - Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Small UAV (SUAV)		1.900	3.200	0.000	0.000

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<p>The JROC approved the capability need for SUAS as an FY-06 new start. The outcome of SUAS is to address Joint operational concerns noted during on-going operations through the integration of new technology across the entire class of Small UAVs. The outputs and efficiencies to be demonstrated are: technology insertions to provided measurably improved performance/logistical support in the following areas: Command, Control and Communications (C3); Payload Integration; Targeting; Platform Related Issues (power, propulsion, etc.); improved operator training though the use of integrated training programs with emphasis on simulation; improved and more efficient Tactics, Techniques, and Procedures (TTP) across the Services for small unit real-time reconnaissance and surveillance capabilities. New operational capabilities will be evaluated and no less than once per year. Transition strategy: FY2009/2010 is the transition period. The capabilities will be integrated into USSOCOM systems, and available for integration into all SUAS customers assets (spiraled out of the ACTD into the field as they become available). The User Sponsor and Lead agency is U.S. Special Operations Command (USSOCOM).</p> <ul style="list-style-type: none"><li>• FY 2006 Outcome - Initiated ACTD. Began work and OSD approval process for a spectrally compliant and overall more data link and C3 structure (increase number of vehicles able to be controlled from the current 4 per geographical area). Began CONOP development. Evaluated PUMA long endurance small UAS, developed CONOP for flying 2 vehicles from one control station. Completed LMUA on AquaPUMA (marinized PUMA), supported deployment of High Speed Vessel. Anticipate early fielding of demonstration AquaPUMA system as a result of this demo.</li><li>• FY 2007 Planned Outcome - Continue technology definition and cut in (spiral fielding). Begin TTP development. Continue CONOP refinement. Perform two limited assessments and one Interim Military Utility Assessment to support fielding of capabilities.</li><li>• FY 2008/09 Planned Outcome - Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Communications/Navigation Outage Forecasting System (C/NOFS)		0.400	0.000	0.000	0.000
<p>The JROC approved the capability need for CCID as an FY-00 new start. The outcome of C/NOFS is to predict the satellite space environment and alert control operators to place satellites in protective mode when disturbed, ionospheric conditions are likely. Outputs and efficiencies of C/NOFS products will attempt to measure: 1) accurate and timely representation of ionospheric scintillation situational awareness impacting usage of UHF SATCOM and GPS for the nowcast, 1-3 hour, 4-6 hour and 24+ hour time periods; 2) reliably disseminate to warfighters that employ the products for military operations planning and execution; 3) acceptable dissemination times for warfighter employment; 4) Increase situational awareness to improve military operations planning and execution employing UHF SATCOM and GPS assets; 5) Increase the situational awareness to improve the ability to isolate asset degradation or outage due to scintillation effects; 6) Increase the situational awareness to determine potential impacts to unfriendly operations employing UHF SATCOM or GPS for navigation; Numerical values associated with applicable output and efficiency measures above are classified. The Transition status: The C/NOFS ACTD Scintillation Network Decision Aid (SCINDA) ground station is deployed and in operational use at six sites. Currently the satellite launch has been delayed due to problems with the solar array panels. A prototype operational demonstration of forecasting capability is planned during the first year of space operations, with planned transition in Fiscal Year 2006 to the DoD Space Test program of record and Air Force Research Laboratories. The User Sponsor is the U. S. Strategic Command, the lead service is the Air Force.</p> <ul style="list-style-type: none"><li>• FY 2006 Output - Satellite launch delayed due to electromagnetic interference testing problems. Using funds provided in FY 2006 and other components support, the C/NOF ACTD will conclude in FY 2007. Activities include: Perform prototype operational demonstration of forecasting capability and conclude an interim capability support phase.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Tactical Service Provider (TSP)		0.000	2.400	0.000	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for TSP as a FY07 new start. The TSP ACTD focuses on taking full advantage of emerging commercial technologies to significantly enhance and improve C2 and Net-Centric capabilities to meet critical present and near-term requirements until DoD's next generation communication systems (JTRS, TSAT, GBS, IP SATCOM) are at Full Operational Capability (FOC). TSP is planned for a final demonstration in the fourth quarter of FY08, with sustainment of the demonstrated capabilities by DISA through FY09 until transition to programs of record in FY10. TSP outcome will enable broadband communications between strategic information sources and tactical users as well as between tactical users. The expected output is wideband communications supporting two-way, high-bandwidth services for tactical users using a hybrid architecture of emerging, standards-based SATCOM and wireless technologies by delivering robust lightweight</p>					

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commercially available applications, DoD tactical applications, and emerging Net Centric Enterprise Services (NCES) applications through demonstration and testing in a simulated, mobile tactical environment. The expected efficiency is substantial increase in delivery of tactically relevant command and control and intelligence-related information products to land mobile troops, and the near real time delivery of tactically generated information to operational and strategic echelons. TSP is a two year ACTD co-sponsored by USCENTCOM and USJFCOM. The Defense Information Systems Agency (DISA) is the lead agency. <ul style="list-style-type: none"><li>FY 2007 Planned Output: The technical focus for TSP in FY07 will be on implementing emerging digital broadcast protocol standards for forward SATCOM link, using emerging Joint Internet Protocol (IP) Modem standard and a new satellite protocol standard for return SATCOM link, achieving two-way Bandwidth on Demand, and the addition of a Global Broadcast Service (GBS) terminal appliqué using IEEE standard 802.16 for two-way wireless communications extension. TSP expected efficiencies include a 38% improved bandwidth efficiency over existing digital broadcast standard in use today, decreased size and weight of equipment required by mobile tactical sources to send and receive relevant information, and measurable real- or near-real-time transmission of intelligence collection products from deployed forces back to operational and strategic users. Two demonstrations are planned for the fourth quarter of FY07: the first two-way IP SATCOM communications over the improved GBS terminal prototype; the second a "WiMax" (802.16) wireless extension of communications connectivity from the improved GBS terminal. From an operational viewpoint, these demonstrations will establish the new baseline for bi-directional high bandwidth satellite communications, and provide early limited military utility assessment of the technologies. Programmatically, the operational and technical teams will be obtaining approval of the Implementation Directive and developing the Concept of Operations (CONOPS) and the integrated assessment plan.</li><li>FY 2008/09 Planned Output: Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Joint Multi-Mission Electro-Optic Sys (JMMES)		0.000	2.000	0.000	0.000
The Joint Requirements Oversight Council validated the capability need for JMMES as an FY-07 new start. The outcome of JMMES is demonstration and transition of airborne sensors and automated processing for automatic detection of itemstargets for Joint Service, Coalition, and Interagency partners. The JMMES project will demonstrate use of advanced multi-spectral sensors in an aircraft turret compatible with existing turret mounts in US Navy, US Army, Drug Enforcement Agency, and British and Canadian aircraft. The project will develop and demonstrate automatic processing and automated operator cueing for targets such as submarines, mines, targets under trees, illicit crops, and search-and-rescue targets at sea. The primary outputs and efficiencies to be demonstrated in JMMES Military Utility Assessments are (1) ability of JMMES to recognize targets of interest, in terms of (a) percent of auto detections and auto cues that are relevant, (b) distance error of auto detect and auto cue reports, (c) timeliness of reports (seconds) to decision makers; and (2) ability of JMMES to defeat denial and deception efforts, in terms of (a) percent of denial and deception efforts defeated, (b) where and when JMMES applies (operating environments, seasons, time of day, range, etc.), (c) percent of time operable during missions, and (d) reliability and logistic support requirements. JMMES is a 3-year project sponsored by U.S. Pacific Command and U.S. Southern Command. Initial capabilities will be demonstrated and operated in FY07, with demonstrations against additional targets with additional aircraft types in FY08 and FY09. Transition activities will begin in FY07, leading to firm transition to programs of record in Program Objective Memorandum 2010. The lead Service is U.S. Navy. <ul style="list-style-type: none"><li>FY 2007 Planned Output - Upgrade existing sensor suites for JMMES applications, integrate sensor and processing systems aboard selected aircraft. Conduct data collection and assessments for anti-submarine warfare missions, and begin algorithm development for other targets. Begin Concept of Operations and system architecture documentation. Support transition of initial capabilities for the Littoral Combat Ship.</li><li>FY 2008/09/10 Planned Output - Refer to the JCTD R-2a.</li></ul>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Maritime Auto Super Track Enhance Reporting (MASTER)		0.000	2.500	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for MASTER (Maritime Automated Super Track Enhanced) as an FY-07 new start. The outcome of MASTER is to					

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demonstrate a set of technologies and CONOPS to provide automatic tracking of ship traffic using unclassified methods, classified methods and National Technical Means which will provide a tangible improvement of United States maritime domain awareness on a global-basis. The MASTER JCTD will also provide Tactics, Techniques and Procedures (TTPs) to the Intelligence Community (IC) which will allow the IC the ability to use MASTER in Agency-specific environments. The primary outputs and efficiencies to be demonstrated in the Military Utility Assessment (MUA) are to develop and deploy an initial 24/7 operational capability to provide: (1) percent increase in an analysts ability to create a fully vetted, high quality ship tracks using additional information sources from SCI/Secret/Unclassified-levels and disseminate these "Super Tracks" including associated metadata, alerts, and notifications to operational users at all security levels using a standardized MDA report format, (2) percent decrease in the time required for an intelligence analyst to assemble a fully vetted, high quality coherent and thorough file of information of the ship(s) being tracked together with a time history and track of the vessel between any desired points between the departure point and arrival point and points in between, (3) percent increase in the ability of an analyst to determine ship threat profile (friend or foe) based on ship metadata and track history, (4) percent increase rate of automatic ship track generation per-day over current manual process, (5) percent increase in number of ship tracks per analyst in a given time period and a relative decrease in cost to create and assess a given number of tracks over a specific time frame. The JCTD Residuals include: 1) Multi-INT generation algorithm for worldwide MDA tracks and their metadata; 2) MLS Guards and accreditation (SCI, Secret. SBU); 3)Draft USMTF-type MDA message format for Super Track dissemination through MLS Guards; 4) Alarms/alerts notification methodology; 5) Operationally tested CONOP for a 24/7 worldwide capability.				
MASTER is a three-year JCTD under the Sponsorship of Northern Command (NORTHCOM) and ONI, NRO (proposed), USCG (proposed) with completion of development and demonstration by the end of FY 2009 and transition to the IC through PEO-ISR/Space beginning in FY 2009. The lead service is Navy.				
FY 2007 Planned Output - Integrate technologies & demonstrate initial automatic capability in a single AOR/AOI.				
FY 2008/09 Planned Output - Refer to the JCTD R-2a.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Coalition Mobility System (CMS)	0.000	2.500	0.000	0.000
The Joint Requirements Oversight Council validated the capability need for CMS as an FY-07 new start. The outcome of CMS is to develop the capability for rapid coordination of coalition movement execution. CMS will integrate selected, operationally relevant data from U.S. systems with data sources used by coalition partners to establish a working coalition environment, which meets the needs of U.S. and CTF decision makers. The primary outputs and efficiencies to be demonstrated in the JCTD are: 1) U.S. operators gain access to coalition movement data (military and commercial) using familiar U.S. national systems (Single Mobility System, Global Transportation Network, etc.), 2) Supports the Common Operating Picture for Deployment & Distribution (COP D2), 3) Coalition partners and CTF staff gain access to selected, operationally relevant information on U.S. and coalition airlift and sealift (military & commercial) supporting coalition activities. CMS is a 3-year project sponsored by U.S. Pacific Command. Key participants include the Quadrilateral Logistics Forum consisting of Australia, Canada, United Kingdom, and the United States. Initial capabilities will be demonstrated and operated in FY07, with full-scale demonstrations on coalition networks in FY08 and FY09. USTRANSCOM is the Transition Manager and transition activities will begin in FY07, leading to firm transition to Command and Control Information Exchange Data Model (C2IEDM) and multiple coalition networks by 2010.				
FY07 output will: Identify the existing US SMS data elements to be made available in CMS and the appropriate queries for use by CMS users. The JCTD will also adjust the coalition data format as required to ensure operational efficiency				
FY 2008/08/10 Output: Refer to the JCTD R-2a.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009

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CoCom Direct Support, Pre-Transition, and Classified programs			13.137		23.495		0.000		0.000			
<p>Direct support costs for the ACTD program averages between \$15-\$20 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&amp;C).</p> <p>•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&amp;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 at \$5.0 million per year.</p> <p>•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 \$3.0 million per year.</p> <p>•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 \$11.0 million each year.</p> <p>•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&amp;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.</p>												
Accomplishment/Planned Program Title			FY 2006		FY 2007		FY 2008		FY 2009			
FY 2006/2007 SIBR/STTR/Rescissions			3.629		3.406		0.000		0.000			
FY06 rescissions for FFRDC, CAAS, Section 8131, 8122 and SIBR/STTR taxes. FY07 rescissions for FFRDC, Section 8023 and SIBR/STTR taxes.												
C. Other Program Funding Summary			FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
Joint Capability Technology Demonstration (JCTD): PE 0603648D8Z, BA3			33.687	35.629	194.352	207.740	213.989	207.572	210.299	213.257	0.000	1316.525
JCTD Transition: PE 0604648D8Z, BA4			2.778	4.084	2.960	4.970	8.996	8.974	3.013	3.055	0.000	38.830
<p>Comment: In FY08 all ACTD funding transfers to the JCTD program. This will complete the transtion to the JCTD model that began in the FY06 President's Budget. The new JCTD Program provides a "cradle to grave" path for transformational joint capabilities. The initial funding lines (program elements (PE)) are outlined in the table below. The PEs in the table (with the exception of the ACTD BA3 PE which will fully transfer to the JCTD BA3 PE in FY08) represent the JCTD model. The model contains a BA3 development arm as well as BA4 transition arm. Under the new JCTD process, only the ACTD/JCTDs that demonstrate the highest military utility will be considered for the transition funding in the JCTD BA4 Transition</p>												

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603750D8Z - Advanced Concept Technology Demonstrations</b>	PROJECT <b>P523</b>
<p>PE. Promising ACTDs may receive transition funding during the transition period to the JCTD program. Beginning in FY07 all new starts will be JCTD only. Refer to the specific Budget Exhibit for more details on each funding line.</p> <p><b><u>D. Acquisition Strategy</u></b> 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 in the demonstration phase. 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. Many JCTDs will transition smoothly into a well identified program of record and not require funding from the transition PE (the transition arm of the JCTD model). Promising ongoing ACTDs may also receive transition funding from the JCTD Transition arm as the ACTD program completes. All ACTD funding will transfer to the JCTD program element in FY08. Beginning in FY07 all new starts will be JCTD only. Some initiatives that are successful but are having smaller problems transitioning to an identified program of record may receive "pre-transition" funding from the JCTD BA3 PE.</p> <ul style="list-style-type: none"> <li>• Capability Based: Greater CoCom influence looking at nearer term joint/coalition needs</li> <li>• Provide Spiral Technologies - 25% will provide an operationally relevant product demonstration within 24 months of ID signature.</li> <li>• Agile Demonstration - 75% complete final demonstration within three years of ID signature.</li> <li>• OSD provide significantly more funding (often greater than 30%). In some exceptional cases a majority of project funding, especially during the first two years</li> <li>• JCTDs not necessarily tied to an exercise. Greater flexibility to establish military utility via operational "real-world" demonstration or specifically designed test/venue</li> <li>• 80% of JCTDs transition at least 50% of their products to sustainment</li> </ul> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603755D8Z - High Performance Computing Modernization Program**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	211.920	208.463	187.587	208.488	217.323	202.921	213.416	220.622
P507 High Performance Computing Modernization Program	211.920	208.463	187.587	208.488	217.323	202.921	213.416	220.622

**A. Mission Description and Budget Item Justification:** The Department of Defense (DoD) High Performance Computing (HPC) Modernization Program supports the needs of the warfighter for technological superiority and military dominance on the battlefield by providing advanced computational services to U.S. weapons system scientists and engineers. By exploiting continuous advances in HPC technology, the defense research, development, test and evaluation (RDT&E) community is able to resolve critical scientific and engineering problems more quickly and with more precision. The results of these efforts feed directly into the acquisition process by improving weapons system designs through an increased fundamental understanding of materials, aerodynamics, chemistry, fuels, acoustics, signal image recognition, electromagnetics, and other areas of basic and applied research as well as enabling advanced test and evaluation environments that allow synthetic scene generation, automatic control systems and virtual test environments. 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 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, Fairbanks, AK and the Maui High Performance Computing Center, Maui, HI. Two other ADCs, also congressionally established, do not receive programmed support through the HPC Modernization Program, but provide supercomputing services to the DoD. The Army High Performance Computing Research Center, Minneapolis, MN and the Space and Missile Defense Command, Huntsville, AL receive their operational support from the Army. During FY2006 and prior years, there were also several smaller, special-purpose dedicated distributed centers (DDCs) that were annually established or upgraded based upon a competitive selection process. However, these centers will be retired as their systems become obsolete and funding for specialized programs is now provided through dedicated HPC project investments (DHPCPIs). DHPCPIs 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 sharing of knowledge, tools, and expertise.

HPC Modernization Program users include 5,275 Scientists and Engineers at approximately 180 locations (DoD Laboratories, 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. MSRCs are responsible for as large a fraction of DoD's S&T and T&E computational workload as feasible and provide extensive capabilities to address user requirements for hardware, software, and programming environments. ADCs, existing DDCs (until retired), and DHPCPIs augment the MSRCs to form the program's total 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

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

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**0603755D8Z - High Performance Computing Modernization Program**

value HPC application codes. Additional funding for Computational Research and Engineering Acquisition Tools and Environments (CREATE) has been provided by the DoD, beginning in FY2008. CREATE will produce supercomputer-based engineering design and test tools to improve the acquisition process for major weapons systems across the Department.

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) Acquire, deploy, operate and maintain best-value supercomputers; 2) Acquire, develop, deploy and support software applications and computational work environments that enable critical DoD research, development and test challenges to be analyzed and solved; 3) Acquire, deploy, operate and maintain a communications network that enables effective access to supercomputers and to distributed S&T/T&E computing environments; 4) Continuously educate the RDT&E workforce with the knowledge needed to employ computational modeling effectively and efficiently; and 5) Promote collaborative relationships among the DoD computational science community, the national computational science community and minority serving institutes.

As reported last year, FY2007 and FY2008 funding reductions caused major program adjustments. Each of the four MSRCs will reduce or relocate staff in FY2007 as help desk and scientific visualization functions are removed from the four centers and consolidated at three locations, each of which will serve the entire DoD community. While some hard to replace, qualified technical personnel from a very limited pool of highly talented people will be lost to the program, it is hoped that the consolidations will be invisible to the customer from a service perspective. In addition to consolidation savings, each of the MSRCs and the two partially supported ADCs adjusted core activities downward to operate within lower annual funding allocations. It is anticipated that overall staff reductions will equal approximately 25. Funding will be reduced for high bandwidth connects at two major sites. The bandwidths will either drop from OC48 to OC12 or other DoD components utilizing these links will fund the cost difference. Some bandwidth adjustments will also occur at lower bandwidth sites. The number of site specific security assessments conducted during FY07 and the out-years will be reduced. Efforts are underway to augment and replace some site specific security assessments with automated and remote security tools. The Programming Environments and Training component of the program will remove five management/administrative positions. Eleven technical projects that would have transferred important technologies from universities to DoD users will be cancelled.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	217.489	175.313	183.009	204.048
Current BES/President's Budget (FY 2008/2009)	211.920	208.463	187.587	208.488
Total Adjustments	-5.569	33.150	4.578	4.440
Congressional Program Reductions		-1.204		
Congressional Rescissions				
Congressional Increases		34.350		
Reprogrammings				
SBIR/STTR Transfer	-5.569			



**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

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**0603755D8Z - High Performance Computing Modernization Program**

Other		0.004	4.578	4.440
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**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
06	Selected Resource Centers	138.0	69.4	169	Habus	Habus
06	Networking	20.3	1.0	3.2	Gbps	Gbps
06	Software Applications	4.2	4.2	4.2	Customer Satisfaction (0-5 scale)	Customer Satisfaction (0-5 scale)
07	Selected Resource Centers	307.0	154.0	TBD	Habus	Habus
07	Networking	23.5	1.0	TBD	Gbps	Gbps
07	Software Applications	4.2	4.2	TBD	Customer Satisfaction (0-5 scale)	Customer Satisfaction (0-5 scale)
08	Selected Resource Centers	461.0	191.1	TBD	Habus	Habus
08	Networking	24.5	1.0	TBD	Gbps	Gbps
08	Software Applications	4.2	4.2	TBD	Customer Satisfaction (0-5 scale)	Customer Satisfaction (0-5 scale)

Comment: All FY2006 actual performance metrics met or exceed those planned.

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603755D8Z - High Performance Computing Modernization Program</b>					PROJECT <b>P507</b>	
Cost (\$ in Millions)		FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
P507	High Performance Computing Modernization Program	211.920	208.463	187.587	208.488	217.323	202.921	213.416	220.622
<p><b><u>A. Mission Description and Project Justification:</u></b> The Department of Defense (DoD) High Performance Computing (HPC) Modernization Program supports the needs of the warfighter for technological superiority and military dominance on the battlefield by providing advanced computational services to U.S. weapons system scientists and engineers. By exploiting continuous advances in HPC technology, the defense research, development, test and evaluation (RDT&amp;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&amp;T) and test and evaluation (T&amp;E) programs.</p> <p>The HPC Modernization Program 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, 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. The Army High Performance Computing Research Center (AHPCRC), Minneapolis, MN and the Space and Missile Defense Command, Huntsville, AL, receive their support for operations through the Army. During FY2006 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 are being be retired as their systems become obsolete and funding for specialized programs is currently provided through dedicated HPC project investments (DHPCPIs). DHPCPIs support a one-time need and have no legacy within the HPC Modernization Program. Centers and DHPCPIs directly support the DoD S&amp;T and T&amp;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&amp;T and T&amp;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.</p> <p>The HPC Modernization Program user base includes 5,275 Scientists and Engineers at approximately 180 locations (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. MSRCs are responsible for as large a fraction of DoD's S&amp;T and T&amp;E computational workload as feasible. 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&amp;T and T&amp;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</p>									

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

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**0603755D8Z - High Performance Computing Modernization Program**

PROJECT

**P507**

programming environments, and develops mechanisms to protect high value HPC application codes.

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) Acquire, deploy, operate and maintain best-value supercomputers; (2) Acquire, develop, deploy and support software applications and computational work environments that enable critical DoD research, development and test challenges to be analyzed and solved; (3) Acquire, deploy, operate and maintain a communications network that enables effective access to supercomputers and to distributed S&T/T&E computing environments; (4) Continuously educate the RDT&E workforce with the knowledge needed to employ computational modeling effectively and efficiently; and (5) Promote collaborative relationships among the DoD computational science community, the national computational science community and minority serving institutes.

The DREN provides wide area network (WAN) connectivity among the Department's S&T and T&E communities. The DREN is implemented through an Intersite Services Contract awarded to MCI (WORLDCom) during FY 2002. 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 2006	FY 2007	FY 2008	FY 2009
Selected Resource Centers:	122.692	107.689	90.418	102.049

FY2006 Accomplishments: The program sustained and supported the integration, operation and use of HPC computational resources at four Major Shared Resource Centers. The program also partially sustained and supported the integration, operation and use of HPC computational resources at two Allocated Distributed Centers. Also during FY2006, the program made other specialized systems investments that were sustained and supported by sponsoring Service organizations.

FY 2007/2008/2009 Plan: 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. 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. These efforts are planned to continue into future years with no set completion date.

As reported in last year's exhibits, funding reductions assessed for FY2007 and FY2008 caused major program adjustments beginning in FY2007. Each of the four MSRCs will reduce or relocate staff in FY2007 as help desk and scientific visualization functions are removed as separate functions at all four centers and consolidated at three locations, each of which will serve the entire HPC Modernization Program community. While some qualified technical personnel from a very limited pool of highly talented people will be lost to the program, it is hoped that the consolidations will be invisible to the customer from a service perspective. It will be very difficult to replace these personnel as shown by difficulties in recruitment over the last several years. In addition to consolidation savings, each of the MSRCs and the two partially Allocated Distributed Centers adjusted core activities downward to operate within lower annual funding allocations. It is anticipated that overall staff reductions will equal approximately 25 personnel.

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)								Date: February 2007					
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3				PE NUMBER AND TITLE <b>0603755D8Z - High Performance Computing Modernization Program</b>					PROJECT <b>P507</b>				
Accomplishment/Planned Program Title				FY 2006		FY 2007		FY 2008		FY 2009			
Networking:				30.544		41.477		29.561		32.507			
FY2006 Accomplishments: The DREN provided high speed wide area network services to over 130 locations throughout the United States. Also, the DREN expanded internet protocol version 6 (IPv-6) testing for the Department of Defense and upgraded full point-to-point encryption of the network. DREN continued collaborative work with the federal networking community and standards associations.													
FY 2007/2008/2009 Plan: Network services to link all elements of the program will provided by the Defense Research and Engineering Network (DREN) as well as operation of security systems and enhancements. Collaborative work with the federal networking community and standards associations will continue to assure that the DREN will remain compatible with future technology change. These efforts are planned to continue into future years with no set completion date.													
Again as reported in last year's exhibits, funding reductions assessed for FY2007 and FY2008 caused program adjustments. In FY2007 the program will reduce funding for high bandwidth connects at two major sites. The connection bandwidths will either drop from OC48 to OC12 or other DoD components that utilize these links will fund the cost difference Some bandwidth adjustments will also occur at lower bandwidth sites. The number of site specific security assessments conducted during FY2007 and the out-years will be reduced. Efforts are underway to augment and replace some site specific security assessments with automated and remote security tools.													
Accomplishment/Planned Program Title				FY 2006		FY 2007		FY 2008		FY 2009			
Software Applications:				58.684		59.297		67.608		73.932			
FY2006 Accomplishments: Development efforts in software programs continued to mature as other projects were completed, and others begun. Software Institutes and portfolios developed shared scalable applications to exploit scalable HPC assets. An Academic Outreach Program was supported to encourage and support computational science in universities across the United States. The Programming Environments and Training effort provided computational and computer science support to the DoD HPC user community through interaction and collaborative projects with academic and industrial partners. Efforts were maintained in 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.													
FY 2007/2008/2009 Plan: Additional program funding for Computational Research and Engineering Acquisition Tools and Environments (CREATE) has been provided by the DoD, beginning in FY2008. CREATE will produce supercomputer-based engineering design and test tools to improve the acquisition process for major weapons systems across the Department. Development efforts in software programs will continue to mature as other projects are completed, and others begun with a greater emphasis on engineering applications. Software Institutes and portfolios will continue to develop shared scalable applications to exploit scalable HPC assets. An Academic Outreach Program will continue be supported to encourage and support computational science in universities across the United States. The Programming Environments and Training effort will provide computational and computer science support to the DoD HPC user community through interaction and collaborative projects with academic and industrial partners. On-going efforts will be 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.													
Also as reported in last year's exhibits, funding reductions assessed for FY2007 and FY2008 caused major program adjustments. The Programming Environments and Training component of the HPC Modernization Program will remove five management/administrative positions. Eleven technical projects that would have transferred important technologies from universities to DoD users will be cancelled.													
C. Other Program Funding Summary				FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost

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Exhibit R-2A

Project Justification

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>										Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3				PE NUMBER AND TITLE <b>0603755D8Z - High Performance Computing Modernization Program</b>						PROJECT <b>P507</b>	
0902198DZ Major Equipment OSD	52.767	50.089	51.132	52.651	54.429	56.790	57.536	58.345	Continuing	Continuing	
<p>Comment: In 2006, the AHPCRC received congressionally added funds for upgrades and the ARSC was also provided procurement funding for limited upgrades. The following DHPCPIs were also provided upgrades through the annual competitive process mentioned earlier: Massachusetts Institute of Technology Lincoln Laboratory, Lexington, MA; Dugway Proving Ground, Dugway, UT; Army Communications-Electronics Research Development and Engineering Command (CERDC), Fort Monmouth, NJ. Funding exists in the 2007 Procurement budget to provide for approximately five DHPCPIs.</p> <p>In FY 2006 two MSRCs were upgraded and funding exists in the FY 2007 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.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>											

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**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603781D8Z - Software Engineering Institute**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	26.116	28.380	29.851	31.305	32.173	32.762	33.229	33.726
P781 Software Engineering Institute (SEI)	21.709	21.688	22.811	23.531	24.281	24.790	25.116	25.469
P782 Software Intensive Systems	2.437	2.680	0.000	0.000	0.000	0.000	0.000	0.000
P783 Software Producibility Initiative	1.967	2.073	3.140	3.074	3.092	3.072	3.113	3.157
P784 Advanced Lithography	0.003	1.939	0.000	0.000	0.000	0.000	0.000	0.000
P785 DeVenCI	0.000	0.000	3.900	4.700	4.800	4.900	5.000	5.100

**A. Mission Description and Budget Item Justification:** 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. 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 technology development and transition activities of the Software Engineering Institute (SEI) at Carnegie Mellon University.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	30.762	26.594	29.648	30.340
Current BES/President's Budget (FY 2008/2009)	26.116	28.380	29.851	31.305
Total Adjustments	-4.646	1.786	0.203	0.965
Congressional Program Reductions		-0.169		
Congressional Rescissions				
Congressional Increases		1.950		
Reprogrammings	-3.797			
SBIR/STTR Transfer	-0.849			
Other		0.005	0.203	0.965

**C. Other Program Funding Summary:** Not Applicable.

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OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>	
<p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Performance Metrics:</u></b> Not Applicable.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>					PROJECT <b>P781</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P781      Software Engineering Institute (SEI)	21.709	21.688	22.811	23.531	24.281	24.790	25.116	25.469										
<p><b><u>A. Mission Description and Project Justification:</u></b> Software Engineering Institute 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.</p> <p>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.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2006</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2007</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2008</td> <td style="text-align: center; width: 10%; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Acquisition Practices for DoD Software Intensive Systems:</td> <td style="text-align: center; padding: 5px;">21.709</td> <td style="text-align: center; padding: 5px;">21.688</td> <td style="text-align: center; padding: 5px;">22.811</td> <td style="text-align: center; padding: 5px;">23.531</td> </tr> </table> <p>FY 2006 Accomplishments: Developed Version 1.2 of the CMMI Product Suite, including updated CMMI models, the SCAMPI Method Definition Document (MDD), and CMMI training courses to reflect lessons learned from their use. Maintained the CMMI Product Suite by creating, maintaining, and appropriately updating or enhancing products. Completed and published initial draft of the CMMI for Acquisition (CMMI-ACQ). Managed and administered transition programs and services to support the widespread, high-quality use of the CMMI Product Suite in government and industry. Investigated technology and practices for developing secure software and produced an operational definition and workshop for secure software development. Defined measurement tools and practices for software acquisition by evolving the Team Software Process (TSP) metrics framework to support program management in software acquisitions, and provided the transition mechanisms and infrastructure needed for adoption. Defined an engineering process improvement strategy that uses TSP to accelerate CMMI-based organizational improvement. Initiated work on version 5.0 of the Team Software Process Product Suite, including incorporation of a version of TSP for systems engineering being jointly developed with NAVAIR. Investigated the application of the TSP quality management practices to the development of safety-critical systems and published a technical note that describes the transitioning of the process into practice. Investigated the creation of measures and benchmarks that could be used to provide quantitative criteria for evaluating process performance. Managed, administered, and provided technical support for the training, authorization, certification licensing, and other activities needed to support transition of TSP into practice. Extended and operated the Software Engineering Information Repository (SEIR) to provide data and information that software organizations use to learn about (a) the experiences of other organizations attempting to improve their software engineering processes and technology, (b) new software engineering technology that may improve their performance, and (c) issues, challenges, and policies related to the DoD and its suppliers of software-intensive systems. Provided expertise and specific techniques for software and acquisition organizations to use for measuring and analyzing their performance and managing their projects and processes, and research new areas with promise for improving organizational measurement and analysis capability. Helped more than 50 key acquisition programs achieve their objectives by working directly with them to apply new technologies and conduct experiments with maturing SEI products and services in real-world acquirer contexts. Accomplished this through means such as conferences, workshops, courses, briefings, technical reports, articles, advocacy, and participaSupported survivability engineering by improving the technical basis for identifying and preventing both security flaws and malicious code; and limiting the damage caused by successful attacks. Coordinated activities in response to internet security incidents and supported the continued development of a national response team, US-CERT, and the President's National Strategy to Secure Cyberspace. Provided analysis and capabilities to the DoD, DHS, and the Internet community to enable situational awareness of Internet threats. Created a product line production planning workshop to guide a product production strategy, and to provide tools and directions for applying that strategy to a</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Acquisition Practices for DoD Software Intensive Systems:	21.709	21.688	22.811	23.531
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
Acquisition Practices for DoD Software Intensive Systems:	21.709	21.688	22.811	23.531														



**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

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

production method and production plan. Published guidance for DoD acquisition managers and executives on product line activities and acquisition strategies. Published version five of the SEI Framework for Software Product Line Practice. Presented the Software Product Line Conference (SPLC) 2006 in August 2006. Published the results of research into the suitability of approaches for specifying architecturally significant requirements. Initiated research into the use of real options for managing uncertainty in business goals, requirements, and architecture design decisions while evolving a software architecture. Created and piloted a set of architecture-related acquisition aids to help DoD acquisition organizations effectively prepare contractually required documentation for SEI's Quality Attribute Workshop (QAW) and architecture evaluations using the Architecture Tradeoff Analysis Method (ATAM). Conducted the Second SEI Software Architecture Technology User Network (SATURN) to bring together engineers, architects, technical managers, and product managers with SEI's technical staff. Created a Web-based community resources center for software architects. Developed and tested general purpose tools for measuring the timing characteristics of systems assembled from distributed components. Created an approach to apply software model checking to assembly code, enabling verification when source code is not available. Created the first tutorial on the principles, methods, and technologies of predictable assembly. Piloted SoS Navigator with MILSATCOM and NATO, and released the alpha version of this technology, which helps an organization navigate a system-of-systems procurement or development. Updated the Service-Oriented Migration and Reuse Technique (SMART). Defined model problems for the evaluation of Web services and for Ontology Web Language-Semantics (OWL-S).

FY 2007/2008/2009 Plans: Manage a joint industry, government, and SEI effort to develop an addition to the CMMI Framework to cover acquisition. Provide an addition to the CMMI Framework to cover service delivery. Explore whether and how to add Information Security to CMMI. Provide empirical analyses of CMMI costs and benefits. Provide stewardship functions for CMMI, such as support to transition products, programs and services, and to perform quality assurance, communications, and project operations. Develop a high-maturity team process and training for use in systems engineering and acquisition, guided by CMMI and based on the TSP elements and training courses. Develop performance benchmarks for software engineering management to quantitatively manage software engineering work. Create an integrated process improvement strategy with CMMI to define a new process improvement strategy and roadmap that leverages technologies to help organizations consistently achieve greater performance improvement and do it in less time than current methods. Create a specific "how to" methodology or implementation guidance for selected techniques and tools that have proven invaluable in industry and government applications, including Six Sigma tools, business case analyses, and various computations of expected benefits or returns. Identify, tailor, pilot, and package analytical techniques appropriate for interpreting and validating potential data that is represented in text and other formats that do not readily lend themselves to analysis. Adapt statistical and quantitative analysis techniques, commonly known as Six Sigma, for acquisition, systems engineering, and software engineering practitioners. Operate the Software Engineering Information Repository, a forum for members of the community to contribute and exchange information concerning implementation activities. Explore new methods of collaborative management on software-intensive systems.

**C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.**E. Major Performers** Not Applicable.

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>					PROJECT <b>P782</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P782      Software Intensive Systems	2.437	2.680	0.000	0.000	0.000	0.000	0.000	0.000										
<p><b><u>A. Mission Description and Project Justification:</u></b> The Systems and Software Engineering (SSE) Directorate manages the Software Intensive Systems (SIS) mission to improve DoD SIS acquisition and sustainment. The SSE Directorate is the focal point for DoD initiatives that reduce software risk. The SSE 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 and Guidance, Education, Best Practices, Software Engineering Technology, and Collaboration. The SSE Directorate conducts its SIS efforts by understanding DoD needs, issues and solutions; and acting on/transitioning improvements to DoD enterprise, program and practitioner levels.</p> <p>In FY 2008, the Software Intensive Systems funding line will be transferred from PE0603782D8Z to the Developmental Test and Evaluation line in Acquisition in Technology and will be renamed Software Engineering and System Assurance.</p> <p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Software Intensive Systems:</td> <td style="text-align: center; padding: 5px;">2.437</td> <td style="text-align: center; padding: 5px;">2.680</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> </tr> </table> <p>FY 2006 Accomplishments: Support Acquisition Success: Established Deputy Director for Software Engineering and System Assurance. Provided software and system assurance expertise on program support reviews. Improve State-of-the Practice of Software Engineering: Started effort to develop System of Systems Engineering. Guidebook, Capability Maturity Model Integration (CMMI) Guidebook for acquirers. Provide Software Leadership and Outreach: Established National Defense Industrial Association (NDIA) Software Committee. Hosted NDIA Top Software Issues workshop. Ensured Adequate Software Resources to Meet DoD Needs: Completed Phase 1 of Software Industrial Base Study, identifying critical needs.</p> <p>FY 2007 Plan: Support Acquisition Success: Update review methodology to better address software and systems assurance issues. Provide software and system assurance expertise for ACAT ID/IAM and special interest programs. Improve state-of-the practice of software engineering: Identify and address systemic issues related to software. Conduct literature search of software best practices. Continue development of System Assurance Guidebook. Provide software leadership and outreach: Host NDIA Software Summit, complete report. Establish DoD software forum. Participate in Service-led software initiatives, e.g., Army Strategic Software Improvement Program and multi-national forums, e.g., Software. Intensive Systems Acquisition Improvement Group develop Department/National strategic plan for meeting defense software requirements. Ensure adequate software resources to meet DoD needs: Complete Phase 2 of software industrial base study Objectives: Tools, techniques identified; program support provided to ACAT ID/IAM and special interest programs; partners established, agenda set; Artifacts: System of Systems Engineering Guide, CMMI-Acquisition Guide, DoD Software Strategic Plan; Defense Acquisition Program Support methodology v1.2 (software focus); Industry summit report; Conference sponsorship and participation (e.g., Systems and Software Technology Conference, Systems Engineering).</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Software Intensive Systems:	2.437	2.680	0.000	0.000
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
Software Intensive Systems:	2.437	2.680	0.000	0.000														

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>	PROJECT <b>P782</b>
<b>C. Other Program Funding Summary:</b> Not Applicable.		
<b>D. Acquisition Strategy:</b> Not Applicable.		
<b>E. Major Performers</b> Not Applicable.		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>					PROJECT <b>P783</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P783      Software Producibility Initiative	1.967	2.073	3.140	3.074	3.092	3.072	3.113	3.157										
<p><b><u>A. Mission Description and Project Justification:</u></b> The role of the Software Producibility 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.</p> <p>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.</p> <p>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.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="text-align: center; padding: 5px;">1.967</td> <td style="text-align: center; padding: 5px;">2.074</td> <td style="text-align: center; padding: 5px;">3.140</td> <td style="text-align: center; padding: 5px;">3.074</td> </tr> </table>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009		1.967	2.074	3.140	3.074
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
	1.967	2.074	3.140	3.074														
<p>FY 2006 Accomplishments: Awarded two contracts to define an architecture and concept of operations for the Software and Systems Test Track. Awarded three contracts to provide software development tools for promoting systems of systems interoperability. Initiated development of a business plan for options to foster government and industry co-investment in focused research centers for improving software producibility. Engaged with industry and government to mature options. Initiated development of a SIS Producibility Technology Roadmap to prioritize research investments and identify measures that allow the development community to judge progress.</p> <p>FY 2007 Plan: Award the Software and Systems Test Track implementation contract. Continue research efforts in developing technologies for interoperable systems of systems. Mature business plan for gov/industry co-investment in research, select an implementation approach, initiate the necessary agreements. Mature the SIS Producibility Technology Roadmap, get community consensus on priorities and</p>																		

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>	PROJECT <b>P783</b>
<p>measures. Started 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. The experimental platform research included subtasks to conduct large-scale coordination experiments, and developed methods and tools for evaluating aggregate performance of applications. This environment provided 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 provided 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. Initiated a research topic in interoperability to address software techniques to improve system of system interoperability. Developed and transitioned 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 was to develop and establish principles of interoperability as a foundation for hardware-software. These principles enabled the precise description of components, their construction and their acceptable interactions, leading to new approaches for building and assembling systems. Conducted a third workshop on software producibility focused on industry needs, interests and motivations. 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&amp;D programs.</p> <p>FY 2008 Plan: 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. Continue operation of the Software and Systems Test Track. Complete research efforts in interoperable systems of systems. Initiate one new research effort in SIS Producibility.</p> <p>FY 2009 Plan: 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.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>						PROJECT <b>P784</b>									
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P784      Advanced Lithography	0.003	1.939	0.000	0.000	0.000	0.000	0.000	0.000										
<p><b><u>A. Mission Description and Project Justification:</u></b> Not Applicable.</p>  <p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="text-align: left; padding: 5px;">Accomplishment/Planned Program Title</td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Advanced Lithography</td> <td style="text-align: center; padding: 5px;">0.003</td> <td style="text-align: center; padding: 5px;">1.939</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> </tr> </table> <p>Congressional add for thin film mask technology development. Funds will be reprogrammed to the proper execution Agent.</p>  <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p>  <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p>  <p><b><u>E. Major Performers</u></b> Not Applicable.</p>									Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009	Advanced Lithography	0.003	1.939	0.000	0.000
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009														
Advanced Lithography	0.003	1.939	0.000	0.000														

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603781D8Z - Software Engineering Institute</b>					PROJECT <b>P785</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P785      DeVenCI	0.000	0.000	3.900	4.700	4.800	4.900	5.000	5.100										
<p><b><u>A. Mission Description and Project Justification:</u></b> The purpose of DeVenCI is to sustain an established process to increase Department of Defense (DoD) awareness of emerging commercial technologies developed by non-traditional DoD procurement sources, and to increase commercial awareness of DoD needs and requirements. Through this improved awareness, DeVenCI focuses on facilitating interactions and information exchanges that will speed adoption of innovative commercial technologies that address DoD challenges related to the Global War on Terrorism, and will encourage broader commercial support of the DoD supply chain. The DeVenCI process relies on workshops, technology expositions, industry outreach, and web access to accomplish its goal of improving communications between the DoD and companies with emerging commercial technologies. DeVenCI also provides the opportunity for DoD technology users to assess the potential for evaluating or adopting emerging technical innovations as relevant solutions to existing or anticipated DoD needs.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">DeVenCI</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">3.900</td> <td style="text-align: center; padding: 5px;">4.700</td> </tr> </table>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	DeVenCI	0.000	0.000	3.900	4.700
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
DeVenCI	0.000	0.000	3.900	4.700														
<p>FY 2008/2009 Plans: Plan and conduct a minimum of six technology workshops in DoD relevant technology sectors. Prepare and issue a follow-on solicitation for venture capital consultants. Expand the program to examine the technical fundamental of patented inventions to assess the feasibility of developing combinatorial solutions focused on other DoD challenge areas. Conduct an assessment of the DeVenCI process.</p>																		
<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p>																		
<p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p>																		
<p><b><u>E. Major Performers</u></b> Not Applicable.</p>																		

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603826D8Z - Quick Reaction Special Projects**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	106.362	108.159	109.514	114.145	115.653	109.494	110.932	112.492
P826 Quick Reaction Fund	28.131	29.561	29.751	32.043	32.060	30.278	30.675	31.106
P828 Rapid Reaction Fund	49.821	50.035	50.511	51.059	51.531	48.941	49.584	50.281
P829 Technology Transition Initiative (TTI)	28.410	28.563	29.252	31.043	32.062	30.275	30.673	31.105

**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.

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 2006, over 100 proposals were reviewed and to date 12 projects were funded.

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 successfully demonstrate new technologies in relevant environments and accelerate the introduction of new technologies into operational capabilities for the armed forces.

RRF is fully executed through the Combating Terrorism Technology Task Force (CTTTTF), recently re-designated, as the Rapid Reaction Technology Office (RRTO). The CTTTF was stood up to provide rapid response to operations in Iraq and other theaters in support of the Global War on Terrorism (GWOT) and to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years.

In FY 2006, CTTTF/RRTO's objectives are to leverage the DoD science and technology base and those of the other Federal Departments; stimulate interagency coordination and cooperation; accelerate the fielding of capabilities and concepts to counter emerging threats; and provide feedback to the S&T community to guide long term developmental strategies. The task force works to anticipate adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force works to exploit technology developed outside of DoD in the commercial sector, in academia and internationally; as well as anticipate adversary's application of available and advanced technology. The average length of a



**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603826D8Z - Quick Reaction Special Projects**

Combating Terrorism Technology Task Force program falls within an 8-12 month range in order to more effectively aid the warfighter.

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	108.942	107.782	112.343	116.315
Current BES/President's Budget (FY 2008/2009)	106.362	108.159	109.514	114.145
Total Adjustments	-2.580	0.377	-2.829	-2.170
Congressional Program Reductions		-0.627		
Congressional Rescissions				
Congressional Increases		1.000		
Reprogrammings	-3.400			
SBIR/STTR Transfer	-3.100			
Other	3.920	0.004	-2.829	-2.170

**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						
08						

Comment: QRF/RRF: Program completion and success will be monitored against program schedule and deliverable stated in the proposals.

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<p>TTI: 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. In FY 2008, initiate the new start of projects and conclude the activities on many continuing projects with the results of several of the technologies transitioning to the warfighter.</p> <p>RRF: In FY 2006/FY 2007/FY 2008, RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007																																							
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603826D8Z - Quick Reaction Special Projects</b>					PROJECT <b>P826</b>																																								
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013																																								
P826      Quick Reaction Fund	28.131	29.561	29.751	32.043	32.060	30.278	30.675	31.106																																								
<p><b><u>A. Mission Description and Project Justification:</u></b> 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.</p> <p>(U) Quick Reaction Fund - A data call was released on July 25, 2005 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&amp;E principles submit their top ten proposals. A notification on the DDR&amp;E website was also posted so there was another avenue to submit proposals. Candidate proposals were focused in the areas that have the potential to address disruptive, catastrophic and irregular technologies. 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 2006 funding include Backpack Medical Oxygen System (BMOS), English-Iraqi 2-Way Speech to Speech Translation System, Field Prototype for Standoff Detection of Fissile materials IED's and WMD's, Gunslinger Hostile Fire Detection and Counter Fire System, 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 2007 and 2008 plans are to continue to respond to critical operational needs and technology opportunities.</p>																																																
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Dev and Qualification of Light-Weight ALON Transparent Armor:</td> <td style="text-align: center; padding: 5px;">0.400</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> </tr> <tr> <td colspan="5" style="padding: 5px;">FY 2006 Accomplishments: The primary objective of this initiative is to field light-weight transparent armor for use in up-armored ground vehicles like the High Mobility Multi-Wheeled Vehicle (HMMWV) for fragmentation protection against fragmenting and armor-piercing threats.</td> </tr> <tr> <td style="padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Backpack Medical Oxygen System (BMOS):</td> <td style="text-align: center; padding: 5px;">0.525</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> <td style="text-align: center; padding: 5px;">0.000</td> </tr> <tr> <td colspan="5" style="padding: 5px;">FY 2006 Accomplishments: Portable ballistically protected Liquid Oxygen (LOX) System that stores LOX and converts it to the gaseous state providing an uninterrupted supply of therapeutic oxygen for Air Force rescue personnel (PJs) to use on patients in the field. BMOS weighs slightly more than current oxygen generators carried by PJs, but has adjustable flow rates, providing approximately a ten-fold increase in oxygen supply; and, will not explode when hit with a round.</td> </tr> <tr> <td style="padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Dev and Qualification of Light-Weight ALON Transparent Armor:	0.400	0.000	0.000	0.000	FY 2006 Accomplishments: The primary objective of this initiative is to field light-weight transparent armor for use in up-armored ground vehicles like the High Mobility Multi-Wheeled Vehicle (HMMWV) for fragmentation protection against fragmenting and armor-piercing threats.					<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Backpack Medical Oxygen System (BMOS):	0.525	0.000	0.000	0.000	FY 2006 Accomplishments: Portable ballistically protected Liquid Oxygen (LOX) System that stores LOX and converts it to the gaseous state providing an uninterrupted supply of therapeutic oxygen for Air Force rescue personnel (PJs) to use on patients in the field. BMOS weighs slightly more than current oxygen generators carried by PJs, but has adjustable flow rates, providing approximately a ten-fold increase in oxygen supply; and, will not explode when hit with a round.					<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009					
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CRISSTL Ball:	1.750	0.000	0.000	0.000
FY 2006 Accomplishments: This effort is developing a lightweight, compact sensor system that provides hemispherical area coverage to give improved war fighter situation awareness. Sensor information is relayed by a wireless link to an operator's console. Several system configurations are planned that incorporate either variations in packaging, or options in the sensor used. Sensor options provide optical, infrared or thermal scene generation. The fundamental goal is to improve situation awareness while limiting war fighter exposure to hostile fire.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
English-Iraqi 2-Way Speech to Speech Translation System:	1.195	0.000	0.000	0.000
FY 2006 Accomplishments: This project will provide a portable two way English-Iraqi speech translation capability to operate in the Force Protection, Training, Civil Affairs and Medical domains. This capability is needed to augment the limited number of available translators in order for English speaking coalition forces to conduct Force Protection operations, limited tactical questions, training for Iraqi Armed and Police Forces, and to provide limited questioning on Civil Affairs (sewer, water, electricity). Hand portable English-Iraqi limited 2-Way speech translation systems will augment the limited number of linguists in the Area of Responsibility.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Field Prototype for Standoff Detection of Fissile Materials:	1.870	0.000	0.000	0.000
FY 2006 Accomplishments: Develop, demonstrate and deliver a prototype field instrument for standoff detection of fissile and explosive material. Sensitive detection at a safe range will save military lives and equipment and lead to increased security for the US.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Gunslinger Hostile Fire Detection and Counter Fire System:	2.068	0.000	0.000	0.000
FY 2006 Accomplishments: Gunslinger Spiral 2 (GS-2) is a joint project (with participants from the Army, Navy, and Marine Corps) to develop an integrated system of multi-spectral sensors and a stabilized remote gun mount on a tactical ground vehicle with an operator interface intended for Marines. The system detects and locates hostile fire events, and provides the operators a means of responding to those events quickly, while the vehicle is on-the-move. QRF funds are being used to complete the integration, system testing, safety certification, operational testing, and to support the system during a near term deployment to Operation Iraqi Freedom (OIF).				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Hardened Facility Attack Camera:	2.400	0.000	0.000	0.000
FY 2006 Accomplishments: The project will design, build, and demonstrate a camera to image the interior of hardened and deeply buried targets (HDBT) during an attack by a penetrator type weapon. The camera would be mounted on the penetrating weapon (typically a bomb), and provide an image of the interior of the structure or facility just prior to detonation of the warhead. The camera would transmit imagery through the bomb's own penetration hole to relay receivers on the attack aircraft or loitering UAVs deployed in the vicinity of the attack. This imagery will provide information about target interiors.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009

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iGPS Basic Functional Test Campaign:	0.510	0.000	0.000	0.000
FY 2006 Accomplishments: The objective of the iGPS Basic Functional Test Campaign is to enable the Government to (i) participate in determining test requirements, (ii) witness testing, and (iii) access the test data to be performed by the Boeing Company as "the Contractor," for the U.S. Air Force Research Laboratory (AFRL) under the Thrust Area I, Embedded Information Systems Technology Support (EISTS). The Contractor, functioning as an integrated product team with the Air Force Research Laboratory (AFRL) and DDR&E, shall be responsible for planning, coordinating, and executing all activities in this contract. The Contractor shall plan, schedule, and provide for the engineering, technical expertise, and resources necessary to successfully complete the tasks required for the EISTS program. Specific tasks within this delivery order address system performance studies, experimentation, and analysis.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Low Cost Precision Airdrop:	3.195	0.000	0.000	0.000
FY 2006 Accomplishments: A Joint Analysis Team (JAT) consisting of General Officers and SES representatives from all services and supported by an Integrated Product Team (IPT) of subject matter experts is examining a holistic approach to address the precision airdrop rapid fielding plans, and the link to formal programs of record/full fielding.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Low Profile VHF Antenna(s) with FSS:	0.575	0.000	0.000	0.000
FY 2006 Accomplishments: Current whip antennas installed on combatant craft break due to the harsh environment and can cause a hazard to the crew and passengers. In addition, whips on current craft add to their Radar Cross Selection (RCS) Signature. If it is a desire to lower the RCS on the craft or to produce a new craft with low RCS qualities, one of the major problems are whip antennas. The combatant craft community currently has Lo-RCS antennas for Ultra High Frequency (UHF) SatCom, UHF Line of Sight (LOS), Identification Friend of Foe (IFF), Global Positioning System (GPS), and domes for radars. There are no Lo-RCS VHF antennas for craft with a metal hull.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Merchant Marine Vehicle of Interest Analyzer (DYNET:MMVOIA):	0.350	0.000	0.000	0.000
FY 2006 Accomplishments: The need for improved intelligence analysis and decision tools is urgent and immediate to counter organized terrorism and insurgencies. Goals for this project include (1) facilitating improved course of action scenario evaluation with analytic and predictive capability that account for missing and erroneous data that is based on a capacity to test methods of strategic intervention against terror networks as they manifest themselves in the movement of personnel, resources, and information through merchant marine shipping routes; and, (2) Improvement in techniques to discover patterns of activity for prediction of terrorist operations in maritime environments. DYNET: MMVOIA will transition new discoveries and developments in terrorist network analysis into the military and intelligence communities in the U.S.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Personnel Halting and Stimulation Response (PHaSR):	0.300	0.000	0.000	0.000
FY 2006 Accomplishments: PHaSR is a revolutionary weapons system that will be the forerunner of a new wave of hand-held, single operator laser systems for point and perimeter defense functions. PHaSR is a self-contained lightweight, ruggedized, multiple use platform designed to deliver laser applications into the hands of the war fighter. The current system has two-wavelengths: one visible and one Mid-IR. The specific frequencies are classified. Both wavelengths use a diode laser as the pump source. The effects caused by these two lasers are classified. Testing has occurred in the laboratory that has				

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demonstrated the desired human effects. Future testing will focus on higher power levels and increased efficiency.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Low Signature, Portable Fuel Cell Power Systems	3.535	0.000	0.000	0.000
FY 2006 Accomplishments: Will provide a 250-watt portable fuel cell power source that is virtually undetectable on the battlefield and is dramatically smaller, lighter and more efficient than alternative battery or generator systems. Initially two applications will be targeted; field battery chargers and silent auxiliary power units (APUs).				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Portable Global Broadcast Service (GBS)	1.500	0.000	0.000	0.000
FY 2006 Accomplishments: This project will conduct testing and Operational Field Evaluation of an Air Force SBIR-produced Portable GBS Receive Suite to accelerate a non-standard acquisition of a potentially disruptive capability improvement to the war fighter. Evaluation of Portable GBS Receive Suite is a viable lightweight and lower cost alternative to other GBS Receive Suites currently available or whether their receive suite quantity requirements should change to acquire this new capability in addition to existing requirement.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Mag-Klot EX: Multifunctional Magnetic Hemostat	1.972	0.000	0.000	0.000
The leading cause of combat casualties for soldiers killed in action (KIA) and those that die of wounds (DOW) due to late complications, is uncontrolled hemorrhage. Rapid development of Mag-Klot EX will immediately decrease the number of military and civilian combat related KIA's and DOW's due to uncontrollable hemorrhage. In addition to helping to preserve life, this technology will significantly advance the scientific understanding of multifunctional, biomedical, materials.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Reprogrammings, Program Support, SBIR/STTR taxes	5.986	0.000	0.000	0.000
Comptroller realigned funds from FY06 to FY05 to support GWOT related efforts and funding required for program support.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 Plans:	0.000	29.561	0.000	0.000
QRF Proposals have been received and review panel has been designated to review and recommend proposal for funding. Selected proposals will be reported in the following QRSP Congressional Report.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2008 and FY 2009 Plans:	0.000	0.000	29.751	32.043
FY 2008 and FY 2009 data call for new start projects will be fielded in fourth quarter of FY 2007 and FY 2008.				

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<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007																			
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Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013																				
P828      Rapid Reaction Fund	49.821	50.035	50.511	51.059	51.531	48.941	49.584	50.281																				
<p><b><u>A. Mission Description and Project Justification:</u></b> The Quick Reaction Special Projects Program (Program Element 0603826D8Z) QRSP supports three separate projects that provide rapid funding to expedite the 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 (RRF). The Defense Acquisition Challenge Program (DACP) was transferred in FY 2005 and out years to PE0604051D8Z.</p> <p>RRF is fully executed through the Combating Terrorism Technology Task Force (CTTTF), recently re-designated as the Rapid Reaction Technology Office (RRTO). The CTTTF was stood up to provide rapid response to operations in Iraq and other theaters in support of the Global War on Terrorism (GWOT) and to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years. In FY 2005/2006, CTTTF/RRTO has leveraged the DoD science and technology base and those of the other Federal Departments; stimulated interagency coordination and cooperation; accelerated the fielding of capabilities and concepts to counter emerging threats; and provided feedback to the S&amp;T community to guide long term developmental strategies. The task force anticipated adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force exploited technology developed outside of DoD in the commercial sector, in academia and internationally; as well as anticipated adversary's application of available and advanced technology. In FY2007 RRTO will build upon previous experience and pursue projects to: counter cover, concealment and deception in a counter insurgency environment; explore methods and approaches of persistent surveillance stimulation for counterinsurgency; develop alternate power sources for sensors and systems; and expand human, social and cultural knowledge. RRTO will actively pursue cross organization project teaming and sharing of information. The average length of a Rapid Reaction Technology Office project falls within an 8-12 month range in order to more effectively aid the warfighter.</p>																												
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Advanced Technology Applications Center</td> <td style="text-align: right; padding: 5px;">1.500</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> </table> <p style="padding: 5px;">FY 2006 Accomplishments: This project will develop a capability to integrate disparate sensor data. Product integration will use metadata tagging to combine multiple sources of information and combine them in a single product that can be pulled by the consumer in a limited bandwidth environment.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2006</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2007</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2008</td> <td style="width: 10%; text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">3D Antenna</td> <td style="text-align: right; padding: 5px;">0.900</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> <td style="text-align: right; padding: 5px;">0.000</td> </tr> </table> <p style="padding: 5px;">FY 2006 Accomplishments: The ability to hide an ultra-miniature tag, the characteristics of highly reliable operations, and the addition of an airborne surveillance and search capability (in addition to optional satellite or other terrestrial techniques) can greatly enhance our counter-terrorist, counter-narcotics, and war fighting capabilities.</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Advanced Technology Applications Center	1.500	0.000	0.000	0.000	<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	3D Antenna	0.900	0.000	0.000	0.000
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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
MASTER Maritime Domain Awareness for Global War on terrorism (GWOT)	1.000	0.000	0.000	0.000
FY 2006 Accomplishments: The automatic generation and maintenance of ship tracks will greatly expand current capabilities. The new, emerging ADEPT-tag technology developed within National Technical Means (NTM) is combined with multi-intelligence data sources containing maritime related information to automatically generate ship tracks. Specific technologies and capabilities are classified.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Wideband Processor (AWP)	2.500	0.000	0.000	0.000
FY 2006 Accomplishments: The AWP technology will provide the capability for new detection, location and processing of commercial telecommunications being used by asymmetrical threats. The AWP technology will provide a quick reaction system that will locate and target modern commercial telecommunications.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
COIN (Counter Insurgency) Tactical Survey	1.985	0.000	0.000	0.000
FY 2006 Accomplishments: Produce architecture to detect, track, and investigate personnel and activities through methodologies similar to those used to counter criminal activities. The tactical surveillance architecture will increase the granularity of situational awareness at all levels and will save blue force lives by identifying and neutralizing potential threats in real time.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Technology Applications Center	1.500	0.000	0.000	0.000
FY 2006 Accomplishments: This project will develop a capability to integrate disparate sensor data. Product integration will use metadata tagging to combine multiple sources of information and combine them in a single product that can be pulled by the consumer in a limited bandwidth environment.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Counter Insurgency Pattern Assessment (CIPA)	2.800	0.000	0.000	0.000
FY 2006 Accomplishments: The CIPA program uses multi-level geospatial analyses to identify behavioral patterns associated with insurgent or terrorist actions. The CIPA product predicts potential areas for future attacks and allows War fighters to effectively employ limited assets to focus on areas of likely attack.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
COIN (Counter Insurgency) RAND Study	2.500	0.000	0.000	0.000
FY 2006 Accomplishments: RAND will conduct comprehensive research into the nature of the current and future insurgency. Provide decision makers with recommendations on how to improve U.S. counter insurgency capabilities, including ways to enhance the ability of partner nations to combat insurgency.				

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603826D8Z - Quick Reaction Special Projects</b>			PROJECT <b>P828</b>
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Frogger PEAR	1.000	0.000	0.000	0.000
FY 2006 Accomplishments: This project will merge ongoing development of the Augmented Reality Visualization of the Common Operating Picture (ARVCOP) and the Modular Mission Planning Toolkit (MMPT) program. Supports mine warfare mission planning for multiple heterogeneous unmanned platforms and NSCT-1 delivery vessels. The effort will bring multiple sensor feeds into a common operating picture.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Frogger UAV	1.000	0.000	0.000	0.000
FY 2006 Accomplishments: This effort will develop a computer based training system for operators of small UAVs. A standardized, modular UAV training capability will provide a consistent operational capability by bring all UAV operators to a criterion based level of proficiency. UAV operators training to a criterion-based level of proficiency will provide an improved, standardized operational capability at lower cost and less risk with this system.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Geolocation Effort	1.680	0.000	0.000	0.000
FY 2006 Accomplishments: The project addresses a CENTCOM Joint Urgent Operational Needs Statement (JUONS) for detecting and locating a specific category of electronic devices in real time. The details of this project are classified.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Halo Pele	0.900	0.000	0.000	0.000
FY 2006 Accomplishments: HALO Pele is a test designed to provide an engineering evaluation of a suite of technologically advanced sensors to support war fighter activities. HALO Pele Testing will perform high altitude (~50 kft) data collection operations on the NASA operated WB-57 aircraft over various Hawaii ground sites. An addition of a well characterized suite of new source and method sensor technologies to support the war fighter is provided.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Mapping Human Terrain - Human Terrain Information System	1.200	0.000	0.000	0.000
FY 2006 Accomplishments: To provide operational unit commanders, their staffs and combat forces with knowledge, training and tools needed to rapidly understand and exploit foreign cultures so that this understanding can be applied to enhance situational awareness and operational effectiveness. This effort will produce prototype tools, draft doctrinal publications, and initial training packages that in total allow the war fighter to better record and understand human terrain, and exploit this human terrain knowledge for operational and tactical victories.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009

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Moving Target Information Exploitation (MTIX)	0.650	0.000	0.000	0.000
FY 2006 Accomplishments: Develop and deploy a vehicle movement change detection tool using MTIX which will baseline patterns of object movement from persistently collected MTI. This proposed tool will permit the rapid detection and extraction of significant changes from within the data, as well as near-real-time posting of the changes on SIPRNET and JWICS web sites.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Joint Experimental Range Complex	3.709	0.000	0.000	0.000
FY 2006 Accomplishments: 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.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Program Support	1.073	0.000	0.000	0.000
FY 2006 Accomplishments: Provide management and analysis of highly specialized defense research and engineering technologies. Support include technical, financial, administrative, and programmatic analysis of current and planned research and engineering projects for CTTTF.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Special Capabilities Office and Core Support	0.650	0.000	0.000	0.000
FY 2006 Accomplishments: Supply services and support in acquiring, designing, planning, and constructing a government sponsored Special Compartmented Information Facility (SCIF) and Special Access Program (SAP) areas within a commercial facility and staffed with program security, AIS contracting, and administrative personnel.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Phoenix	4.000	0.000	0.000	0.000
FY 2006 Accomplishments: Demonstrate an innovative approach to support Intelligence Preparation of the Battlespace (IPB) for Information Operations (IO) by enabling the application of advanced, non-traditional model- driven and biographical data mining technologies to a mixture of social, cultural, and production-related data for weapons of mass destruction (WMD). A prototype of an advanced data mining system and analytic tactics, techniques, and procedures (TTP) to support planning for non-kinetic, effects-based operations will be provided. The details of this project are classified.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Airborne Systems Participation at Buried Cache Detection Test	0.387	0.000	0.000	0.000
FY 2006 Accomplishments: The objective of the Buried Cache Detection Test is a proof of principle assessment of selected assets representing the three different components of a tiered concept (Overhead, Air-Breather and Ground) for detecting large buried weapons caches.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>

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Predictive Analysis Collaborative Capability (PACC)	1.500	0.000	0.000	0.000
FY 2006 Accomplishments: This project is linking historically accurate data and real-time indicators to predict and access enemy courses of actions, and geospatially reference multi-INT data repositories to the Distributed Common Ground Station (DCGS) Defense Integrated Backbone (DIB) web enabled Intelligence, Surveillance, and Reconnaissance (ISR) battle management architecture.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Project ARGUS	1.500	0.000	0.000	0.000
FY 2006 Accomplishments: Project Argus will integrate the contributions of advanced social network analysis (UCINet) and data mining technologies (entity tagging, entity disambiguation, link and node analysis) into an interactive, geo-temporal visualization environment (Oculus Geotime). Analysts and operational specialists will be able to understand and explore large volumes of data at once through a common operating picture of operational significance.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Project Red Light	0.900	0.000	0.000	0.000
FY 2006 Accomplishments: Enabling technology engineered for SOCOM to discretely geolocate and report target locations. This effort will provide evaluation of DoD/Intelligence Community needs, evaluation of capabilities for inclusion in the baseline, prototyping of new capabilities to meet user identified requirements to include testing/fielding of modified baseline. Details of the project are classified.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Advanced Modem Phase II	0.450	0.000	0.000	0.000
FY 2006 Accomplishments: The QRC funding will allow for miniaturization of an existing commercial modem for integration into multiple sensors throughout the services while including users from numerous communities. The effort involves direct user participation and approval through design and prototyping, culminating in field testing of the prototype and final report. The results of the effort crosses all services and numerous government agencies utilizing commercial modems for over the horizon transmission.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Project Lighthouse Phase II	0.450	0.000	0.000	0.000
FY 2006 Accomplishments: Enabling technology engineered for SOCOM to discretely geolocate and report target locations. This effort will provide evaluation of the needs of DoD and the military community, evaluation of capabilities for inclusion in the baseline, prototyping of new capabilities to meet user identified requirements to include testing/fielding of modified baseline.				
<b>Accomplishment/Planned Program Title</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Scorpion II	0.500	0.000	0.000	0.000
FY 2006 Accomplishments: Truck-mounted, self contained Radio Frequency Generator with integrated directing antenna and aiming/pointing system. Counters remotely detonated IEDs. Pre-detonates or 'duds' the IED by scrambling the trigger electronics. A prototype system that can be operated autonomously in the field to evaluate the military utility of the technology as an effective means of defeating RCIEDs. Project will test a prototype system and capture data to assess the vulnerability of various targets at distances of interest. Details of the technology are classified.				

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<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Round Up	4.000	0.000	0.000	0.000
FY 2006 Accomplishments: An integration of existing projects for an end to end architecture, the tactical collection, processing and manual fusion activities in theater. Provide a truly end to end solution by fusing at the raw detection level data from very specialized processors with tactical collectors of not only SIGINT but also any data produced for detailed intelligence products supporting Intelligence Preparation of the Battlefield in near real time. The details of this project are classified.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Natural Taggants	1.750	0.000	0.000	0.000
FY 2006 Accomplishments: A forensic database and GIS model will be developed to relate the stable isotope ratios found in human hair to ratios found in drinking waters and protein sources from regions across the world. This geolocation capability will allow terrorists to be back tracked chronologically to specific locations or geographic regions using hair samples. By reconstructing movements and providing information about where a person has been and for how long, terrorists may be linked together and/or to locations of intelligence value, such as encampments, recruitment and training sites, terrorist incidents, or common travel routes.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
TINA (Tactical Infrared Networked Awareness)	1.600	0.000	0.000	0.000
FY 2006 Accomplishments: TINA Improves situational awareness for operators and enables compact, high bandwidth means to harvest data quickly. TINA takes advantage of significant DoD investment in communications and visualization technologies to integrate the metro reflector long-range asymmetric communication technology with the TacViz™ tactical data visualization tool. The new system will provide an advanced reconnaissance asset that will allow operators to access, collect, and understand data from various remote sensors.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Visualizing Belief System (VIBES)	0.700	0.000	0.000	0.000
FY 2006 Accomplishments: Adapt and integrate state-of-the-art models of human beliefs and perceptions into software tools for use in planning and executing tactical missions in the complex environment. This effort will show the military utility of "operationalizing" models from cognitive science and human factors to assist commander/analysts' cultural understanding in complex environments.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Supernova Technique Development and Employment	0.300	0.000	0.000	0.000
FY 2006 Accomplishments: Develop and employ new and upgraded Supernova techniques from Compass Call aircraft in support of CENTCOM tasking The Supernova effort brings forward a capability to counter the IED threat. Details of this project are classified.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009

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Multiple Cooperative UAVs for Persistent ISR	0.150	0.000	0.000	0.000
FY 2006 Accomplishments: The goal of the proposed project is to develop a cooperative multiple UAV system that provides commanders with capabilities to continuously collect intelligence, conduct surveillance, and perform reconnaissance for mission planning and execution, friendly force protection, and exploitation of enemy weaknesses. The system will prove a flexible, real time, relatively low cost capability to better gather and exploit ISR data.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
The Structure and Dynamics of Insurgency	0.150	0.000	0.000	0.000
FY 2006 Accomplishments: This project builds a dynamic model of insurgency that clearly defines the variables, parameters, and relationships that shape the outcome of insurgent competitions. The model will be presented in general terms but have sufficient flexibility to allow analysts to move from the general to the specific. This project will provide a set of tools the policy and intelligence communities can use for addressing operational, tactical, and organizational issues.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Technology for Enhanced Exploitation of Multiple Sensors (TEEMS)	1.000	0.000	0.000	0.000
FY 2006 Accomplishments: Enhance a currently funded effort in analysis of multi-sensor data to enable faster generation and discovery of knowledge products and faster detection of suspicious activity, with lower false-alarm rates. This project will provide faster detection of suspicious activity, with lower false-alarm rates and improved target tracking and identification.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Project DAWP (Thumper)	0.120	0.000	0.000	0.000
FY 2006 Accomplishments: The intent of this project is to demonstrate Detonation Wave Array Projector (DWAP) technology effectiveness and operational feasibility. A new acoustic cannon, called DWAP, shows promise as a full-spectrum weapon capable of non-lethal or lethal effects over short to long ranges in a direct or indirect path. DWAP shows promise as a full-spectrum weapon capable of non-lethal or lethal effects over short to long ranges in a direct or indirect path.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Compact Fuel Cell Rapid Technology Insertion	0.425	0.000	0.000	0.000
FY 2006 Accomplishments: Build and deliver a high energy power source that replaces batteries and can be used to power electronics equipment on autonomous system. The system will provide flexible fuel capability that could reduce the weight of energy storage required by over 50% using matured compact fuel cells and reduce mission costs incurred using batteries.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Oregon Nanotechnology and Microelectronics Center (ONAMI)	0.800	0.000	0.000	0.000
FY 2006 Accomplishments: The ONAMI Center for nanotechnology for Thermal Management and Portable Power Generation will focus on developing nanotechnology that can enhance the performance of thermal management systems for electronics cooling, process cooling and the performance of small portable energy systems. This effort develops a nano center of expertise in Oregon.				

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<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Precision Underwater Mapping (IPUMA) Sonar for Small UUV's	1.000	0.000	0.000	0.000
FY 2006 Accomplishments: Develop two wide sector FLS5 systems with the capabilities to support the L-PUMA processing algorithms for front-end processing, target detection, single-ping remote profiling, and terrain 3-D mapping.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
PeConflict.org: Instability Assessment for Afghanistan	0.200	0.000	0.000	0.000
FY 2006 Accomplishments: This effort aims to augment a set of instability assessment tools and provide an extensive assessment and data set for Afghanistan from CY 2004 to the present. The model will identify specific problems and their relative priority to facilitate decision-making and support corrective actions by the Government of Afghanistan, the US-led Coalition, and the international community of nations who are all trying to resolve conflict and prevent future conflicts.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Understanding the Evolving Nature of Nuclear Proliferation	0.180	0.000	0.000	0.000
FY 2006 Accomplishments: An increasing number countries either have or are seeking nuclear weapons capability. To halt or reduce this dangerous and destabilizing trend, it is important to understand what motivates countries to seek nuclear weapons, as well as what technologies, expertise and facilities are being sought or developed. Committee on International Security and Arms Control (CISAC) will conduct a series of activities as part of its core agenda to develop a framework for analyzing nuclear proliferation.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Asymmetric Threat 7 Tactical Analysis Casebook/Post Blast Analysis Casebook (ATTAC/PBAC)	0.152	0.000	0.000	0.000
FY 2006 Accomplishments: Develops a computer software program that assists EOD technicians in the gathering of evidence and the subsequent documentation and reporting of bomb scene investigations. The fielding of post blast investigation software would greatly reduce inadvertent data omissions and the time required to properly document and report bomb scene investigations.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Biometric Knowledge Center (BKnC) - The Development of a Defense Biometrics Research Agenda	0.100	0.000	0.000	0.000
FY 2006 Accomplishments: The BKnC will perform Logistics to aid in the development of a Defense Biometrics Research Agenda to address S&T issues. This effort will address the need for national defense superiority which relies on the investment in biometrics S&T. Authentication and identification of humans using biometrics technology is the premier tool for improving security across the intelligence and defense arenas.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007/2008/2009 Plans:	0.960	50.035	50.511	51.059

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<p>RRF investment decisions are made during the execution years in response to combatant commander, services and other organizations' 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 areas include: alternative power strategies, autonomous operations; electromagnetic spectrum management; "stimulation" technologies and strategies; socio-cultural topics; multi-sensor applications; 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.</p> <p>CTTTF/RRTO's FY07 objectives include: increased interagency funding and program integration through co-funded programs and regular information sharing, the integration of earlier fiscal year efforts into coordinated architectures with specific operational areas of focus, and transition and manufacturing strategies for programs underway or to be started. A few of these areas are described in further detail below.</p> <p>Counter Cover, Concealment and Deception in a Counter Insurgency Environment: Realizing the ability to detect insurgent activity and hostile intent is a different problem set than what has been a typical surveillance and reconnaissance problem, CTTTF/RRTO has invested in technologies to help discern hostile activity in a cluttered environment. Technologies include: standoff trace explosives detection initiatives, predictive tools, open source analysis techniques, development of acoustic imaging capabilities, virtual reality overlays in a tactical environment, perimeter security capabilities and exploitation of novel signatures.</p> <p>Alternative Power Sources for Sensors and Systems: CTTTF/RRTO seeks to help the warfighter more effectively manage sensor employment. RRTO is sponsoring development of a hybrid fuel system to power sensors aboard a small unmanned aerial vehicle and an initiative to develop an alternate fuel source for a sensor package deployed from Naval ships. RRF investment decisions are made during the execution years in response to combatant commander requirements and new threats/new opportunities.</p> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		



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Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P829 Technology Transition Initiative (TTI)	28.410	28.563	29.252	31.043	32.062	30.275	30.673	31.105	
<p><b><u>A. Mission Description and Project Justification:</u></b> 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.</p> <p>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&amp;T base into the acquisition community. The TTI Program facilitates the rapid transition of mature technologies from the S&amp;T base into acquisition programs or directly to procurement. The TTI objectives are to successfully demonstrate new technologies in relevant environments and accelerate the introduction of new technologies into operational capabilities for the armed forces.</p> <p>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&amp;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&amp;T base, conducts a prioritization 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, reviews new start selection options based on available resources, and prepares a recommended new start selection list to the Technology Transition Manager for funding. The Technology Transition Manager, in coordination with the TTC, selects the highest priority proposals for funding.</p> <p>The FY 2007 proposal call memo was signed out by the Technology Transition Manager on February 17, 2006, requesting the TTC members provide their prioritized inputs by April 17. These proposals were to focus on projects having "great impact for the warfighter", (i.e., potentially fewer projects with larger dollar values). The memo also indicated that OSD priorities were on projects that could reduce demands on manpower, increase lethality, and/or reduce our logistics footprint. This year, each Service/Agency was asked to limit their submittals to OSD to a total of ten/five respectively. A total of 95 proposals were submitted to the components, from which they necked down to 30 submitted formally to OSD. These 30 were evaluated against the following evaluation criteria: TTI funding must accelerate product transition, project is from DoD S&amp;T base, cost sharing to leverage TTI funding, project duration less than 4 years, established exit criteria, potential for joint use, value to the warfighter, sufficient technology maturity, commitment to transition/acquisition. The evaluation team downselected to 16 proposals which were briefed to the selection panel. In July 2006, eleven proposed TTI efforts were approved by the Technology Transition Manager as new start projects to be implemented at the start of FY 2007.</p>									

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<b><u>B. Accomplishments/Planned Program:</u></b>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Automated Change Detection: (Army)	1.581	0.000	0.000	0.000
This TTI effort accelerates the transition of a Change Detection capability into current operations. The output of this effort is a new capability that will be used by the warfighter to address a critical need to rapidly identify and locate landmines and Improvised Explosive Devices (IEDs). Additional information is For Official Use Only (FOUO).				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Lightweight Ceramic-Based Armor: (Air Force)	0.506	0.000	0.000	0.000
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 is being evaluated for first article testing as an eSAPI rated armor product 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. In addition, new forming techniques allow the rapid development of complex shaped armor that is not feasible with traditional ceramic material processing. 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.				
FY2006 Output: Continuation of 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. Continuation of work with SOCOM to outline Special Operations specific armor requirements. Delivery of appendage armor solutions to Force Protection Battlelab. Qualification of another industrial source of eSAPI plates for delivery of eSAPI to both the Army and Marine Corps. Production increase of SAPI plates (SAPI, iSAPI, eSAPI and sSAPI) to 10,000 plates per month. Development of lightweight tactical vehicle armor based on the SAPI material and design as per emerging DoD requirements. Development of new forming and manufacturing techniques to produce complex shaped armor for advanced ergonomic designs. Development of capacity to deliver 20,000 sets of appendage armor per month to Army, Marine Corps and Air Force. Development of armor system for Cobra Helicopter, and delivery of under signed IDIQ. Development of new ergonomic body armor shapes with the US Army Soldier System Center. Continuation of work with lightweight vehicle manufacturers to develop platform specific packages responding to the current threat levels.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Command Post of Future (CPOF) and Army Battle Command System (ABCS) Server Software Integration: (Joint w/Army/USMC)	2.319	0.000	0.000	0.000
The Command Post of the Future (CPOF) is a high priority, DARPA-developed technology program that provides a software suite of collaboration tools which is rapidly becoming a defacto capability of choice from Corps down through Battalion. CPOF formally transitioned to the Army Acquisition Community in mid-2006. CPOF successfully supported the 1st Cavalry Division in GWOT operations during OIF with a single 50 user network. This number has dramatically expanded with over 400 current OIF users across multiple networks. 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 Army Battle Command System (ABCS) hardware. TTI Program funding will accelerate the merger and integration of CPOF server software and Army Battle Command server 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.				

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<p>The primary outputs and efficiencies of this program are : 1) comparative analysis against final CPOF and ABCS Server software builds for consolidation; 2) initial consolidated battle command server fielded to OIF 06-08 to add capability with reduced life-cycle costs; 3) documented target system architecture operating environment with CPOF Federated Server configuration to ensure interoperability; 4) feasibility analysis for software coexistence and integration approaches using virtualization and 64-bit dual core hardware technologies to assess exploitation of technology advancements in consolidation strategy; 5) analysis of technical alternatives to develop architecture strategies for CPOF-JADOCS-BC Server solution to further reduce infrastructure dependencies; 6) documented unified server target software and hardware environments per NECC architecture framework standard to jointly leverage efficiencies from this program.</p> <p>FY2006 Output: Completed comparative analysis against final CPOF and ABCS Server software builds. Prototyped and tested initial CPOF Federated Server configuration. Developed, tested, and delivered initial consolidated battle command server and fielded to OIF 06-08. Examined target system architecture operating environment. Explored software coexistence and integration approaches using virtualization and 64-bit dual core hardware technologies. Developed courses of action and conducted analysis of technical alternatives to develop architecture strategies for CPOF-BC Server solution. Defined and documented unified server target software and hardware environments. Prototyped software co-existence and integration approaches. Developed and tested initial CPOF-BC server software prototype identifying critical path technical risk areas.</p>			
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008
Digital Planning Tools for Joint Ground Warfare: (Army)	0.632	0.000	0.000
<p>CENTCOM submitted an Operational Needs statement (ONS) to G3 Army to enhance the Combined Arms Planning and Execution-monitoring System (CAPES) to support Military Operations in Urban Terrain (MOUT), Stability and Reconstruction Operations (SARO), and Diplomatic, Information, Military, and Economic (DIME)/Political, Military, Economic, Social, Information, and Infrastructure (PMESII) planning. The outcome of this program is to support the ability of Army and Marine units to develop digital plans for OIF/OEF that support asymmetrical, non-kinetic planning, in addition to the digital kinetic planning that is currently supported in CAPES. This two year project is being executed in collaboration with a number of operational units to include: III Corps, 101st AAD, and I MEF, and will be transitioned into the Joint Tactical COP Workstation by FYE '06.</p> <p>The primary outputs and efficiencies of this program include: (1) percentage decrease in time to analyze incident trends for incorporation into operational plans, (2) percentage decrease in ability to generate movement plans (routes) that avoid likely hazardous situations (when avoidance of kinetic contact is desired), (3) decrease in ability to predict times and locations where incidents of insurgency is likely, (4) percentage increase in plan options that take non-kinetic PMESII effects into consideration.</p> <p>FY 2006 Output - Completed prototype of MOUT, SARO, DIME/PMESII planning capabilities as described and requested by participating operational units. Prototype software was taken by I MEF and 101st AAD for their OIF rotation for field evaluation. Based on a program brief to JFCOM, this effort will be included in JFCOM PMESII Center of Excellence.</p> <p>Transition to JTCW is on schedule for FYE 2006. Developed capabilities included: 1) Identification of trends in unit-reported historical incident data, Model non-military populations, their dispositions and relationships, addition of Military Operations Other Than War, (MOOTW) graphical control measures; addition of Stability and Support Operations (SASO) and Military Operations on Urban Terrain (MOUT) tasks; prediction and propagation of population disposition as a result of conducting military and non-military tasks; prediction of likelihood of future incidents based on population disposition. Provide multiple COA assessment with respect to their affect on the population. Incident Correlation graphs that are driven by Time of Day and Events. 2) Auto-creation of non military population demographic groups. Population demographic data is created based upon Tribe, Language, Ethnic, Religion and Nationality. Developed a SARO task editor for specifying the effect of a task on non-military population groups. Behavioral Graphs which allow the users to express changes in disposition of affected populations. Default behavioral graphs were created for the SASO tasks. Using the default graphs users can apply effects to tasks from a menu of behavioral patterns, and then modify the pattern. 3) Task Sketching capability. This allows task to be created without assigning units "unassigned task". Task can be associated to units, Graphical Control Measures (GCMs), or annotations. Users create an object (objective - population - Assembly area...) and associate a task to the object. The task can be scheduled</p>			

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immediately whether it is assigned to a unit or not. 4) Find the optimal route based on social information about the region of interest. Documented a proposal to find the N-best routes and impose a partial order on the results in order to provide alternate solutions to the commander. The goal is to optimize the cost in finding the best shortest route. 5) Developed data mining techniques to predict future incidents in a region by using past incidents that have occurred in the same region. 6) Refined the Optimal Route Estimation using Social Factors analysis to include reasoning for the following use cases: Find a route to the nearest hospital; find a route that avoids a specific area because it is known that some event is occurring in that area; find the least dangerous route; find a route that must go through a specific area; find a route that must avoid locations of a specific type (e.g., bridges); find a route based on contingencies. 7) Created a work flow for DIME-PMESII framework that allows a user to define a set of desired Strategic Goals. The PMESII system will consist of the following modules: Strategic Effects Editor - Define high-level desired PMESII effects and constraints from the strategic goals, Strategic Effects Task Planner - Plan possible ways to achieve the desired effects, in terms of operational tasks, Strategic Effects Scheduler - Prioritize effects plans with constraints, Effect Task Order - Select a scheduled plan and outputs.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Integrated Precision Underwater Mapping (I-PUMA) Sonar for Small UUVs: (Navy)	1.054	0.000	0.000	0.000
FY 2006 Accomplishments: 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 primary efficiencies of the i-PUMA sensor suite include providing 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 2006 Output: Completed ALS system design optimization and selected lower-risk 16" noise section. Fabrication of electronic and mechanical components underway and on schedule to be completed 2Q FY 2007. Initiated system software development and porting from PUMA program, which is 50% complete. Continuing object detection and discrimination algorithm development and mission path planner algorithm development. Completed UUV integration plan with nose mounted launch and recovery system. Complete sonar/array processing development, integration, and testing in Lake Travis. Complete object detection and discrimination processing. Completion of mission path planner development. Completion of UUV hardware/software integration and in-water testing/evaluation.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Special Ops Forces (SOF) Virtual Interpreter: (USSOCOM)	0.632	0.000	0.000	0.000
The SOF Virtual Interpreter (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 launch 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 Speaking-Multilingual Interactive Natural Dialog System (S-MINDS) software to record and translate a foreign language response back into English. A limited 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 training from abroad. The goal of this effort is to evaluate and modify if necessary, twenty (20) SOF Virtual Interpreters (SVI)				

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Systems technology modifications for use by USSOCOM forces and others to effect a rapid transition into acquisition.						
FY2006 Output: One Way Translator : Communications "Plug" hardware and software developed and integrated on SOFVI; transitioned the government funded two-way voice-to-voice communications cap; added two Phraselator Input Languages to the SOFVI; integrated commercially available language dictionaries, language translation tools, language training, and sustainment tools, pictures, maps and, area and cultural information into the SOFVI; created database and host language training and sustainment tools on the module management site (MMS); delivered two fully integrated SOFVI devices for evaluation and fifteen additional SOFVI units for user evaluation and a production capability assessment; participated in Operational testing in 4Q FY 2006 by USASOC TIED. Limited Two Way Translator:- Successful demonstration of limited 2-way capability, Successful user interface improvement, On-going comparative evaluation by ARL, Participating in JFCOM effort,. combined DT/OT 4Q FY 2006 by ATEC. Prepared final report and conduct TTI Program Close Out brief.						
Accomplishment/Planned Program Title			FY 2006	FY 2007	FY 2008	FY 2009
Lightweight and Conformal Photovoltaic Solutions for the SOF Warrior: (USSOCOM)			1.549	0.000	0.000	0.000
Photovoltaic (PV) materials are essential ingredients of alternative energy systems slowly integrating into operational tool kits. This Technology Transition Initiative facilitates the production of PV technologies through continued leveraging and project acceleration within previously approved Natick Soldier Center (NSC) Army Technology Objectives (ATO) and Small Business Innovative Research (SBIR) efforts. The FY 2005-2008 ATO initiatives have been accelerated with development and production of several working prototypes in the TTI's first year. Several successful subprojects, identified below, have been conducted during the first funding phase, and additional working subsystem prototypes are in work. These build on the risk mitigation steps of the first year of work quantifying PV technologies for integration into SOF unique equipment. These SOF PV systems include but, not limited to, unattended ground sensors, tags, command and control equipment (handheld radios), weapons sights, unmanned/manned air, ground and maritime platforms, shelter overheads, etc. This technology offers the SOF operator versatility for use as a direct or recharging energy source to complement legacy generator and battery systems.						
FY2006 Output: AA Battery Solar Chargers- An operational, twelve month, evaluation of one thousand (1000) PowerFilm, Inc. (formerly Iowa Thin Film, Inc.) solar charger systems was conducted. System production was completed within forty five days of award; fielded to multiple SOF and service unique users in December 2005; the Natick Soldier Center's (NSC) Operational Forces Interface Group (OFIG) final evaluation report was completed in 2006.						
Conforming Photovoltaics (PV) to Objects- Conformal Abilities of Flexible Substrate Based Photovoltaics (PV) to Irregular Shaped Objects (PowerFilm, Inc.) - This twelve month research and development effort took an innovative twist to mold the photovoltaic material internally to an irregular shape. Additional technology developments have resulted from the initial testing of plastic mold/potting materials, paints, and novel approaches for constructing, painting and etching a conformal PV object. Working prototypes received in September and demonstrated to PEO-IIS managers in October 2006.						
Small, Concealable, Light Powered Electrical Supply (PowerFilm, Inc.) - A strip of Iowa Thin Film, Inc. PV material has been integrated with material and wire filament leads derived from their conformal work. The working prototype was received in September 2006 and demonstrated to PEO-IIS managers in October.						
1' x 1' Mesh/PV Working Prototype (PowerFilm, Inc.) - The working PV sensor prototype was received September 2006. This risk reduction PV system is now the tool used to demonstrated to operators and transition managers to visualize larger systems.						
Conformal Photovoltaics - Shelter PV Prototypes (PowerFilm, Inc.) - Twelve month phased development and production initiative to construct twenty-five PV harnesses for integration with camouflage material by the Natick Soldier Center. Initial four (4) prototype deliverables planned for May 2007.						

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<p>SOF Vehicle PV Prototype (PowerFilm, Inc.) - Planned nine month production of one PV harness for integration with camouflage material by the Natick Soldier Center and use with USSOCOM Small Business Innovative Research project, "Family of SOF Vehicles".</p> <p>Joint Threat Warning System Foldable PV Systems (PowerFilm, Inc.) - This effort will accelerate the Natick Soldier Center sponsored ATO which is developing and integrating foldable PV systems with single headed charge controller units needed for recharging BB390 and BB2590. Production of one hundred thirty complete systems is planned over a fifteen month period.</p> <p>PV Solar System for 75W Rechargeable Battery (PowerFilm, Inc.) - A three month viability study is planned to determine level of effort required to integrate and produce fifty working prototypes for SOF users. If feasible, prototype production is planned to be completed six months later assuming no schedule slippage with commercially available battery procurement. 1KW / Balance of Systems PV System - Twelve month effort is planned to develop, procure, and field necessary systems for evaluation by SOF users in support of bare basing or other shelter considerations supportive of alternative energy initiatives. Planned, twelve month, phased development and production initiative to construct unknown quantity and size of PV harnesses for integration with camouflage material by the Natick Soldier Center. Our development and production plans are predicated on capability based decisions made to support Reconnaissance and Surveillance, Mobility, and Joint Special Operations Task Force with alternative energy solutions.</p> <p>PV Thread/Mesh Development (Konarka Technologies, Inc.) - Solid-state PV Thread - Deliver 100 feet of solid-state PV thread over six month period of performance. Working PV Fabric Prototype - Deliver a solid state PV fabric from 100 feet of PV thread previously developed. This thread would be woven into an existing fabric (expect camouflage fabric), for support, and demonstration of a device. Working Free Standing Mesh PV System - Deliver this working prototype over fifteen months. Device will be free standing- not woven into an existing fabric.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Seal Delivery Vehicle Advanced Reconnaissance System	0.237	0.000	0.000	0.000
<p>The MK 8 MOD 1 SEAL Delivery Vehicle (SDV) is a manned submersible vehicle used to deliver Navy (Sea/Air/Land) SEALs and their equipment to mission areas. The vehicle is battery-powered and is equipped with propulsion, navigation, communication, and life support equipment. The vehicle ORD provided a documented requirement for a periscope which was unfulfilled during production (1998). A US/UK Cooperative R&amp;D effort demonstrated a Periscope capability in 2003.</p> <p>Outcome - Provide the Naval Special Warfare Community with capability that meets their mission requirement for an SDV Periscope. Obtain prototype SDV Advanced Reconnaissance Sensor Kits to: 1) Enhance SDV situational awareness and intelligence, surveillance and reconnaissance capabilities; 2) Maintain parity with UK capability; and 3) Bridge the gap between S&amp;T funding and procurement.</p> <p>Efficiencies: Project tracked with Earned Value Management. Minimum EVM throughout FY 2006 was a low of .86 CPI. End-of year CPI and SPI were both between 0.95 and 1.10. Signature tests were conducted coincident with tests for other NSW craft to leverage and share expenses</p> <p>FY 2006 Output: Contracted for an enhanced EO Sensor in 2006 (delivery 2007) to meet desired NSW enhanced performance criteria. Commenced design for mast modifications and electronics integration to interface with the Modernized MK 8 MOD 1 SDV. Changed electronic design path to eliminate the Periscope Controller by interfacing with the SDV Onboard Mission Support Computer (SOMSC) supporting display on the pilot and navigator Command Display Units. Completion of SDV SOMSC integration to support use from Command Display Units. Receipt and testing of Phase II Electro Optic Sensor. Refinement of mast mounting design, and confirm with signature tests.</p>				

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<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Husky Mounted IED and Anti-Tank Mine Detection System: (Army)		4.329	1.039	0.000	0.000
This project will provide a near-term, highly effective capability to US forces in Iraq and Afghanistan to detect anti-vehicle landmines and improvised explosive devices (IED's). Additional information is For Official Use Only (FOUO).					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Red Blood Cell Extended Life (RBCXL) : (Army)		1.054	1.199	0.000	0.000
RBCXL addresses requirements validated in the Initial Capabilities Document (ICD) for Ground Contingency Medical Support System, approved by the Air Force in 2003 and documented in the Army's 2005 draft ICD for Theater Combat Casualty Care. The outcome of RBCXL is an FDA approved blood collection and storage system that provides capability to collect and store 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. The 26 month project will be managed by the US Army Medical Materiel Development Activity (USAMMDA) in collaboration with Hemerus Medical, LLC, Saint Paul, MN with completion of manufacturing development and validation and completion of product testing and evaluation by September 2008. The primary outputs and efficiencies to be demonstrated during development include (1) demonstrated safety of system materials when tested in animals, (2) prolonged storage life of human red blood cells (RBCs), (3) enhanced RBC quality and function with in vitro (test tube) testing compared to current RBC storage at each time interval tested, and (4) safety and equal or enhanced RBC survival when infused into human volunteers.					
FY 2006 Output - Finalized baseline development and testing plan, including pre-clinical animal testing and clinical testing necessary for USFDA licensure..					
FY 2007 Planned Output - Complete animal testing protocol development and submitted protocols for scientific and ethical review Complete manufacturing development, testing, and validation. Complete pre-clinical animal toxicology studies. Complete clinical in vitro study. Complete clinical protocol development. Conduct formal meeting with USFDA in preparation for final clinical study. Submit formal application to USFDA to conduct clinical in vivo study. Submit clinical protocol for local and Army human use review. Conduct and complete clinical testing of RBCXL. Complete final study reports. Submit application to USFDA for licensure of RBCXL for commercial clinical use September 2008.					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Unmanned Surface Vehicles for Littoral Combat Ship Missions: (Navy)		1.054	2.398	2.135	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for Unmanned Sea Surface Vehicles (USSVs) for Littoral Combat Ship (LCS) Missions. The outcome of this TTI program will provide enhanced capabilities, via the USSV, that will be a key enabler for 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 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.					
The output of the project will be to design and build an advanced USSV that is optimized for LCS missions. The lead service is the Navy.					
FY2006 Output: USSV-MCM Payload: Preliminary Integration and Test of existing (non-optimal) mine influence system and USSV, lessons learned. Payload Definition: I.D. Final Mine Influenced System, Defined Requirements: The mine influence system installed on the new USSV was identified as the ONR Code 32 bare cable system. The requirements for weight, space, power and arrangements for the identified system were provided to the USSV design team. Procure/Acquire Mine Influence System. The mine influence system used on the new USSV was acquired. USSV Design/Build. The design for					

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the new USSV is complete. Construction commenced in December 2006.				
FY2007 Planned Output: Construction of the USSV will be completed in FY07. USSV Performance Test/Builder's Trials - USSV performance testing. Payload Integration - the payload identified in Task 2 will be installed aboard the USSV. Mine Influence/USSV At-Sea Test: the performance of the mine influence/USSV system will be tested on a range. Deliver to USSV and technical package to LCS Mission Module Program Office (PMS420). Spiral Output: this TTI program will accelerate development of the USSV so that it can be transitioned into LCS Flight 0 in 2007, which represents a two-year acceleration compared to the current PMS420 plan. USSV-Payload #2. Payload Definition: A second payload will be identified by PMS420 and detailed requirements for weight, space, power and arrangements for the identified system will be provided to the USSV design team. This payload will be either another mine influence payload or an antisubmarine warfare (ASW) payload. Both payloads are required by the LCS Mission Module Program Office. USSV Modifications: A USSV will be modified to accept the second payload. Payload Integration: the second payload will be installed on the USSV. This task will initiate in FY07.				
FY2008 Planned Output: The second payload identified above will be installed on the USSV. This task will complete in FY08. Payload/USSV At-Sea Test: the performance of the Payload/USSV system will be characterized in at-sea tests. Deliver to LCS Mission Module Program Office (PMS420): the technical package describing the Payload/USSV system. The Transition Manager for this TTI Program is the LCS Mission Module Program Office (PMS420). Final demonstration dates are September 2007 and September 2008. TTI program completion date is 30 September 2008.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Operational Gliders for Battlespace Reconnaissance and USV Surveillance: (Navy)	2.002	2.278	0.854	0.000
The Chief of Naval Operations (N8) and Chief of Naval Oceanography (N84) validated the requirement for an operational glider for battlespace reconnaissance and included ocean gliders as part of the Littoral Battlespace Sensing, Fusion and Integration (LBSF&I) Program of Record. The Technology Transition Initiative will accelerate the transition of ocean gliders to operational readiness.				
The outcome of the "Operational Gliders for Battlespace Reconnaissance and USV Surveillance" program is the development of robust ocean gliders that are certified for operational deployment (six prototypes of improved and hardened gliders will be initially delivered) together with an operationally feasible (roll-on, roll-off) deployment and recovery system, a command and control system, and an approved manufacturing process. The completion of the operational glider prototypes, all other deliverables, demonstrations and documentations will be completed at the end of FY2008; the TTI Program funding accelerates the achievement of technical readiness by 36 months (FY2008 vs. FY2011).				
The primary output and efficiency to be achieved in this project is operationally robust underwater gliders that 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. Additional outputs and efficiencies include the following: (1) glider configuration such that they can accommodate optical sensors that facilitate non-acoustic Anti-Submarine Warfare (ASW) measurements; (2) an approved manufacturing capability so that acquisition of large numbers of gliders can facilitate the fleet establishing networks of 10-30 gliders. (These networks of gliders provide real-time environmental intelligence, surveillance and reconnaissance data in the operational area of interest. These data provide mission planning modules with the initial and evolving deep or shallow water environmental data); (3) gliders with the capability to provide long duration sampling (1 month to 3 months), and to provide real-time data at a far lower cost (present estimate is \$4 per glider vertical profile vs. present cost of \$1000 per profile via ship) with immediate delivery of data to operational fleet commands; (4) gliders that, once deployed, do not (now) and will not require support from fleet assets such as ships, aircraft, or submersible platforms; piloting and data flow will be remote but real-time with global coverage. The project will achieve roll-on-roll-off deployment from surface platforms and a common command and control system for all glider types.				
FY 2006 Output - Design of Common Command and Control System, Battery Safety and Approvals Progress; Hardening of Glider; Demonstration and Concept of Operations (CONOPS) development. An initial review of battery and battery safety systems was conducted in February 2006. The project will evaluate and move toward adopting a standard cell of lithium rechargeable batteries for all three glider				



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systems. A long-duration lithium cell has been constructed with accompanying modifications of the glider shell; this will be a special model for selected fleet operations and will go through the same approval process. A draft Command and Control System (CCS) has been designed. A preliminary analysis of the existing individual CCSs was completed (March 2006) and collated the methods used to communicate piloting instructions to the vehicles and to retrieve data collected during glider missions. A user interface was designed with input from the customers that have committed to flying and maintaining the gliders and software development that integrates all control software has begun. Both the Seaglider and Slocum gliders were modified to use removable, reconfigurable wings as part of the "hardening" of the platform. New adaptive sampling methods and concepts of operations were demonstrated in the FY06 RIMPAC exercise (multi-nation, multi-platform Anit-Submarine Warfare (ASW) exercise). During that exercise four Seaglidiers and two Slocum gliders were flown to supply ASW-support. Spiral Output: the RIMPAC exercise provided an opportunity to test new piloting methods in exceptionally strong flow regimes; the piloting patterns will be incorporated into CONOPS and the CCS. The Capability Development Document for LBSF and I Program of Record has been prepared for Milestone B Decision.					
FY 2007 Planned Outputs: Prototype gliders incorporating the new rechargeable battery systems and the new wings and antenna options will be constructed. The battery systems and the prototypes will undergo standard NAVSEA testing including implosion, explosion, stress testing, off-gas testing and design review. The revised wings, antennas and deployment and recovery systems will undergo at sea testing during Naval exercises as part of a build-test-build cycle that will lead to the optimized design. The deployment and recovery hardware will be constructed, and tested on-board several candidate naval vessels. Work towards an approved manufacturing and design process will begin. The Command and Control System software will be finalized and tested. The improved designs and the manufacturing process will be documented and a configuration control system will be implemented. The adaptive sampling algorithms within the common control environment will be evaluated during the at sea exercises.					
FY 2008 Planned Outputs: Remaining prototypes will be constructed so that in mid- FY2008, there will be six prototypes of improved and hardened gliders available for use by the Navy. The approval and certification of the manufacturing process will continue and documentation and configuration control systems will be completed. The final prototypes, along with the deployment/recovery systems and command system will be tested at sea. Remaining modifications will be completed leading to an operational glider design and six hardened gliders. Approvals and certifications will be completed. The design criteria and tested prototypes are timed to be synchronous with the initiation of LBSF& I funding for acquisition. The Acquisition Program Manager is Thomas Piwowar, PMW 180; the Program manager for LBSF&I is CAPT Michael Huff, PEO C41 and Space, PMW 180 ISR and IO.					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Blazed Array Sonar for Ship Hull Inspection: (Navy)		0.864	0.000	0.000	0.000
The Joint Requirements Oversight Council (JROC) validated the capability need for Blazed Array Sonar for Ship Hull Inspection. The outcome of Blazed Array Sonar for Ship Hull Inspection 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. This project, with completion of development and demonstration by end of CY 2007, will transition to PMS-EOD (Explosive Ordnance Disposal) and be integrated on to an EOD Unmanned Underwater Vehicle (UUV) Hull UUV Localization System (HULS) User Operational Evaluation System (UOES) by FY 2008.					
The primary outputs and efficiencies to be demonstrated on an EOD-UUV Hull search platforms are (1) percent decrease in incorrectly called targets (false alarms), (2) percent decrease time for data analysis, (3) capability to image complex structures under the ship hull					
FY 2006 Output - A hardware and user interface specification was used to develop the system architecture. The forward lookout array design was completed in June 2006, and fabrication initiated. The electronics architecture was defined and the top level board designs produced. Complete fabrication and integration of the "Alpha" prototype on to a ROV/UUV, with subsequent performance testing and refinements. Process to be duplicated with a "Beta" Unit prototype. Upon successful demonstration of the Blazed Array System on an ROV/UUV the system will be transitioned onto the EOD-UUV HULS UOES. Spiral Output - the Blazed Array Sonar for ship hull inspection if successful will be spiraled to the field two years early.					

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APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3		PE NUMBER AND TITLE <b>0603826D8Z - Quick Reaction Special Projects</b>			PROJECT <b>P829</b>
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Flameless Ration Heater (FRH) : (Army)		0.527	0.276	0.000	0.000
<p>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 waste in bulk issue, 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.</p> <p>The outcome of this program will be the incorporation of a safe, disposable and readily transportable heater into the Meal, Ready-to-Eat (MRE) ration.</p> <p>FY 2006 Output : Completed initial efforts to advance the development of non-hydrogen producing, chemical ration heaters. Completed initial in-house testing and assessment of two alternative heater candidates - a phosphorous pentoxide/calcium oxide anhydride heater, and a self-contained potassium permanganate/glycerine heater - to include package design modification, physical package testing, thermal testing for heater performance, heat uniformity and shelf life.</p> <p>The output is data that forms the basis of a Safety Assessment Report (SAR). The SAR was submitted to Developmental Test Center to obtain a Safety Release on both candidate heaters. Once safety release was obtained, large quantities of heaters were procured and assembled into MREs by contract assemblers. The MREs containing test heaters were tested by troops undergoing field training exercise at Fort Lewis, WA in 4Q FY 2006. Field test data will be used as an outcome measure of troops' acceptance of the candidate heaters in comparison with the current ration heater. Heaters were examined for regulatory compliance against DOT and EPA classification standards. The outcome of this assessment will be an awareness of any restrictions on the candidate heaters in terms of handling, shipment, storage, use or disposal and any impact these restrictions may have on the ration distribution life cycle. An initial Phase I producibility assessment contract was awarded in FY 2006 to improve the manufacturability of candidate heaters in a more automated and scalable manner than is presently used to fabricate prototypes. The outcome of this effort will ensure that alternative heaters are correctly designed for manufacture on conventional packaging machinery.</p> <p>FY 2007 Planned Output: Complete the analysis of the Fort Lewis field test data to verify soldier acceptance of candidate heaters. An additional evaluation and focus group will be conducted at the Army Mountain Warfare School in Jericho, VT in 2Q07. Using soldier feedback, heater designs will be modified where possible to improve usage and acceptance. Accelerated shelf life testing of candidate heaters will be completed - heaters must have a three year shelf life to be included as a component of the MRE. Rough handling testing of candidate heaters will be completed. The outcome of this effort will be an improvement in package design modification to increase heater durability at cold temperatures. The Phase II producibility assessment contract will be awarded to ensure heaters with any design modifications are properly designed for manufacturability. A cost-benefit analysis will be conducted on candidate heaters. The results of this analysis will be considered as an efficiency measure in that added benefits of a safer, non-hydrogen producing heater may justify additional cost of the item if applicable. Results of developmental efforts and soldier acceptance will be presented to Service representatives in 3Q FY 2007 for decision on whether to continue efforts to include one or both candidate heaters in the MRE. As final output of this project, performance based specifications will be prepared for one or both candidate heaters for future procurement of the item through the Defense Logistics Agency (DLA). Final decision for the addition of alternate heaters to the MRE assembly document is scheduled to be made by a Joint Service decision board to be held in conjunction with the annual DoD Combat Feeding Research &amp; Engineering Board meeting in 1Q FY08.</p>					
<b>Accomplishment/Planned Program Title</b>		FY 2006	FY 2007	FY 2008	FY 2009
Modular Crowd Control Munition-Vehicle Mount System (MCCM-VMS): (Army)		0.706	0.000	0.000	0.000

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<p>An MCCM-VMS capability was identified in current operations for an unfunded portion of a system with an approved Operational Requirements Document. The outcome of the MCCM-VMS TTI is to demonstrate the MCCM-VMS technology and transition it to the receiving PM. The PM will subsequently Type Classify, produce and field it as a materiel capability that will provide Soldiers and/or Servicemen with a vehicle mounted system capable of delivering non-lethal counter-personnel area effects. The outcome will include the capability for one Serviceman to control multiple MCCM's either mounted on specific vehicles or ground-emplaced for perimeter defense. The 12 month project under sponsorship of the Joint Non-Lethal Weapons Program (JNLWP), will be completed for transition to the Project Manager for Close Combat Systems (OPM-CCS) by the third quarter of FY 2007.</p> <p>The primary output and efficiencies to be demonstrated in the MCCM-VMS TTI are (1) 6-fold increase (from 4 up to 24) in the number of MCCM's that can be operator controlled and fired from both vehicle mounted and ground-emplaced systems, (2) mounting configurations for MCCM-VMS on at least 3 separate types of military vehicles, (3) digital control by 1 operator of multiple MCCM's in designated firing sequences, (4) 7-fold increase (from 5 to 35) in number of repeat MCCM firings from one vehicle-mounted blast attenuation box.</p> <p>FY 2006 Output - Final design, fabrication and demonstration of the Generation 2 VMS prototype with digital controller software, master control unit and junction boxes. Final VMS Blast Attenuation Box design for producibility and affordability through re-use. Establishment of vehicle mount configurations for High Mobility Multi-purpose Wheeled Vehicle (HMMWV), Family of Medium Tactical Vehicles (FMTV), and M113 Rapid Entry Vehicle (REV). Completion of draft technical manuals. Spiral Output - the prototype VMS Blast Attenuation Box was successful and immediately spiraled to the M113 Rapid Entry Vehicle for urgent fielding. Completion of fabrication of Gen 2 VMS prototype software and hardware for engineering qualification testing. Conduct engineering qualification tests. Finalize performance specification and complete engineering-level technical data package with supporting safety documentation. Transition to PM-CCS for their subsequent Type Classification, production, and fielding.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Shipboard Composite Combat Identification (SCCID): (Navy)	1.540	0.000	0.000	0.000
<p>FY 2006 Accomplishments: The Joint Requirements Oversight Council (JROC) validated the capability need for SCCID. The outcome of SCCID is to develop a multi-source fusion and Combat Identification (CID) engine capability that provides 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 Cooperative Engagement Capability (CEC)-based radar tracks. SCCID will provide the warfighter with rapid recommendations based on the fusing and correlation of organic and national SIGINT data. SCCID is a three-year project under the joint support and efforts of PMA-290 and the Office of Naval Research (ONR) with completion of development and demonstration by end of FY 2007 and transition to the US Navy by FY 2008.</p> <p>The primary outputs and efficiencies to be demonstrated during Trident Warrior 2007 (TW07) Military Utility Assessment are (1) improve Battle Space awareness, (2) provide a means that will help prevent fratricide, (3) provide a means to prevent engagement on friendly or neutral tracks, and (3) reduce the operator manual efforts in analyzing the numerous track data inputs.</p> <p>FY 2006 Output - Integration and testing of SCCID at the Systems Integration Laboratory (SIL) located at Space and Naval Warfare Systems Center (SPARWAR SYSCEN), San Diego. This includes: a) Radiant Mercury template development for a two way communications interface between CEC and SCCID; b) SCCID Open Architecture Computer Environment (OACE) and Net Centric Enterprise Solution for Interoperability (NESI) compliance; c) SCCID Defense Information Infrastructure (DII) Common Operating Environment (COE) compliance; d) SCCID Segmentation into the Cryptologic Unified Build (CUB); software package; e) SCCID and CEC Integration software development and test; f) Memorandum Of Agreement (MOA) SIL Tests g) Coherent scenario development. Crew training occurred prior to installation of the SCCID for inclusion in TW07. Post at sea demonstration report written and distributed to the appropriate commands. Upon successful completion of the MOA SIL tests and transition to PMW-180 Program of Record (POR), the SCCID software installed and demonstrated during the TW07 Multi-System Integration (MSI) Limited Objective Experiment (LOE). SCCID's role in the TW07 MSI LOE will be as the final CID resolution engine to help deconflict CIDs being provided by multiple sources (MSI, CEC, Network Centric Collaborative Targeting (NCCT)). Fielding of SCCID as a segment of CUB. Following software upgrade testing and integration into SCCID, accomplished segmentation of software into CUB.</p>				

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Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Land/Littoral Battle Command Warfighter Interface: (Army)	0.843	2.518	0.000	0.000
<p>The Command Post of the Future (CPOF) is a high priority, DARPA-developed technology program that provides a software suite of collaboration tools accessed through a superior intuitive human-computer interface (HCI), which is rapidly becoming a defacto capability of choice from Corps down through Battalion. CPOF formally transitioned to the Army Acquisition Community in mid-2006. 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) 1 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 the current near/mid-term tactical level single common C2 solution mandated by the Joint Requirements Oversight Council (JROC) 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 will accelerate the transition and application of CPOF-based HCI technology into the unified Army-Marine Corps JTCW system by approximately 18 months.</p>				
<p>FY 2006 Output: Completed comprehensive usability engineering and human computer interface assessments on the latest version of the Command Post of the Future (CPOF) system. Initiated comprehensive usability engineering and human computer interface assessments on the latest version of Joint Tactical Common Operating Picture (COP) Workstation (JTCW) client and JTCW Army "Injectors." Initiated examination of the current interface between application software and human-computer interface (HCI) for the JTCW client.</p>				
<p>FY 2007 Planned Output: Complete comprehensive usability engineering and human computer interface assessments on the latest version of JTCW client and JTCW Tri-Service "Injectors." Complete analysis and insure detailed understanding of the interface between application software and HCI for JTCW Client. Define and document the application program interfaces (UI Framework) for a CPOF-based single JTCW client presentation layer. Initiate definition and documentation of a HCI design guidance package for this CPOF-based client presentation layer. Initiate development of a common interface template prototype for this CPOF-based client presentation layer that can subsequently be used by battle command software development activities. Complete definition and documentation of a HCI design guidance package for this CPOF-based client presentation layer. Complete development of a common interface template prototype for this CPOF-based client presentation layer that can subsequently be used by battle command software development activities.</p>				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Sense and Avoid (SAA) for Small UAVs (SUAV): (Air Force)	0.949	0.719	0.214	0.000
<p>Air Force has validated the need for a Sense and Avoid (SAA) capability for Small Unmanned Aircraft Systems (SUASs). The outcome of Small Sense and Avoid (SSAA) is to create a miniaturized version of Air Force Research Laboratories' (AFRL) Phase-I Advanced Technology Demonstration SAA system. The miniaturized system will be the hardware and software necessary to alert the ground-based pilot and/or an on-board avoidance maneuvering subsystem of any potential collisions. The system enhances the situational awareness of a SUAS in both the National Airspace System (NAS) and in operational environments, and will go a long way in meeting the Federal Aviation Administration's standards for granting UASs access to the NAS. Development and demonstration will be completed by end of FY 2008. Transition will be to both the Air Force Small UAS office and to the Army Project Manager for UASs in FY 2009.</p>				
<p>The primary outputs and efficiencies to be demonstrated in this technology transition initiative are (1) a percent decrease in the hardware's size, weight, and power; (2) identification of and creation of software architecture able to integrate SAA data seamlessly with SUASs' ground control stations; (3) identification of and creation of a system that requires minimal modification to the unmanned aircraft; and (4) estimated 24 month advancement of a SAA system transitioning to the field.</p>				

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FY 2006 Output: Selected UAS platforms to be covered by this initiative (i.e. Shadow) and defined SSAA system performance requirements; designed SSAA system architecture; procured long-lead hardware components and subsystems. Adapted SAA software for SUAS implementation. Began SSAA prototype system fabrication.				
FY 2007 Planned Output: Complete SSAA system prototype fabrication; conduct laboratory and UAS surrogate testing; plan and conduct miniaturized SSAA flight demonstration on Aerostar UAS. Begin transition of technology to Programs of Record (i.e. Shadow, others). The transition manager is the 303d Aeronautical Systems Wing.				
FY 2008 Planned Output: Final demonstration date is June 2008. Analyze flight demonstration data and document results; develop pre-SDD system design; submit Final Report. Completion date of the project is September 2008.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Log Based Planning for OIF Authority Transition: (Army)	1.634	0.000	0.000	0.000
This program addresses an emerging requirement for logistics units resulting from Operation Iraqi Freedom (OIF) and the transition of authority to the Iraqi Security Forces (ISF). The outcome of this program is to provide a collection of logistics base planning tools that will allow US logistics units to provide support for both US and ISF forces in the context of transitioning authority to the ISF. Field evaluations of the software will be conducted with I MEF, and III Corps with transition into the Joint Tactical COP (Common Operational Picture) Workstation (JTCW).				
The primary outputs and efficiencies include: (1) Percentage reduction in the time to develop combat service support plans (goal is 35% reduction), (2) Percentage reduction in transportation requirements to satisfy support requirements (goal is 10%), (3) Percentage reduction in time to configure and load equipment for re-supply missions (goal is 30%), (4) percentage reduction in size of logistics units (goal is 25%). The logistics support areas to be addressed in this effort are: Class 1 (Food/Water), Class 3 (Fuel), Class 4 (Construction materials), Class 5 (Ammunition), Class 7 (End Items), Class 8 (Medical), Class 9 (Maintenance Parts), Re-supply.				
FY 2006 Output - Created a community of interest for collection of both Army and Marine requirements, and then worked to refine the requirements while the units were in theater. Prioritized requirements and created design for development of logistics planning tools. The Planning tools developed will be transitioned into the Joint Tactical COP Workstation (JTCW). These planning tools will promote operational efficiency by reducing the time to develop combat service support plans, specifically in the context of OIF and OEF. New planning capabilities will address logistics support of Iraqi Security Forces (ISF) as well as the needs of enemy prisoners of war, displaced civilians and general population. A generalized approach will ensure that the capabilities support future needs associated with Foreign Military Training and Stability and Reconstruction Operations. Specific logistics support capabilities will address all classes of supply including: fuel, water, food, temporary housing, maintenance, ammunition, transportation, security, and major end-items. These capabilities will be created through the development of models and algorithms supporting utilization, delivery, resource loaders, inventory management, and scheduling. The capabilities will be prototyped and field testing by III Corps and Marine units to include I MEF and II MEF. Once validated, the new planning tolls will be transitioned into JTCW.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Semantic Web II -- Transition to Additional Commands: (NGA)	0.632	0.719	0.000	0.000
The Technical Support Working Group (TSWG), on behalf of the Joint IED Defeat Organization and its US Army and Special Forces customers, validated the need for extending the capabilities of the Semantic Web Network. The outcome of this effort is to seamlessly deliver National and multi-service tactical intelligence via the Semantic Web Network to an experimental predictive analysis cell at Ft. Bragg, with eventual transition paths to Special Forces and US Army operational units in theater. 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 and Operational databases in real-time. The Functional Capability Area for this technology is Net-Centric Warfare, supporting				

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<p>Command and Control. Specific uses of the technology by the Marine Corps have been for Rapid Planning (R2P2) and Intelligence Preparation of the Battlefield (IPB). This is a two-year project with completion of development and demonstration by end of CY 2006, and transition to support 3rd and 7th Special Forces Groups, Army 10th Mountain Battalion and a Marine Battalion by FY 2008.</p> <p>The primary outputs and efficiencies to be demonstrated in this effort are significantly reduced search times for information required for operational planning (reduced from hours to seconds/minutes), and better information available for decisions - typically, information from more sources than would otherwise have been used, and fewer irrelevant documents such as sometimes returned by search engines in their results list.</p> <p>FY 2006 Output - The initial Semantic Web Network/aXiom prototype capability was delivered to the Predictive Analysis cell in 4Q FY 2006. Extensions to this initial capability, to integrate additional required data sources and output information to the Caleb program's Asymmetric Software Kit (ASK) are required early in FY 2007. The criteria for success within this initial spiral are access to existing data sources through aXiom capability. In the second spiral, it is expected that the system will be extended to support a wider range of data sources as mutually agreed, and aXiom outputs will be integrated directly into the Asymmetric Software Kit.</p> <p>FY 2007 Planned Output - Integration of the capability with the overall USASOC analysis capability will occur in late FY 2007 through early FY 2008. Begin transition to the Program of Record, Special Operations Advanced Technology Development.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Advanced Digital Multi-Spectral Night Vision Goggles: (SOCOM)	1.792	3.237	0.000	0.000
<p>The USSOCOM Requirements Evaluation board approved the Special Operations Visual Augmentation System Binocular/Monocular Capability Development Document (Spiral 2) which validates the requirement for multi-spectral or hyper-spectral fusion of image intensification, colorized image intensification, thermal imaging, and other advanced imaging technologies as they reach operational maturity. The outcome of the Advanced Digital Multi-Spectral Night Vision Goggles (ADMNVG) project is the development of a goggle which will utilize digital technology to generate an image composed from multiple spectrums; I2-Image Intensification, LWIR-Long Wave Infrared, and SWIR-Short Wave Infrared providing a scene composed of multiple wave bands. The imagery generated from the ADMNVG 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 and display video from external sources to the soldier. The ADMNVG 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 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 ADMNVG via vehicle power, via other larger batteries for extended periods of operation, and will allow the soldier to scavenge for power. The project is a two year effort starting in FY 2006 and transitioning to acquisition in FY 2008.</p> <p>The primary output and efficiencies to be demonstrated are the development of a system which increases the soldier's ability to identify threats and targets with improved speed and accuracy thereby improving battlefield awareness in darkness and poor visibility while also reducing weight and power consumption beyond that of currently fielded systems.</p> <p>FY 2006 Output - Continued development efforts to reduce overall system weight and power draw through advancements in the NIR camera and custom 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 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.</p>				

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FY 2007 Planned Output - Complete the following efforts: fusion processor effort including development of hardened FPGA, ASIC, and algorithms; optics design and fabrication; fabrication of battery pack and establishment of power management methods and power sources; establishment of the ADMNVG configuration; and definition of deliverables. Complete the following: VIS/NIR, SWIR, and LWIR camera development and integration; goggle assembly and housing build; establishment of production tooling and processes; goggle delivery, test and evaluation with final report; and transition of the system to acquisition.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Warfighter Hearing Enhancement and Protection (Navy):	0.000	1.679	1.495	0.000
In FY 2006 Office of the Chief of Naval Operations (OPNAV) validated the need to improve aircraft carrier flight deck crew helmets, including better hearing protection and communication ability, by establishing the Flight Deck Cranial (FDC) program. The FDC is to surpass existing helmet performance in key areas related to safety standard compliance and life cycle efficiency per FY 2005 Deputy Assistant Secretary Navy (Safety) Business Case Analysis. FDC is sponsored by OPNAV N8 with planned transition to U.S. Navy operational commands in FY 2010. Transition PM is Naval Air Systems Command PMA202 Aircrew Systems.				
An Evolutionary Acquisition Strategy and a Spiral Development approach will be used to deploy qualified hearing enhancement and protection equipment technologies: (1) replace existing subsystems during routine maintenance, (2) Engineering Change Proposal (or similar) to existing hearing / head protector, (3) system replacement to attrited system(s), and (4) standardized system acquisition. FDC system outputs and efficiencies include (1) ANSI speech intelligibility test demonstrates 20% gain or more, (2) ANSI hearing protection test demonstrates 3 dB gain or more, (3) greater than 50% use the hearing protection correctly (current estimate is 7%), (4) fit an estimated 95% of the U.S. Navy personnel population (size, shape, gender, race), (5) meets/exceeds ANSI head protection standard, (6) compatible with chem-bio and fire protection clothing.				
FY 2007 Planned Output: Initiated custom earplug (without communication capability) fit trial on 200+ U.S Atlantic Fleet aviation personnel. Trial results are being used in design and process refinement. Integrate suite of S&T hearing protection and communication products in existing flight deck helmet. Complete systems-level performance and environmental laboratory testing and initiate operational trials. Spiral Output - approve qualified subsystems for fleet use by direct procurement.				
FY 2008 Plan: Final Operational Demonstration of hearing enhancement and protection technologies will be March 2008. Develop Integrated Logistics Support Plan (Implementation, Configuration Control, Maintenance, Tech Manuals, Training Package, etc) to transition hearing protection and communication technologies for use in existing flight deck helmet. Spiral Output - approve existing flight deck helmet with improved hearing protection and communication technologies for fleet procurement. TTI Efforts Culminate in Follow-on POM-08 RDT&E and OPN Procurement.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Diagnostics Avionics Tester for On-aircraft Maintenance (Navy):	0.000	0.378	0.787	0.000
The F/A-18 Program Office has an immediate need for Support Equipment (SE) items that can reduce maintenance costs, and reduce ambiguities between systems and components at the on-aircraft maintenance level. The outcome of the "Diagnostics Avionics Tester for On-Aircraft Maintenance" Technology Transition Initiative (TTI) project will be to incorporate net-centric diagnostics technologies into the Tactical Reconnaissance (TAC RECCE) and Electro-Optical Infrared (EO/IR) F/A-18 Maintenance Programs by developing a prototype Diagnostics Avionics Tester and Net-Centric Diagnostics Framework that can replace the AN/USM-681 Electro-Optics Pallet/Pod Tester (EOPT).				
The exit criteria will be a successful demonstration of the prototype Diagnostics Avionics Tester and Net-Centric Diagnostics Framework with a F/A-18 squadron equipped with the AN/ASQ-228 Advanced Targeting Forward Looking Infrared (ATFLIR) Pod and a F/A-18 squadron equipped with the AN/ASD-12 Shared Reconnaissance Pod (SHARP).				

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<p>The primary outputs and efficiencies to be demonstrated include the (1) percent increase in ATFLIR and SHARP operational availability; (2) cost reduction for maintenance and repair; (3) percent increase in fault detection and fault isolation rates; (4) run time reduction for F/A-18 Automated Test Equipment at the off-aircraft maintenance level; (5) percent reduction in false alarms/cannot-duplicate occurrences; and (6) percent reduction in logistics footprint for the new Support Equipment at the on-aircraft maintenance level.</p> <p>One prototype and a Level 3 technical data package will be provided to the F/A-18 Program Office. The F/A-18 Program Office will procure production versions of the Diagnostics Avionics Tester and Net-Centric Diagnostics Framework beginning in FY 2008 with life cycle support implemented in the first year of procurement. Deliverables will be due in FY 2009 and FY 2010.</p> <p>FY 2007 Plan: Procured militarized commercial-off-the-shelf (COTS) tablet PC to serve as the processor unit for the prototype Diagnostics Avionics Tester. Completed development of the avionics interface for the prototype Diagnostics Avionics Tester. Completed first software builds for the Net-Centric Diagnostics Framework, ATFLIR Computer Software Configuration Item (CSCI), and SHARP CSCI.</p> <p>FY 2008 Plan: Diagnostics Avionics Tester and Net-Centric Diagnostics Framework have successfully completed all test efforts and are approved for flightline use. Successfully demonstrated the prototype Diagnostics Avionics Tester and Net-Centric Diagnostics Framework at a F/A-18 squadron equipped with the AN/ASQ-228 ATFLIR Pod, and a F/A-18 squadron equipped with the AN/ASD-12 SHARP. One prototype and a Level 3 technical data package (TDP) provided to the F/A-18 Program Office. The F/A-18 Program Office will begin incorporating net-centric diagnostics technologies into the TAC RECCE and EO/IR F/A-18 Maintenance Programs by procuring production versions of the Diagnostics Avionics Tester and Net-Centric Diagnostics Framework to replace the AN/USM-681 EOPT.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
N-Acetylcysteine (NAC) Clinical Trials for Hearing Loss Prevention (Navy):	0.000	1.199	1.068	0.000
<p>The Joint Requirements Oversight Council (JROC) validated the capability need for the investigation into NAC for prevention of hearing loss. The outcome of the project is to facilitate the final transfer of this cutting edge pharmacological technology of antioxidant therapy for the prevention and reduction of hearing loss from the basic science laboratory into the operational environment. This two-year project is under sponsorship of Navy Medical Research Center, with completion of development and demonstration by end of FY 2008, transition to pharmacy by FY 2009.</p> <p>The primary output for this study is a 40 to 50% reduction in average threshold shifts for NAC participants compared to placebo.</p> <p>FY 2007 Plan - All clinical study preparation, documentation and site preparation and initiation.</p> <p>FY 2008/2009 Plan - Study execution, data analysis, FDA approval. Begin transition with acquisition of national stock number through the Defense Medical Standardization Board. Complete transition via Tri-Care Management Authority for Pharmacy and integration into operational forces.</p> <p>This project was previously referred to as "Prevention of Hearing Loss -- Hearing Pill"</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Battlespace Terrain and Reasoning Awareness Battle Command (BTRA-BC) (Army):	0.000	2.108	0.746	0.631
<p>BTRA-BC intends to transition terrain, atmospheric and weather analytic Tactical Decision Aids (TDAs) in support of Command, Control, Communication, Computers, Intelligence Surveillance and Reconnaissance (C4ISR). TDA software for transition will operate at two levels: 1) TDAs that operate over large data sets to create actionable information of the effects of the terrain, atmosphere and weather on units, tactics, ground and air platforms, systems and sensors and the soldier and 2) TDAs that perform mission and task level analysis in support of the Military Decision Making Process (MDMP),</p>				



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<p>planning, Course of Action Analysis (COA), asset management and execution monitoring. Specific TDAs developing actionable information address topics of: 1) Observation and Fields of Fire, Cover and electro-optical concealment, Obstacles, Key Terrain and Avenues of Approach, 2) platform mobility and unit maneuver incorporating weather effects, 3) interactive graphs representing maneuver potential and battlefield geometry, 4) Positions of Advantage for varying military tasks, 5) Infra-red, Acoustic and Seismic sensor performance, 6) atmospheric and weather effects on UAV mobility and performance. TDAs addressing MDMP activities support: 1) Interactive, Mapquest-like mission constrained ground and air platform routing, 2) ISR asset management, 3) ground and air asset synchronization and 4) battlefield effects. All products are designed for visualization and input to other automated Battlefield Operating Systems (BOSSs).</p> <p>BTRA-BC will also transition a geo-Battle Management Language (geoBML) supporting semantic and syntactic interoperability between Army and Joint systems via the Joint Consultation, Command and Control Information Exchange Data Model (JC3IEDM) required by Army and USMC systems.. Each year, BTRA-BC will transition various data analysis and decision support tools to: 1) NGA's Commercial Joint Mapping Toolkit (C/JMTK), supporting 207 approved Joint C4ISR programs, 2) the Digital Topographic Support System (DTSS) supporting the Current force of the Army at Division and Brigade Combat Teams and 3) the Army's Future Combat System via C/JMTK.</p> <p>FY 2007 Plan: BTRA-BC will transition seven (7) decision support tools, aggregated services and data/information models for incorporation in the Army mandated Joint C3 Information Exchange Data Model (JC3IEDM). All software will be fully documented for immediate adoption by Program(s) of Record.</p> <p>Outcomes:</p> <ol style="list-style-type: none"> <li>1) Common, Joint Battle Command software tools and services ensuring consistent, actionable information from terrain and weather analysis, enabling shared awareness, empowering predictive analysis and providing a common geo-environmental basis to the Common Operating Picture (COP) or Common Relevant Operating Picture (CROP). <ol style="list-style-type: none"> <li>a. Increase of 3X in the number of Courses of Action (ground maneuver forces) that can be considered during mission planning</li> <li>b. Predictive tactical advantages across both unfamiliar and familiar terrains improving force, sensor and asset management and synchronization given terrain and weather effects</li> </ol> </li> <li>2) Initial capability to share actionable, C4ISR relevant, geospatial information with Army and Coalition partners via the extension of the Joint C3 Information Exchange Data Model (JC3IEDM).</li> <li>3) DISA/GIG compliant analytic software services.</li> </ol> <p>Efficiencies:</p> <ol style="list-style-type: none"> <li>1) Software reuse. Transitions via NGA's Commercial Joint Mapping Toolkit (C/JMTK) make the software tools available to over 207 approved Joint C4ISR programs and operational on military systems using either Windows, Solaris (Unix) or Linux operating systems</li> <li>2) Common integration and use of tools and products. CJMTK will provide, for the 1st time, reference implementation guidance regarding software, services and resulting product interaction using the JC3IEDM.</li> <li>3) Single approach to interoperability across Joint and Coalition Systems for geospatial Battle Command Information.</li> <li>4) Early risk mitigation. Accelerated transition allows the Army's Future Combat System and Distributed Common Ground Segments (DCGS-A) and Digital Topographic Support System (DTSS) to evaluate and adopt design methods, procedures and processes in early spirals of development.</li> </ol> <p>FY 2008 Plan: BTRA-BC will transition six (6) decision support tools, aggregated services and data/information models for incorporation in the Army mandated Joint C3 Information Exchange Data Model (JC3IEDM). All software will be fully documented for immediate adoption by Program(s) of Record. Outcomes: (1) Common, Joint Battle Command software tools and services ensuring consistent, actionable information from terrain and weather analysis, enabling shared awareness, empowering predictive analysis and providing a common geo-environmental basis to the Common Operating Picture (COP) or Common Relevant Operating Picture (CROP); (2) Extended capability to share actionable, C4ISR relevant, geospatial and weather information with Army and Coalition partners via the extension of the Joint C3 Information Exchange Data Model (JC3IEDM); (3) DISA/GIG compliant analytic software services.</p> <p>FY 2009 Plan: BTRA-BC will transition eight (8) decision support tools, aggregated services and data/information models for incorporation in the Army mandated Joint C3 Information Exchange Data Model</p>		

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(JC3IEDM). All software will be fully documented for immediate adoption by Program(s) of Record. Outcomes: (1) Common, Joint Battle Command software tools and services ensuring consistent, actionable information from terrain and weather analysis, enabling shared awareness, empowering predictive analysis and providing a common geo-environmental basis to the Common Operating Picture (COP) or Common Relevant Operating Picture (CROP); (2) Extended capability to share actionable, C4ISR relevant, geospatial and weather information with Army and Coalition partners via the extension of the Joint C3 Information Exchange Data Model (JC3IEDM); (3) DISA/GIG compliant analytic software services.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
AIM-9X Electric Arm Fire Device (EAFD) (Navy):	0.000	2.123	0.463	0.000
The Joint Requirements Oversight Council (JROC) validated the early transition of "In-Line" Electric Arm Fire Device (EAFD) with Exploding Foil Deflagrating Initiator (EFDI) Technology into the AIM-9X Sidewinder Missile Air-to-Air Weapon System as a FY07 new start. The outcome of early EAFD transition is enhanced US Navy aircraft carrier flight deck operations, a significant reduction in USN/USAF logistic support costs, greater weapons system reliability and enhanced system safety. The two-year project is under the sponsorship of Naval Air Systems Command (NAVAIR) Program Executive Office for Weapons PEO(W) Program Management Activity (PMA-259) with transition to production in CY2008. The lead service is the Navy.				
The primary outputs of this early transition program are as follows: 1) Eliminates the current burden on ordnance crews to manually arm/disarm AIM-9X Sidewinder missiles after every sortie; 2) Improves cold weather flight operations; 3) Improves Nuclear, Biological, Chemical Operations; 4) Eliminates logical reprogramming operations; 5) Improves 9X Weapon System Probability of Launch by 1%-3%; 6) Lowers weapon system radar cross section planar cross section on aircraft; 6) Enhances weapon system safety; 7) Enables 9X Sidewinder canister employment (i.e., USN Sea Serpent).				
FY 2007 Plan - Complete qualification testing of Exploding Foil Deflagrating Initiator (EFDI) subassembly. Complete qualification of Electronic Arm Fire Device (EAFD) component. Begin integration and design verification testing of EAFD with the Block II Sidewinder air-to-air missile. Initiate design coordination with USG Safety Boards.				
FY 2008 Plan - Complete integration and design verification testing of EAFD with Block II 9X Sidewinder. Complete ground based environmental qualification testing of EAFD with Block II 9X Sidewinder. Completion of qualification testing is scheduled for May 2008. Transition EAFD with EFDI technology into Block II 9X Sidewinder production with Engineering Change Proposal (ECP) approval. ECP approval is projected to occur between May 2008 and November 2008. Transition Manager is NAVAIR, PEO(W), PMA-259.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Automated ALRE Reading (AutoREAD) Sheets (Navy):	0.000	0.959	0.427	0.000
AutoREAD is an automation and process improvement project that uses personal data assistants (PDAs) to eliminate paper logkeeping and streamline the collection, analysis, and reporting of launch and recovery equipment preventative maintenance measurement data. Its purpose is to reduce Aircraft Launch and Recovery Equipment (ALRE) maintenance workload and gain improvements in equipment readiness, safety, engineering support, and fleet metrics. It creates an infrastructure for continuous ALRE reliability improvement into the future.				
The primary outputs and efficiencies of this program are as follows: 1) Improvements in quality, accuracy and legibility of measurement data by 20%; 2) Process improvement from the use of integrated, electronic MRCs and Reading Sheets (1-2 hours per PMS maintenance action); 3) Process improvement from the use of electronic signatures on arresting gear (AG) Reading Sheets (1 hour savings per PMS maintenance action); 4) Reduce effort and cost required to track completion of PMS Maintenance Actions with associated Reading Sheet data				
FY 2007 Plan: Develop software requirements specification, system design. Code and Test AutoREAD including Integration testing with ADMACS. Procure hardware for initial ship test. Successfully demonstrate AutoREAD application.				

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FY 2008 Plan: Begin Land Based integration testing, ship board integration testing, and production deliveries. Complete transition of AutoREAD under ADMACS Block 2. The planned elements of AutREAD will be demonstrated as a component of ADMACS block 2 production deliveries.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Joint Fires and Effects Trainer System (JFETS) (Army):	0.000	0.240	0.214	0.000
<p>The Call For Fire Trainer (CFFT) Capabilities Production Document (CPD), into which JFETS will be integrated, is at the Joint Requirements Oversight Council (JROC) for staffing to determine the level of Joint interest. JFETS has been sustained through Congressional Plus-Up funds since FY 2003. In the CFFT Program Objective Memorandum (POM) submittal for FY 2008-2013, funding has been identified for JFETS. JFETS is a collective training system that provides an immersive simulated battlefield for training Joint Fires Observers at the Institutional level, and it will use immersive training technologies to train current and future applications of joint fires.</p> <p>RDECOM will provide the following to facilitate the transition of JFETS into CFFT: JFETS Part Number, Description (baseline), System Specification Document, Software Product Specification, Software Design Document, Bill of Material, Software Installation Procedure Document, Drawings, components, connectivity (all configurations), Configuration Management System (CMS), Users manual.</p> <p>FY 2007 Plan - The initial technical data package is scheduled to be delivered the 4th quarter of FY 2007, which will include the information mentioned above. Deliver the Close Air Support Module (CASM) and the After Action Report (AAR) application for integration into CFFT, Develop the Fires and Effects Command (FECM), the last JFETS module to be developed.</p> <p>FY 2008 Plan - Final technical data package is scheduled to be delivered 4Q of FY 2008, which will include information associated with the development of the FECM. The final demonstration date and completion date will be during the 4Q of FY 2008. Continue with the full production of the CFFT for deployment in support of the Warfighter. . The JFETS system will be deliverable from FY 2009 through FY 2011.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Two Axis Stabilization of Submarine Imaging (Navy):	0.000	1.799	1.068	1.199
<p>Submarines have a requirement to operate in congested coastal/littoral environments to conduct many of their new Global War on Terror (GWOT) missions. Submarine GWOT missions include the deployment of Special Operating Forces (SOF) and persistent Intelligence, Surveillance and Reconnaissance (ISR) and require increased Situational Awareness and Contact Avoidance (SACA). To support these requirements the Navy is developing imaging systems with a non-rotating, 360-degree continuous field capability of view for use on existing and future periscopes and masts. Extreme movement of the periscope can result in a loss of the visual horizon, which in turn can lead to the loss of the visual track of a target of interest or a contact that might pose a danger to the submarine during near surface operations. In addition, during other forms of near surface operations such as sustained ISR the maintenance of a detailed visual situational awareness is crucial for both the safety of the ship and personnel as well as for the successful accomplishment of the mission.</p> <p>The outcome of this program is to provide a ruggedized, demonstrated, tested, integrated, 2-axis stabilization system for use onboard US submarines with existing and developmental optical systems. Existing periscope mechanical periscope image stabilization systems are not suitable for use with a 360 degree imaging sensor and the use of software algorithms only will result in a significant loss of data. The development and deployment of a 2-Axis Stabilization System is required to optimize the use of these new 360 degree imaging systems and provide a higher probability of success for these submarine missions. The lead service is the Navy; the sponsor is the Program Executive Officer (Submarines). The efficiencies desired from the Advanced Engineering Model (AEM) for this program include mechanically mitigating <math>\pm 15</math> degrees of ship motion in two axis. This will enable existing electronic stabilization techniques to provide additional stabilization while maintaining 95% of pixels on target.</p>				

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FY 2007 Plan: Develop the initial system. This includes the scaling of the system to a form, fit and function model mechanically compatible with submarine periscope masts. Support testing of developmental 360 degree imaging system by providing an interim, larger than final form factor, 2-axis stabilization system for dockside and at-sea testing.				
FY 2008 Plan: Continue the development of the Advanced Development Model (ADM) with environmental testing, and demonstrations in a relevant environment.				
FY 2009 Plan: Complete design fabrication and testing of a second ADM unit.. The scheduled completion date is April 2009, with a transition to procurement in FY 2010. The Transition Manager is PEO SUBS (PMS 435).				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Thermal Battery for Precision Guided Munitions (Army):	1.960	1.882	0.000	0.000
The Army has established performance and cost goals for the Excalibur Precision Munition Thermal Batteries and while the Program of Record (POR) has met performance metrics, the manufacturing readiness within the industrial base lags technology readiness--thus impacting cost of thermal battery production. The outcome of the program is to transition a production-ready manufacturing process for Excalibur Thermal Batteries in advance of full-rate production that meets the cost metrics established by the POR. Transition will result in cost avoidance of \$50/thermal battery, a 10% reduction in reject rate, and a 25% improvement in production rate. Transition is scheduled to occur in the 2nd QTR FY08. The transition manager will be the Program Management Office for Excalibur.				
These manufacturing enhancements come as a direct result of a number of investments in small business innovative research programs (SBIR), manufacturing technology (ManTech) programs, and the S&T community.				
FY 2006 Accomplishments: Delivery of affordable manufacturing technologies and thermal battery prototype hardware for evaluation testing. The evaluation testing purpose is demonstration of intermediate manufacturing readiness level development for availability for spiral insertion into Excalibur hardware. FY 2006 delivers automated welding processes and improved glass metal seal for insertion into the industrial base.				
FY 2007 Plan: Final operational demonstration will be conducted to demonstrate that the manufacturing readiness meets the cost goals established by the program of record. Transition of production ready manufacturing processes to the program of record will begin in the 4th QTR of FY 2007.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2008 New Start TTI Projects:	0.000	0.000	18.805	0.000
FY 2008 Plan: Annual Call for TTI Proposals will be released in January/February 2007 for response by April 2007 and OSD review, prioritization and selection during the June/July 2007 timeframe. The FY 2008 TTI Program will support \$19.224M (or approximately 15-20) in new start transition efforts.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
FY 2009 New Start TTI Projects:	0.000	0.000	0.000	29.213
FY 2007 Plan: The FY 2009 Annual Call for TTI Proposals will be released in January/February 2008 for response by April 2008 and OSD review, prioritization and selection during the June/July 2008 timeframe.				

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<p>The FY 2008 New Start selections are expected to have funding commitment tails in FY 2009 of approximately 40% (or \$11.3M). The balance of FY 2009 funding will support the FY 2009 New Start selections.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Image Compression for Digital Precision Strike Suite (Navy)	0.000	0.342	0.459	0.000
<p>The purpose of the Image Compression for Digital Precision Strike Suite project is to transition a matured compression software suite to Special Operations Forces (SOF) that will shorten the upload time for image and video data files. It provides a much needed capability to mitigate bandwidth limited communications problems without compromising the image quality &amp; information needed for subsequent analysis upstream.</p> <p>The primary outputs of this program are as follows: A compression software suite with high quality image and high compression ratio for SOF radios that mitigate today's communication data link issues.</p> <p>FY 2007 Planned Output - Implementation of the software suite on Precision Strike Suite - SOF laptops.</p> <p>FY 2008 Planned Output - Testing and validation in field units.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Monolithic Microwave Integrated Circuit (MMIC) Enhancement for DD(X) DBR/SPY-3 Radar (Navy)	0.000	1.073	0.000	0.000
<p>The primary objective of the Monolithic Microwave Integrated Circuit (MMIC) Yield and Efficiency Enhancement for DD(X) Dual Band Radar (DBR)/SPY-3 Radar project is to improve the fabrication process of the 0.5um Gallium Arsenide (GaAs) pseudomorphic High Electron Mobility Transistor (pHEMT). This transistor is a component of the MMIC card in the DD(X) SPY-3 phased array radar. This project will improve the efficiency of the production line and system performance for the DD(X) SPY-3 phased array radar.</p> <p>The primary outputs of this program are as follows: 1) 10% - 20% MMIC Yield Improvement; 2) 10% Points Increase in MMIC Efficiency and Associated Improvement in Module and Array Efficiency</p> <p>FY 2007 Planned Output - DSR MMIC production process dramatically improving MMIC production yield, performance and stability; Improved RF circuitry technology providing significant MMIC output power with same input power (power added efficiency).</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Self-Powered Tray Ration Heater (Army)	0.000	0.342	0.517	0.000
<p>The objective of the Self-Powered Tray Ration Heater (TRH) project is to apply thermoelectric technology to a standard TRH to enable operation independent of vehicles and generators. The TRH was designed to heat 18 six-pound packages of shelf stable food (tray packs) for Company-sized groups of Warfighters. The TRH uses a commercial oil burner (configured to burn JP8) to heat 10-15 gallons of water to close to 200°F. This allows tray packs to be placed in the hot water for 30 minutes to bring them up to serving temperatures. Versions of the TRH are used by the Army in the Assault Kitchen (AK), the Marine Corps in the Tray Ration Heating System, and the Air Force in the Single Pallet Expeditionary Kitchen. A secondary objective of this program is to provide a universal STRH that all four services as well as FEMA can procure, operate and support. The current TRH requires approximately 200 watts of power for operation, which must be supplied by a HMMWV or generator. A self-powered capability</p>				

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<p>improves overall reliability, availability, and maintainability characteristics, since a generator or vehicle power supply are inherently less reliable and require more maintenance than solid-state thermoelectric modules. Due to the limited number of HMMWVs available to Food Service, alternative mounting configurations with HMMWV trailers are needed. The self-power version of the TRH along with a Trailer mounted version of the AK will allow the HMMWV to be used for other missions when the AK is set up and feeding Warfighters. This project has applications to all DoD services and FEMA.</p> <p>The primary outputs of this program are as follows: a standard TRH to enable operation independent of vehicles and generators.</p> <p>FY 2007 Planned Output - Optimize design, in-house technical and operational tests, producibility study, and production of 10 test units.</p> <p>FY 2008 Planned Output - Technical and operational tests in the field; update Technical Data Packages and Technical Manuals; develop joint requirement and procurement document; transfer to procurement.</p>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Misc Adjustments	0.014	0.056	0.000	0.000
<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>				

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603828D8Z - Joint Experimentation**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	0.000	103.489	112.017	115.170	118.688	119.989	121.565	123.274
P808 Joint Experimentation	0.000	103.489	112.017	115.170	118.688	119.989	121.565	123.274

**A. Mission Description and Budget Item Justification:** U.S. Joint Forces Command (USJFCOM) was designated "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. The FY 2005 National Defense Authorization Act (NDAA) directed the transfer of USJFCOM RDT&E funding of joint warfare experimentation and training programs from Navy accounts to new Defense Wide RDT&E accounts beginning in FY 2007. Funding to support the Joint Experimentation (JE) Program in FY 2006 and prior was reflected in the Navy's RDT&E Program under PE 0603727N. Beginning with FY2007, USJFCOM execution of the Joint Experimentation funding is subject to the oversight of Director, Defense Research and Engineering (DDR&E) via Deputy Under Secretary of Defense Advanced Systems & Concepts (DUSD(AS&C)).

The shift to OSD oversight brings overarching policies and goals into focus in executing the central DoD account for Joint Experimentation. Joint Experimentation teams Service and Defense Agencies partners to serve the requirements of Combatant Commanders (CoComs) and senior Department of Defense (DoD) leadership to improve joint force mission capabilities. All CoComs collaboratively register priorities for experimentation through the USJFCOM Combatant Commander Engagement Program. Joint Experimentation complements and advances experimentation undertaken by the Military Services and Defense Agencies. Where ambiguity exists about capability solutions for time-sensitive joint operational requirements, Joint Experimentation will identify most promising remedies for implementation by Service and Agency force generation and acquisition authorities. Significant Joint Experimentation resources will be applied to explore innovative future capabilities and force shaping options, specifically to support formulation of Defense planning guidance, key military capabilities, and long-term joint objective force composition. Experimentation with international partners is pursued in the context of serving regional CoCom requirements, with future emphasis on small-scale Limited Objective Experiments (LOEs) executed in-theater, where CoComs and their staffs can best benefit from experiment results attuned to end-user operational environments and from the collateral influence on multinational participants. OSD will ensure an equitable appropriation of resources between centralized Defense requirements and individual CoCom experimentation needs. Joint Experimentation will support USJFCOM efforts to improve integrated capabilities for Joint Command and Control (JC2), joint Integrated Surveillance and Reconnaissance (ISR), Joint Logistics and Irregular Warfare (IW). In 2006, increased emphasis accrued to bilateral experimentation with the United Kingdom, reflecting that nation's status as a special partner of the United States. In 2007, this emphasis will be extended first to Australia, then to Canada. When cooperative funding and coincidence of missions permit, Joint Experimentation will include interagency and coalition partner efforts. With OSD oversight, there is a priority emphasis on discrete deliverables from individual experimentation efforts. While seeking efficiency of effort with joint training exercises, Joint Experimentation will benefit from a greater focus on development and validation of new operational concepts and acquisition solutions. To this end, and in balance with issues referred directly from CoComs, Joint Experimentation will address those Most Pressing Military Issues (MPMI) and Integrated Priority List (IPL) shortfalls compiled by the Joint Staff through the Joint Capabilities Integration and Development System (JCIDS).

Requirements associated with defense of the U.S. are increasingly complex, stretching our capabilities to respond rapidly and decisively to emerging crises and conflicts. Development of advanced techniques, tools, and organizations to defeat terrorism and counter evolving challenges of the 21st century requires innovative thinking and aggressive experimentation with alternatives to ensure the effectiveness of the future joint force. All CoComs collaborate on the priorities for experimentation through the USJFCOM Combatant Commander Engagement

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PE NUMBER AND TITLE

**0603828D8Z - Joint Experimentation**

Program. The foundation for a coherent joint force is aggressive concept development and robust joint experimentation. USJFCOM establishes a common joint context for the DoD, already proven a powerful tool that fosters coherence, improved stewardship and proactive interoperability materiel solutions. Performance is measured by timely and successful delivery of joint system solutions to Combatant Commands.

The Joint Experimentation Campaign Plan incorporates high priority tasks assigned to U.S. Joint Forces Command (USJFCOM) from senior DoD leadership. Primary outputs demonstrated in the top national security priorities are designed to enable joint operations by experimenting with the innovative concepts. Prominent efforts include:

- Emergent CoCom theater joint operational mission problems
- Service component operational integration for joint capabilities
- Joint Command and Control (JC2)
- Intelligence Surveillance and Reconnaissance (ISR), Information Operations, Influence operations
- Joint Deployment Process Owner/Joint Deployment, Employment, Sustainment (JDPO/JDES)
- Joint Logistics
- Joint Urban Operations (JUO)
- Irregular Warfare (IW)/Asymmetric warfare on a global scale
- Military Support for Stability, Security, Transition and Reconstruction (SSTR) Operations
- Concepts for integrated interagency and coalition operations (Unified Action)
- Homeland Defense (HLD)

USJFCOM synchronizes 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 Joint Experimentation role by directing USJFCOM to "lead and coordinate the department's experimentation activities." Subsequent assignment of Joint Experimentation oversight to OSD strengthened the Program's ability to develop and field coherent joint solutions. The Joint Staff partners on this effort by monitoring Service experimentation efforts and representing the Service experimentation components in Joint Experimentation fora. Outputs continually reinforce and intensify the 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.

<b><u>B. Program Change Summary</u></b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
Previous President's Budget (FY 2007)	0.000	115.684	115.437	118.396
Current BES/President's Budget (FY 2008/2009)	0.000	103.489	112.017	115.170
Total Adjustments	0.000	-12.195	-3.420	-3.226
Congressional Program Reductions		-15.995		



**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603828D8Z - Joint Experimentation**

Congressional Rescissions				
Congressional Increases		3.800		
Reprogrammings				
SBIR/STTR Transfer				
Other			-3.420	-3.226

FY 2007 Congressional adjustments: Reduction (-\$15.9M) for "duplicative efforts"; increase (+\$3.8M) for Modeling and Simulation (M&amp;S).

**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
08						

Comment: Performance of Joint Experimentation systems is measured by successful development of:

- (1) objective validation of enhanced CoCom capabilities to perform joint missions in their assigned theaters and areas of responsibility,
- (2) documented delivery effective joint operational concepts,
- (3) confirmed production of refined and validated capability descriptions for joint materiel solutions for implementation by Service and Agency force developers and acquisition authorities,
- (4) identification of innovative integrated solutions and joint interoperability standards for Service-developed military capabilities, and
- (5) resolution of specific joint capability shortfalls delineated through the Joint Forces Command Combatant Commander Engagement process and through the Concept Joint Capabilities Integration and Development System (JCIDS), specifically in Most Pressing Military Issues (MPMI) and Integrated Priority List (IPL) shortfall compilations.

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603828D8Z - Joint Experimentation</b>					PROJECT <b>P808</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P808      Joint Experimentation	0.000	103.489	112.017	115.170	118.688	119.989	121.565	123.274	

**A. Mission Description and Project Justification:** U.S. Joint Forces Command (USJFCOM) was designated "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.

The FY 2005 National Defense Authorization Act (NDAA) directed the transfer of USJFCOM RDT&E funding of joint warfare experimentation and training programs from Navy accounts to new Defense Wide RDT&E accounts beginning in FY 2007. Funding to support the Joint Experimentation (JE) Program in FY 2006 and prior was reflected in the Navy's RDT&E Program under PE 0603727N. Beginning with FY2007, USJFCOM execution of the Joint Experimentation funding is subject to the oversight of Director, Defense Research and Engineering (DDR&E) via Deputy Under Secretary of Defense Advanced Systems & Concepts (DUSD(AS&C)).

OSD oversight brings overarching policies and goals into focus in executing the consolidated DoD account for Joint Experimentation. Joint Experimentation teams Service and Defense Agencies partners to serve the requirements of joint Combatant Commanders (CoComs) and senior Department of Defense (DoD) leadership. All CoComs collaboratively register priorities for experimentation through the USJFCOM Combatant Commander Engagement Program. Joint Experimentation complements and advances experimentation undertaken by the Military Services and Defense Agencies. Where ambiguity exists about capability solutions for time-sensitive joint operational requirements, Joint Experimentation will identify most promising remedies for implementation by Service and Agency force generation and acquisition authorities. Significant Joint Experimentation resources will be applied to explore future capabilities and force shaping options, specifically to support formulation of Defense planning guidance and long-term joint objective force composition. Experimentation with international partners is pursued in the context of serving regional CoCom requirements, with future emphasis on small-scale Limited Objective Experiments (LOEs) executed in-theater, where CoComs and their staffs can best benefit from experiment results attuned to end-user operational environments and from the collateral effects of coalition participation. OSD will ensure an equitable appropriation of resources between centralized Defense requirements and individual CoCom experimentation needs. In 2006, increased emphasis accrued to bilateral experimentation with the United Kingdom, reflecting that nation's status as a special partner of the United States. In 2007, this emphasis will be extended first to Australia, then to Canada. When cooperative funding and coincidence of missions permit, Joint Experimentation will include interagency efforts. With OSD oversight comes a renewed emphasis on discrete deliverables from individual experimentation efforts. While seeking efficiency of effort with joint training exercises, Joint Experimentation will benefit from a greater focus on development and validation of new operational concepts and acquisition solutions. To this end, and in balance with issues referred directly from CoComs, Joint Experimentation will address those Most Pressing Military Issues (MPMI) and Integrated Priority List (IPL) shortfalls compiled by the Joint Staff through the Joint Capabilities Integration and Development System (JCIDS).

Requirements associated with defense of the U.S. are increasingly complex, stretching our capabilities to respond rapidly and decisively to emerging crises and conflicts. Development of advanced techniques, tools, and organizations to defeat terrorism and counter evolving challenges of the 21st century requires innovative thinking and aggressive experimentation with alternatives to ensure the effectiveness of the future joint force. All CoComs collaborate on the priorities for experimentation through the USJFCOM Combatant Commander Engagement Program. The foundation for a coherent joint force is aggressive concept development and robust joint experimentation. USJFCOM establishes a common joint context for the DoD, already proven a powerful tool that fosters coherence, improved stewardship and proactive interoperability materiel solutions. Performance is measured by timely and successful delivery

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<p>of system solutions to Combatant Commands.</p> <p>The Joint Experimentation Campaign Plan incorporates high priority tasks assigned to U.S. Joint Forces Command (USJFCOM) from senior DoD leadership. Primary outputs demonstrated in the top priorities are designed to enable support to joint operations by experimenting with the innovative concepts. Prominent efforts include:</p> <ul style="list-style-type: none"> <li>-- Emergent CoCom theater joint operational mission problems</li> <li>-- Service component operational integration for joint capabilities</li> <li>-- Joint Command and Control (JC2)</li> <li>-- Intelligence Surveillance and Reconnaissance (ISR), Information Operations, Influence operations</li> <li>-- Joint Deployment Process Owner/Joint Deployment, Employment, Sustainment (JDPO/JDES)</li> <li>-- Joint Logistics</li> <li>-- Joint Urban Operations (JUO)</li> <li>-- Irregular Warfare (IW)/Asymmetric warfare on a global scale</li> <li>-- Military Support for Stability, Security, Transition and Reconstruction (SSTR) Operations</li> <li>-- Concepts for interagency and coalition operations (Unified Action)</li> <li>-- Homeland Defense (HLD)</li> </ul> <p>Individual preplanned experimentation projects might be curtailed to accommodate critical experimental support for CoComs, to undertake time-sensitive tasks from senior Defense officials, and to comply with evolving experimentation policies. While ample opportunities will be preserved for discovery and innovation, projects under development without acceptable provisions for discrete deliverables and measurable performance metrics will have funding withheld or cancelled by DoD oversight authorities, with funding redirected to other joint experimentation priorities.</p> <p>USJFCOM synchronizes 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 Joint Experimentation role by directing USJFCOM to "lead and coordinate the Department's experimentation activities." Subsequent assignment of Joint Experimentation oversight to OSD strengthened the Program's ability to develop and field coherent joint solutions. The Joint Staff partners on this effort by monitoring Service experimentation efforts and representing the Service experimentation components in Joint Experimentation fora. Outputs continually reinforce and intensify the 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.</p> <p>Budgeted efforts presented below primarily reflect investment strategies internally developed by USJFCOM, subject to revision during the on-going integration of OSD policy, inputs from USJFCOM's Combatant Commander Engagement process, and referral from the JCIDS process.</p>		

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<b><u>B. Accomplishments/Planned Program:</u></b>			
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008
Joint Concept Development Experimentation	0.000	45.364	51.667
<p>Primary OUTCOME (objective) for this effort is to provide a robust integrated environment for evaluation and assessment of both near- and far-term mission critical capabilities gaps and operational shortfalls. These efforts focus on the priority areas designated by Combatant Commanders (CoComs) through the Concept Development and Experimentation - CD&amp;E - process and compiled through the Joint Capabilities Integration and Development System (JCIDS) as Most Pressing Military Issues (MPMIs) and Integrated Priority List (IPL) issues. Over time, increasing efforts will address distributed execution of experiments to better serve CoCom needs for tailored solutions and enhanced military relationships with nations in their geographic regions and theater specific interagency needs.</p> <p>FY 2007 Planned Output:</p> <ul style="list-style-type: none"> <li>- Assess and refocus efforts of FY2007 concept development emphasis on key areas identified as capabilities gaps and operational shortfalls. USJFCOM will intensify focus on the ten priority areas designated by Combatant Commanders including SSTRO, Multi-national Interagency Group (MNIAG), JUO, Joint Command and Control, Unified Action, Asymmetric Warfare and military support to Homeland Defense. Primary outputs and efficiency goals are reduction of manpower in deployed units, savings in cost or time, increases in effectiveness through fusion of intelligence with the Joint-Intelligence-Operations Center for Experimentation (JIOC-X), and more effective and efficient fielding of capabilities through Computer Network Attack (CNA) and Electronic Warfare (EW).</li> <li>- Partner with US Strategic Command (USSTRATCOM) and the Defense Threat Reduction Agency (DTRA) on Combating Weapons of Mass Destruction (CbtWMD) efforts resulting in a government-wide campaign plan focusing on identifying capability gaps and appropriate experimentation venues to a four-star equivalent Senior Leader Review.</li> <li>- Test proposed solutions from the MCO and SSTRO conceptual work through extensive collaboration, using results for implementation plans for the Building Partnership Capacity QDR Roadmap and implementation of DoDD 3000.05. Partner with the European Command to explore "Shaping"; a concept to focus on influencing reluctant countries during pre-conflict periods to maintain or advance US interests.</li> <li>- Within the Integrated Joint Special Technical Operations (IJSTO) Branch, provide special program experimentation for current and future solutions to the pressing problems for the warfighter, to include development and execution of Special Access Program Experiments (SAPEXs) and support to OSD/JS SAPCO efforts.</li> <li>- Provide a composite US Joint Forces Command/US Strategic Command team responsible for integration of strategic missions into concept development and experimentation; provide integration and synchronization between activities and strategic mission sets, to include the Joint Forces Command Global Cell construct, Combating Weapons of Mass Destruction (CbtWMD), and other space/ISR related areas of interest.</li> </ul> <p>FY 2008 Planned Output:</p> <p>Priority focus on efforts supporting specific capability gaps identified directly by joint CoComs (as expressed through the Concept Development and Experimentation - CD&amp;E - process) and compiled through the Joint Capabilities Integration and Development System (JCIDS) as Most Pressing Military Issues (MPMIs) and Integrated Priority List (IPL) issues. Emphasis will be placed on development of Limited Objective Experiments (LOEs) designed for distributed execution with CoCom staffs in their respective operational theaters, with special efforts dedicated to designing bilateral experiments with United Kingdom counterparts. When mutually agreed, these US-UK limited scale experiments will be opened to participation by Australia and Canada, linking our closest allies in substantive interoperability initiatives. Renewed emphasis will be placed on integration of Service and Defense Agency experiments to serve joint employment aims, and to pursue economy of efforts. The work plan for FY08 and beyond will look for opportunities to integrate Joint Experimentation with Joint Training. At the same time, oversight review of experimentation projects will critically appraise planned efforts to ensure that exercises are not undertaken with joint experimentation funds.</p> <p>Continuing efforts include (1) Emergent CoCom theater joint operational problems; (2) Service component operational integration for joint capabilities; (3) Joint Command and Control; (4) ISR, IO, Influence operations; (5) Joint Deployment Process Owner/Joint Deployment, Employment, Sustainment(JDPO/JDES); (6) Joint Urban Operations; (7) Joint Logistics; (8) Irregular Warfare (IW)/Asymmetric warfare on a global scale; (9) Concepts for in-theater Coalition Operations; (10) UNIFIED ACTION, integrated interService, interagency, coalition operations; (11) military support for Stability, Security, Transition, and Reconstruction (SSTR); and (12) Homeland Defense.</p>			

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<p>FY 2009 Planned Output:</p> <ul style="list-style-type: none"> <li>- Development of an experimentation campaign providing a succession of LOE events for execution in CoCom operational theaters; design and testing of technical means to export live synthetic environments to distributed CoCom experimentation sites;</li> <li>- Development and validation of Joint Command and Control (JC2) concepts and capabilities supporting USJFCOM responsibilities for integration and interoperability of tactical- and operational-level C2;</li> <li>- Initiatives for systematic screening of CD&amp;E inputs, MPMIs, and IPLs for issues accommodating resolution through Joint Experimentation;</li> <li>- Examination of Joint Experiment methodologies to support development and validation of overarching Defense policies such as Defense Planning Guidance and Strategic Planning Guidance;</li> <li>- Collaboration and revision of SSTRO and MCO Joint Operating Concepts in partnership with the other COCOMS, the Joint Staff, and the Armed Services. Refinement and experimentation will begin with the revised Capstone Concept for Joint Operations (CCJO);</li> <li>- Integration of bilaterally designed US-UK experiments into the JE plan of work; inclusion of Australia and Canada with the UK as priority partners for military capabilities exploration and integration.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Joint Executable Concept Refinement	0.000	27.851	31.250	33.984
<p>Primary outcome (objective) for this effort is the development and implementation of warfighting concepts that provide the foundational structures required to enhance CoCom capabilities to conduct their joint missions. Inherent in this mission is improved capabilities for CoComs to identify requirements for experimentation and participate in execution, new methodologies to compile CoCom needs through</p> <p>Primary outputs and efficiencies to be demonstrated: 1) Increased effectiveness in conduct of conflict assessment. 2) Improved efficiency in Mission and Implementation Planning. 3) Improved integration of both governmental and non-governmental agencies into the conflict resolution and stability development process. 4) Increased application of Effects Based Operations (EBO) as applied to interagency operations.</p> <p>FY 2007 Planned Output:</p> <ul style="list-style-type: none"> <li>- Joint Interagency Coordination Group (JIACG) transition complete with doctrinal JIACG Handbook, DOD Instruction on JIACG operations and staffing authorization for interagency positions at each of the combatant commands.</li> <li>- Multi-national Interagency Group (MNIG) concept with a lead nation and lead organization or intermediate level advisory group framework, supported by a Concept of Operations, and enabling tools, which include conflict assessment, planning framework, metric guidelines, guiding principles, and collaborative map for MNIG operations.</li> <li>- A series of major interagency experiments focused on the Unified Action concept and exploring the five capability gap areas and enablers. The experiments planned will look at Conflict Assessment, Policy and Planning, Major Mission Element Planning and Implementation Planning. The Unified Action program will also include a series of workshops, co-sponsored by the communities of interest in selected capability gap areas and enablers.</li> <li>- Multinational Experiment 5 (MNE 5): Refine and expand multi-national and coalition integration and operations coherently across the joint force commander's operational needs. MNE-5 will seek to broaden the context of pre-crisis, and crisis management by engaging both military and non-military interagency organizations. Additionally, MNE-5 will explore efforts to increase interagency interaction with national, and international, military coalitions and non-military organizations. The military aspect of MNE-5 will continue to build on the output of MNE4 and use Effects Based Operations (EBO) as the contextual theme to facilitate military support to interagency operations.</li> <li>- Continue to develop Cross Domain Collaborative Information Environment (CDCIE) to include certification, test, and evaluation (CT&amp;E) of portal, document management, whiteboard, audio, and remote desktop display and warfighter assessment of chat as means of communication.</li> <li>- Concept refinement for Joint Urban Fires Prototype (JUFP), Joint Mission Modeling Tools: Joint Virtual Operational Tool (JVOT), Geospatial Analysis &amp; Planning Support (GAPS) and Joint Mission Preparation, Rehearsal, and Operations (JMPRO), Theater Effects Based Operations (TEBO) ACTD, and Knowledge Access (KA). Outputs are demonstrated in the identification and development of mature capabilities for incorporation to the Combatant Commanders infrastructure to evaluate operational capabilities.</li> </ul>				

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<div>- Expand scope of Cooperative Research and Development Agreement (CRADA) initiatives to include additional private sector entities and academic institutions to engage in collaborative R&amp;D efforts.</div> <div>- Leverage JFCOM ACTD/JCTD efforts by realigning and integrating the JFCOM ACTD/JCDT program with other ongoing Joint Concept Development and Experimentation (JCD&amp;E) efforts.</div> <div>- Expand current engagement initiatives with DDR&amp;E's Reliance Process, (including ACTD/JCTD) and Science and Technology (S&amp;T) stakeholders in the military and commercial sectors to shape technological insertion in current and future prototypes.</div> <div>FY 2008 Planned Output:</div> <div>- Incorporate the MNIG concept and supporting tools in Multinational Experiment 5 for additional refinement and multinational "socialization" prior to transition in FY 2008.</div> <div>- Unified Action experimentation and refinement will continue in FY 2008 by incorporating significant experimentation areas in Multinational Experiment 5.</div> <div>- Examples of projected output, developed in coordination with participating United States Government (USG) departments and agencies, from the Unified Action program include:</div> <div><div>- USG Handbook on Stabilization and Reconstruction</div><div>- USG Planning Process</div><div>- USG Disarmament, Demobilization and Reintegration (DDR) Concept</div><div>- Revised USG Foreign Assistance Program</div><div>- USG agreed roles &amp; responsibilities in Rule of Law</div><div>- Scenario-based USG planning tool</div><div>- USG Collaborative Information Environment and Decision Support Tools</div></div> <div>- National Security University</div> <div>- Multinational Experiment 5: Continue execution to refine and expand multi-national and coalition integration and operations coherently across the joint force commander's operational needs.</div> <div>- Aggressively develop CDCIE and Certificate, Testing &amp; Evaluation (CT&amp;E) completion as well as warfighter assessment of all phases of CDCIE.</div> <div>- Develop and provide capabilities in support of identified war-fighters' and interagency partners' operational requirements for Knowledge Access.</div> <div>- Joint Decision Support Applications (JDSA). Tailor as necessary, and provide to selected interagency and multinational partners, Joint Mission Modeling Tools (JMMT's).</div> <div>- Continue to expand scope of Cooperative Research and Development Agreement (CRADA) initiatives to include additional private sector entities and academic institutions to engage in collaborative R&amp;D efforts.</div> <div>- Continue to expand current engagement initiatives with DDR&amp;E's Reliance Process, (including ACTD/JCTD) and S&amp;T stakeholders in the military and commercial sectors to shape technological insertion in current and future prototypes.</div> <div>FY 2009 Planned Output:</div> <div>- Continue with FY 2008 concepts and refine experimentation.</div>					
Accomplishment/Planned Program Title		FY 2006	FY 2007	FY 2008	FY 2009
Joint Deployment, Employment and Sustainment (JDES)		0.000	13.850	12.100	12.010
Primary OUTCOME (objective) for this effort is provide for continuous near, mid, and long-term improvement and transformation of Joint Deployment, fused operations-logistics command and control, and force capability sustainment as validated by the Joint Requirements Oversight Council (JROC). The goal is to create and continuously improve a responsive, knowledge-based process that enables decision-makers at all levels the ability to make timely, accurate decisions and risk assessments for global force projection of warfighting capabilities. The related initiatives are collaboratively developed with all Combatant Commanders (COCOMs), Services, and the DoD Combat Support Agencies.					
Primary outputs and efficiencies to be demonstrated: 1) Increased responsiveness of logistics distribution-based sustainment system. 2) Improved effectiveness of US Forces to deploy and be sustained in					

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<p>execution of joint operations. 3) Expanded capability of the Enterprise application integration platform to share data and tools. 4) Improved capability to establish functional and technical development "battle rhythm" in order to deliver rapid operational spirals providing enhanced transformation change solution sets. 5) Expanded support the Joint/OSD effort to develop an Adaptive Planning capability for the Department.</p> <p>FY 2007 Planned Output:</p> <ul style="list-style-type: none"> <li>- Joint Experimental Deployment and Sustainment: Develop and obtain Initial Operational Capability (IOC) for the Joint Force Support Component Command (JFSCC) construct in USFK for joint force asset visibility that allows for improved logistics command and control that will enable collaboration between operations and logistics. Achieve Full Operational Capability (FOC) for USFK and develop through Initial Operation Capability (IOC) with two additional COCOMs.</li> <li>- Develop a multinational logistics handbook that describes support structure and processes with accessible tools, organized to support an effects based approach to a multinational unified, comprehensive approach to disaster prevention and intervention.</li> <li>- Enhance Joint Asset Visibility and single fused logistics picture capability. Generate processes and decision support tools as a foundation for the logistician to execute Joint Theater Logistics Command and control (C2).</li> <li>- Assess and redirect requirements to develop logistics distribution-based sustainment system to respond to operating in multiple locations world-wide, and synthesize data to provide and receive time-definitive information on support delivery to allow more informed decisions. This enhanced system will better enable Forces' ability to rapidly deploy as fully supported, immediately employable, capabilities to the Warfighter. Goal is to be 25% more responsive than currently available.</li> <li>- Joint Force Projection (JFP) ACTD: JFP ACTD will provide Enterprise visibility of force capabilities from requirements generation through integration in the battle space and will deliver the following enhancements in FY07: a Joint Reception Staging Onward Movement and Integration (JRSO&amp;I) planning and execution suite, continued prototype technology development, integration of specific applications into a Service Oriented Architecture/Web Services technical environment; and documented business rules for conducting operational planning and execution using an operational capabilities-based construct to identify, source, move, track, and close required forces as capabilities.</li> <li>- Support the Joint / OSD effort to develop an Adaptive Planning (AP) capability for the Department. Specific FY07 deliverables may include leading the DOD collaborative effort to write and Adaptive Planning CONOPS; leading the DOD collaborative effort to create a DOD Architecture Framework (DODAF) compliant AP operational process architecture; and produce a long-term AP capability development strategy. Deliverables contingent upon the pending definition of JFCOM AP capability development role</li> </ul> <p>FY 2008 Planned Output:</p> <ul style="list-style-type: none"> <li>- Continue refinement and deployment of modules completed in FY 2007.</li> <li>- Joint Experimental Deployment and Support: Develop the Joint Logistic Command concept as an adjunct to the JFSCC to allow for the coordinated application of all theater logistics capabilities focusing on the commander's intent.</li> <li>- Refine Concept of Operations describing a multinational logistics/support structure to support an effects based approach to a multinational unified, comprehensive strategy.</li> <li>- Further enhance Joint Asset Visibility and single fused logistics picture capability. Refine processes and decision support tools as a foundation for the logistician to execute Joint Theater Logistics command and control.</li> <li>- Support the Joint / OSD effort to develop an Adaptive Planning capability for the Department. Specific deliverables pending definition of JFCOM AP capability development role.</li> <li>- Joint Force Projection ACTD will provide Enterprise visibility of force capabilities from requirements generation through integration in the battlespace and will deliver the following enhancements in FY08: introduction of Risk Management Information Systems; identification of force projection modeling and simulation (M&amp;S) requirements; additional decision support tools for required capability enhancements.</li> </ul>		

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<p>FY 2009 Planned Output:</p> <ul style="list-style-type: none"> <li>- Continue refinement and deployment of modules completed in FY 2008.</li> <li>- Joint Experimental Deployment and Support: Continue development of the Joint Logistic Command. Expect IOC FY09.</li> <li>- Refine Concept of Operations describing a multinational logistics/support structure to support an effects based approach to a multinational unified, comprehensive strategy.</li> <li>- Further enhance Joint Asset Visibility and single fused logistics picture capability. Refine processes and decision support tools as a foundation for the logistician to execute Joint Theater Logistics command and control.</li> <li>- Support the Joint / OSD effort to develop an Adaptive Planning capability for the Department. Specific deliverables pending definition of JFCOM AP capability development role</li> <li>- Joint Force Projection ACTD will provide Enterprise visibility of force capabilities from requirements generation through integration in the battlespace and will deliver the following enhancements in FY09: Transition end-to-end force projection capability to NECC that utilizes an operational capabilities-based construct of force management, deployment, and employment.</li> </ul>				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Integration with Other Regional Combatant Commanders, Military Services and Agencies	0.000	8.000	8.000	8.010
<p>Primary OUTCOME (objective) for this effort is to facilitate the integration of Regional Combatant Commander, Military Services and Agencies program objectives across the full range of military exercises and experiments. These efforts use in process events/environments to leverage opportunities to further expand the experimental concept runs to better refine recommended solution sets. Through this environment opportunities are taken to rapidly provide M&amp;S solutions and warfighting concept solutions to the warfighter earlier.</p> <p>Primary outputs and efficiencies to be demonstrated: 1) Accelerated development and delivery of experimentation validated solution sets to warfighters. 2) Increased interaction with training community to leverage existing training venues for acceleration of concept development and validation.</p> <p>FY 2007 Planned Output:</p> <ul style="list-style-type: none"> <li>- Joint Context FY07 Experimentation Program examines and evaluates potential warfighter solutions for capabilities identified in the JOPSC family of concepts leveraging FY07 Title X Service, COCOM and other agency experimentation through continue to participate participation in Unified Quest, Noble Resolve, Unified Engagement, Joint Urban Warrior, Expeditionary Warrior, and Crisis Management II.</li> <li>- Identification of capabilities and solutions through experimentation that address specific joint warfighter challenges in the areas of Shaping, Security, Stability, Transition and reconstruction Operation (SSTRO), Major Concept Operations (MCO), Communications Strategy, Interagency mechanisms for strategic/operational planning, and Interagency Integration - Contingency Response Planning</li> <li>- Continue to identify warfighter needs and provide joint experimentation venues in concert with the Joint Center for Operational Analysis, Services, COCOMS, Defense Agencies, Joint Staff, and other multi-national national and inter-agency partners.</li> <li>- Integrate/collaborate further with training community to use existing exercises to provide warfighter solutions in the form of doctrinal, decision-making, and information sharing tool suites.</li> <li>- Participate in Ardent Sentry 07, Sharp Focus, Top Official Exercise Full Scale Event and Commonwealth of Virginia avoidance and Consequence Management exercises to integrate and synchronize joint experimentation in the areas of homeland defense and defense support to civilian authorities and provide information sharing and synchronization solutions.</li> <li>- Develop M&amp;S solutions to individual warfighter challenges.</li> <li>- Document existing persistent collaborative environments (email, web pages, MS chat) and provide those environments to customers (Multi-National, States, Government Agencies etc).</li> </ul> <p>FY 2008 Planned Output:</p> <ul style="list-style-type: none"> <li>- Continue to participate in scheduled experiments (I.E. Unified Quest, Joint Urban Warrior).</li> <li>- Conduct nearly continuous Urban Resolve events.</li> <li>- Document/validate process to provide solutions developed during experimentation directly to COCOM warfighters.</li> </ul>				



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FY 2009 Planned Output: - Participate in scheduled experiments (I.E. Unified Quest, Joint Urban Warrior). - Conduct nearly continuous Urban Resolve events. - Document/validate process to provide solutions developed during experimentation directly to COCOM warfighters.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Multi-National and Coalition Concept Development:	0.000	8.424	9.000	9.016
<p>Primary OUTCOME (objective) for this effort is to foster cooperation and coordination of national and multi-national partners across the full spectrum of military operations. In today's world, the success of coalition military operations will be influenced by the coalition's capability to integrate all elements of national and multi-national diplomacy, development and defense. U.S. Joint Forces command collaborates with NATO and others to test emerging technologies that are viewed as promising to future effects-based approaches to multinational operations. Participating nations test and evaluate new ideas in coalition operations planning, execution and assessment and examine multinational interagency group coordination, multinational logistics interoperability, and information operations and medical support. Our ability to leverage Multi-National and Coalition concept development may develop yet untapped efficiencies in how the collective force is applied. The revised title was developed to assist in the mechanisms for those high visibility efforts.</p> <p>Primary outputs and efficiencies to be demonstrated: 1) Improved engagement of our coalition partners through improvement in information security processes. 2) Expanded multinational collaborative environment across the full range of military operations. 3) Increased number of nations and other organizations that support experimentation and concept development operations with multiple national capabilities.</p> <p>FY 2007 Planned Output:          - Coalition partners require improved methods to conduct rapid interagency and multinational planning, coordination, and execution in order to create and carry out a unified comprehensive strategy. The central theme for MNE 5 will be exploration of a multinational, interagency, comprehensive engagement strategy, which incorporates government, non-government, and private organizations, using all national and international elements of power, to influence a stable international environment. It will seek to broaden the context of pre-crisis and crisis management by engaging both military and non-military interagency organizations. Additionally, MNE 5 will explore efforts to increase interagency interaction with national and international military coalitions and non-military organizations. A primary goal would be to develop an initial capability for uninterrupted, day-to-day involvement across agencies, to support crisis prevention and consequence management activities. The military aspect of MNE-5 will continue to build on the output of MNE4 and use Effects Based Operations (EBO) as the contextual theme to facilitate military support to interagency operations. Currently, eight MNE core nations (Australia, Canada, Finland, France, Germany, Sweden, UK, &amp; US) and NATO are supporting this effort. Additionally, Austria, Denmark, Hungary, Korea, Poland, Portugal, Singapore, and Spain are either considering supporting this work or have requested to be part of MNE 5 and are being evaluated by the core nations for their value added to the experiment. Multinational Strategic Planning. A documented methodology of "best practices" of the comprehensive (whole of government) approach will be produced as an initial baseline document and then become a living document as better solutions are discovered, implemented and refined. Specific areas to be included are: architectures, SOPs for future intervention operations, Tactics, Techniques and Procedures (TTPs), collaborative networking, both virtually and technically and a multinational federation of modeling and simulation tools. Solutions (/methodology, organizational, tools) will also be distributed as they prove viable through experimentation.</p> <p>FY 2008 Planned Output:          - Continue creating a multinational collaborative environment for the entire range of future operations to allow decision makers to execute more informed operational decisions considering all elements of national power. The collective learning gathered as multinational and coalition collaboration gives greater opportunity to dissuade and/or defeat adversaries and allow us to save lives and conserve resources.          - Pursue expanding the number of participating nations and other organizations to identify and support coalition operations with leading technology or innovations from their national capabilities to export</p>				

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603828D8Z - Joint Experimentation</b>	PROJECT <b>P808</b>
<p>across the coalition collaborative needs.</p> <ul style="list-style-type: none"> <li>- Improve methods to conduct integrated rapid planning, coordination, and execution with Interagency and Multi-national partners to create and execute a unified, comprehensive strategy.</li> <li>- Deliver "Blueprint" of a functioning MNIG for use in coalition operations.</li> <li>- Incorporate bi-lateral agreements expansion of NATO and UN participating nations experimentation.</li> </ul> <p>FY 2009 Planned Output:</p> <ul style="list-style-type: none"> <li>- Explore how to integrate full international capabilities across the spectrum of international security issues.</li> <li>- Continue developmental efforts for a more capable and responsive coalition joint task force for global operations.</li> <li>- Develop organization and operations guidelines and collaborative map and procedures.</li> </ul> <p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603832D8Z - Joint Wargaming Simulation Management Office**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	19.394	35.972	37.837	38.273	39.636	40.480	41.012	41.589
P476 Joint Wargaming Simulation Management Office	19.394	35.972	37.837	38.273	39.636	40.480	41.012	41.589

**A. Mission Description and Budget Item Justification:** A. Mission Description and Budget Item Justification: (U) Modeling and Simulation (M&S) is a key enabler of DoD activities such as analysis, acquisition, training, test and evaluation, experimentation, and planning across the Services as well as most of the other major DoD components. The development and use of most M&S within DoD is generally double stovepiped - first, within separate activities such as those above, and second, within each of the DoD components. The strategic objective of this program is to maximize M&S commonality, reuse, interoperability, efficiencies, and effectiveness via common and cross-cutting M&S. This Joint Wargaming Simulation Management Office Program Element is executed by the Modeling and Simulation Coordination Office (M&S CO) in accordance with DoD Directive 5000.59, Management of Modeling and Simulation, DoD Directive 5134.1 Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), 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><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	34.372	36.179	38.992	39.345
Current BES/President's Budget (FY 2008/2009)	19.394	35.972	37.837	38.273
Total Adjustments	-14.978	-0.207	-1.155	-1.072
Congressional Program Reductions		-0.207		
Congressional Rescissions				
Congressional Increases				
Reprogrammings	-14.000			
SBIR/STTR Transfer	-0.978			
Other			-1.155	-1.072

**C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603832D8Z - Joint Wargaming Simulation Management Office****E. Performance Metrics:**

<b>FY</b>	<b>Strategic Goals Supported</b>	<b>Existing Baseline</b>	<b>Planned Performance Improvement / Requirement Goal</b>	<b>Actual Performance Improvement</b>	<b>Planned Performance Metric / Methods of Measurement</b>	<b>Actual Performance Metric / Methods of Measurement</b>
08						

Comment: (U) Comment: Performance in this program is monitored in the following ways:

- (U) 1. Continuous oversight on behalf of the USD(AT&L) by the DoD Modeling and Simulation Steering Committee comprised of Communities enabled by M&S, the four Military Departments, and the Joint Staff.
- (U) 2. Community M&S Business Plans implemented.
- (U) 3. Common and Cross-Cutting M&S Business Plan implemented.
- (U) 4. Standards Implemented.

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>								Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603832D8Z - Joint Wargaming Simulation Management Office</b>					PROJECT <b>P476</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P476      Joint Wargaming Simulation Management Office	19.394	35.972	37.837	38.273	39.636	40.480	41.012	41.589	
<p><b><u>A. Mission Description and Project Justification:</u></b> (U) Modeling and Simulation (M&amp;S) is a key enabler of DoD activities such as analysis, acquisition, training, test and evaluation, experimentation, and planning across the Services as well as most of the other major DoD components. The development and use of most M&amp;S within DoD is generally double stovepiped - first, within separate activities such as those above, and second, within each of the DoD components. The strategic objective of this program is to maximize M&amp;S commonality, reuse, interoperability, efficiencies, and effectiveness via common and cross-cutting M&amp;S. This Joint Wargaming Simulation Management Office Program Element is executed by the Modeling and Simulation Coordination Office (M&amp;S CO) in accordance with DoD Directive 5000.59, Management of Modeling and Simulation, DoD Directive 5134.1 Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&amp;L)), 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.</p> <p>(U) The M&amp;S CO has four responsibility areas:</p> <p>(U) (1) Facilitate the development of DoD's M&amp;S vision to guide the M&amp;S activities of the DoD Components and DoD Communities.</p> <p>(U) (2) Facilitate oversight and strategic governance of DoD M&amp;S capabilities and resources.</p> <p>(U) (3) Facilitate the development and implementation of Community M&amp;S Business Plans and the Common and Cross-Cutting M&amp;S Business Plan.</p> <p>(U) (4) Facilitate the development and implementation of policies, plans, procedures, and DoD issuances to manage M&amp;S and the implementation of best practices of how models and simulations are effectively acquired, developed, managed, and used by DoD Components.</p> <p>(U) The M&amp;S CO strategic objectives:</p> <p>(U) M&amp;S Commonality - Maximize the use of common M&amp;S Tools, Data, and Services via projects creating or making visible and accessible common and cross-cutting M&amp;S Tools, Data, and Services.</p> <p>(U) M&amp;S Reuse - Maximize the reuse of existing M&amp;S Tools, Data, and Service components to create new M&amp;S Tools, Data, and Services via projects that foster visibility, accessibility, and usability of such components.</p> <p>(U) M&amp;S Interoperability - Maximize interoperability among the real operations environment, the simulated operations environment, and the range operations environment via projects to create and maintain standards.</p> <p>(U) M&amp;S Efficiencies - Implement M&amp;S management provisions to organize DoD M&amp;S activities to cost efficiently satisfy DoD M&amp;S requirements. This includes, but is not limited to: M&amp;S Tools, M&amp;S Data and M&amp;S Services; standards and best practices for the use of M&amp;S; DoD M&amp;S Coordination Agents; a DoD M&amp;S Information Analysis Center, and M&amp;S Professional Development.</p> <p>(U) M&amp;S Effectiveness - Maximize the effectiveness and effective use of M&amp;S Tools, Data, and Services via projects that enable the rapid sharing of readily understandable verification, validation, and accreditation information.</p>									

**OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3PE NUMBER AND TITLE  
**0603832D8Z - Joint Wargaming Simulation Management Office**PROJECT  
**P476****B. Accomplishments/Planned Program:**

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Joint Wargaming Simulation Management Office	19.394	35.972	37.837	38.273

FY 2006 Accomplishments: Developed initial Community M&S Business Plans for 6 DoD Communities (analysis, acquisition, training, test and evaluation, experimentation, and planning). Developed initial draft of the M&S Common and Cross-cutting Business plan which identifies the existing major gaps in M&S capabilities which limit the DoD's effective use of M&S. Delivered a National Academies of Sciences study which identifies shortcomings and suggests where and how they should be addressed.

Provided M&S mission planning tools and analysis capabilities that became part of the Department's operations in Iraq. Delivered "designed to order" weather and ocean scenarios in support of the Analytic Community. Delivered a study of commercial gaming technologies and their application to DoD M&S needs. Enhanced training for coalition operations 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.

Continued providing standards, policies and product support for improving Common and Cross-cutting M&S tools, M&S Data and M&S Services to allow their separate models, simulations and command and control systems to effectively operate in a common M&S environment. 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. 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.

FY 2007/2008/2009 Plans: Implementation of the M&S management provisions in DoDD 5000.59. Create and implement the way ahead standards and/or practises for simulation interface interoperability, component interface interoperability, scenario representation interoperability, operations management representation interoperability, and entity representation interoperability; Validation, Verification and Accreditation; DoD M&S Coordination Agents. Improve and implement Community and Common and Cross-Cutting M&S Business Plans.

**C. Other Program Funding Summary:** Not Applicable.**D. Acquisition Strategy:** Not Applicable.**E. Major Performers** Not Applicable.

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Exhibit R-2, RDT&E Budget Item Justification							February 2007	
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense Wide (0400), Budget Activity 3			R-1 ITEM NOMENCLATURE 0603941D8Z Test & Evaluation/Science and Technology (T&E/S&T)					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
PE 0603941D8Z	22.615	39.710	62.889	94.855	97.274	98.852	100.394	101.942
High Speed/Hypersonic Test	4.439	9.425	14.846	23.114	23.361	22.904	23.200	23.715
Spectrum Efficient Technology	3.493	3.585	0.650	2.217	4.428	5.713	5.802	5.891
Multi-Spectral Test	4.371	5.372	8.641	11.930	11.720	11.823	12.006	12.189
Non-Intrusive Instrumentation	3.229	5.094	8.379	10.915	10.721	10.798	10.965	11.132
Directed Energy Test	5.093	8.828	14.575	23.067	23.069	22.945	23.287	23.415
Netcentric Systems Test	1.852	5.373	11.547	17.977	18.339	18.950	19.310	19.671
Unmanned and Autonomous System Test	0.138	2.033	4.251	5.635	5.636	5.719	5.824	5.929

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**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, modeling and simulation (M&S), 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, other government agencies, 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, special studies, analyses, and strategic planning related to test capabilities and infrastructure.

This program is funded within the Advanced Technology Development Budget Activity because it develops and demonstrates high payoff technologies for current and future DoD test capabilities.



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**B. (U) PROGRAM CHANGE SUMMARY**

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Previous President's Budget:	27.371	39.939	64.988	97.456
Current President's Budget:	22.615	39.710	62.889	94.855
Total Adjustments:	(4.756)	(0.229)	(2.099)	(2.601)
Congressional Program Reductions:				
Congressional Rescissions:				
Congressional Increases:				
SBIR/STTR Transfer:				
Other Program Adjustments:	(4.756)	(0.229)	(2.099)	(2.601)

Change Summary Explanation:

FY 2006: FY 2006 Defense Appropriations Act erroneously added \$4.2 million for "Advanced Unmanned Vehicle Systems Development" to Program Element 0603941D8Z, Test and Evaluation Science and Technology. Funds were reprogrammed to PE 0603709D8Z, Joint Robotics Program.

**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.

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			HIGH SPEED/HYPERSONIC TEST					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
High Speed/Hypersonic Test	4.439	9.425	14.846	23.114	23.361	22.904	23.200	23.715

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

This test technology focus area is renamed from Hypersonic Test to High Speed/Hypersonic Test to more accurately communicate the nature of the test technologies required for future aerospace developments. The DoD is developing air-breathing weapons, advanced aircraft, and access to space platforms to operate at high speeds (Mach 3-5) and in the hypersonic speed regimes Mach 5 and higher. High speed/hypersonic systems to be developed by DoD will 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 high and 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. High speed/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 high speed/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 2006	FY 2007	FY 2008	FY 2009
High Speed/Hypersonic Test	4.439	9.425	14.846	23.114

**FY 2006 Accomplishments:**

Continued efforts initiated in prior fiscal years. Highlights of these efforts included:

- Completed Heat Flux Sensor Development for Aerothermal Measurements by successfully calibrating miniaturized heat flux sensors at high temperatures. These heat flux sensors were used in the successful wind tunnel tests on the Missile Defense Agency (MDA) Kinetic Energy Interceptor (KEI) at Arnold Engineering Development Center (AEDC). These heat flux sensors can be embedded in hypersonic vehicles to support wind tunnel and flight testing.
- Completed In-Situ Pressure Measurements for Hypersonic Vehicles efforts to develop an advanced prototype pressure sensor. This embedded sensor completed 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.
- Continued Test Media Effects development and demonstration of diagnostic tools to simultaneously measure chemical species, temperature and velocities in hypersonic flows. Efforts continued in the development of improved Computational Fluid Dynamics (CFD) algorithms to model the effects of vitiation in hypersonic vehicle propulsion systems. These tools will enable the measurement and prediction of vitiation effects to support hypersonic engine test and evaluation.
- Continued Clean Air Heater Test Technology efforts to evaluate material properties through static-testing and initiated design of the heater element.
- Continued In-flight Combustion Gas Analysis efforts to develop tunable diode laser sensor system for measurement of H<sub>2</sub>O, CO, CO<sub>2</sub> and O<sub>2</sub> and temperature with two dimensional spatial resolution. This system was used to support the Robust SCRAMJET test at AeroJet test facilities.
- Continued High Heat Flux Sensor efforts to analyze alternative high temperature heat flux measurement methods and to conduct thermal conductivity and convective heat transfer finite element analysis modeling of candidate sensors to support the design of the model sensor for use in the extreme temperature environment of hypersonic aeropropulsion test facilities.
- Continued with Microelectromechanical System (MEMS) Shear Stress Sensors efforts to test and characterize the brassboard sensor performance and operation in supersonic flow conditions.

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- Continued Pulsed Electron Beam Spectroscopy efforts to design, fabricate and test pulsed e-beam spectroscopy in AEDC lab-scale shock tunnel for temperature and species measurements.
- Initiated new research efforts into Regenerative Storage Heater, Plug Nozzle Study, Hypersonic Engine/Facility Interaction, Modeling and Simulation for Hypersonic T&E and High Pressure Arc Heater.

**FY 2007 Plans:**

Continue efforts initiated in prior years. These efforts to include:

- Complete In-Flight Combustion Gas Analysis efforts to fabricate and ground test a non-intrusive laser spectroscopy diagnostic sensor 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 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.
- 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.
- Complete MEMS Shear Stress Sensor efforts to develop and demonstrate a Silicon Carbide based MEMS sensor that is capable of measuring two-dimensional shear stress environments on the surface of hypersonic vehicles.
- Complete Plug Nozzle Study efforts to assess the feasibility of using an axisymmetric plug nozzle to create variable Mach number test conditions in the AEDC Aeropropulsion Test Unit (APTU) facility to determine uniformity of flow conditions downstream of the plug centerbody in the nozzle to support variable Mach number high speed/hypersonic testing.
- Continue Hypersonic Clean Air Heater Test Technology efforts to fabricate and test a sub-scale clean air heater system. This will provide the basis for the development of a full-scale heater system for use in hypersonic aeropropulsion testing.
- Continue Test Media Effects efforts to model effects of vitiares on hypersonic combustion engines to allow prediction of engine performance in clean air flight conditions.
- Continue Regenerative Storage Heater efforts to conduct comprehensive material testing for selecting core brick structural material for Storage Heater.
- Continue with Hypersonic Engine/Facility Interaction efforts to test a scramjet engine in test facilities and to conduct

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- CFD modeling of a scramjet engine in air, hydrogen and hydrocarbon vitiation conditions.
- Continue Modeling and Simulation for High Speed Hypersonic T&E efforts to demonstrate accuracy of US Wind Code for scramjet and ramjet engine test. Efforts continue to improve combustion modeling to include capabilities such as liquid phase chemical kinetics for hydrocarbon-air combustion model, multiphase spray models for liquid injection model and turbulent heat and mass transfer model.
  - Continue High Pressure Arc Heater efforts to develop an arc characteristics monitoring system to determine effects of heater configuration changes on arc behavior to develop an analysis tool to determine the propensity of arcing to or between segments. These efforts will provide knowledge to reduce the arcing events, which cause severe damage to facilities.
- Initiate future investigations to address T&E technology challenges in this focus area for:
- Instrumentation for hypersonic flight testing of hot structures including sensor and sensor integration techniques for in-flight measurement of temperature, pressures, heat flux, strain and deformation.
  - Ground test technologies to simulate material ablation/erosion at high velocities.
  - Techniques to achieve a variable mach, free-jet test capability for ground testing a complete hypersonic propulsion system wherein the Mach number is varied to match anticipated flight profiles during a continuous facility run.
  - Measurement and computational modeling of hypersonic facility flow parameters to accurately predict behavior of the test article in different hypersonic facility flows and correlate experimental results between different ground test facilities.
  - High speed stores separation measurement technology for accurate store/vehicle separation data in hypersonic flight conditions.
  - Experimentally calibrated computational methodology to investigate the coupled fluid-thermal-structural effects generated in turbine nozzles during variable Mach number hypersonic tests.
  - Methodology for instantaneous optimized nozzle wall contour via closed loop control algorithm and actuators design.
- Initiate a Broad Agency Announcement (BAA) in FY 2007 to select efforts for FY 2008 award.

### **FY 2008 Plans:**

Continue efforts initiated in prior years:

- Complete Test Media Effects efforts to incorporate the effects of vitiation into computational fluid dynamics codes to predict flame holding within hypersonic vehicle combustors used in hypersonic combustion engine testing.

This effort will result in the ability to characterize the performance of a hypersonic vehicle in a wind tunnel using vitiated air and use those results to predict the vehicle's flight performance. This effort will also advance the state of

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the art in ground test instrumentation to characterize the test environment.

- Complete High Pressure Arc Heater efforts to extend the operating regime for arc heater facilities to the Mach 8 – 12 regimes. This will provide true air operating conditions to support testing of thermal protection systems and hypersonic combustion systems.
- Complete Hypersonic Engine/Facility Interaction efforts to resolve ground test issues related to vitiate effects at various test facilities using different combustion heater fuels. This will provide an empirical understanding of the effects of vitiated air on hypersonic scramjet engines and support analysis of ground test performance at different test facilities.
- Continue Regenerative Storage Heater efforts to finalize pilot heater system design.
- Continue Modeling and Simulation for high speed/hypersonic T&E efforts to improve mode transition modeling to include capabilities to conduct numerical simulation of time independent mode transition and to simulate ram to scram mode transition.
- Continue Clean Air Heater Test Technology efforts to design and fabricate a high-pressure elevated temperature air flow system and heater control elements required for testing of heater element in a flow field.

Initiate additional investigations as a result of the BAA process to address critical T&E technology issues such as:

- 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.
- 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 regime.

Initiate a BAA in FY 2008 to select efforts for FY 2009 award.

### **FY 2009 Plans:**

Continue efforts initiated in prior years: These efforts to include:

- Complete Regenerative Storage Heater efforts to develop a brick storage heater based on novel cored brick materials. This will provide a technique to produce non-vitiated air for ground testing hypersonic propulsion systems in a true flight environment.
- Complete Modeling and Simulation for high speed/hypersonic T&E efforts to develop enhanced modeling and simulation tools to support integrated test article and facility effects modeling. This will allow detailed analysis of hypersonic system testing prior to physical testing to reduce risk and cost of ground test events.

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- Complete Clean Air Heater efforts to develop and demonstrate a sub-scale resistive element clean air heater system. This technology will support development of a full-scale wind-tunnel heater system that can provide continuous clean air flow for use in hypersonic aeropropulsion testing.
- Initiate additional investigations as a result of the BAA process to address critical T&E technology issues such as:
- Flight vehicle static structural testing to support ground testing of integrated hypersonic vehicles prior to flight testing
  - Control jet interaction and flow separation control methodologies to ensure high Mach number testing accurately represents in-flight test conditions.
  - Methods for electron-beam energy addition to create high temperature flows required to emulate Mach 8 and above flight conditions.
  - Transient modeling techniques to simulate in-flight transients (e.g. boundary layer effects) to support “fly the mission” ground tests.

Initiate a BAA in FY 2009 to select efforts for FY 2010 award.

**C. (U) OTHER PROGRAM FUNDING SUMMARY NA**

**D. (U) ACQUISITION STRATEGY NA**

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			SPECTRUM EFFICIENT TECHNOLOGY					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Spectrum Efficient Technology	3.493	3.585	0.650	2.217	4.428	5.713	5.802	5.891

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The Test Resource Management Center is realigning this program to perform risk reduction and advanced technology development for Central Test and Evaluation Investment Program (CTEIP) projects. Accordingly the Spectrum Efficient Technology (SET) Focus Area is being structured to provide advanced technology developments needed by CTEIP's integrated Network Enhanced Telemetry (iNET) project. The iNET study has developed an architectural concept for a Telemetry Network System (TmNS) that addresses the needs of the test and evaluation and training communities. However, the iNET architecture is not yet sufficiently defined to guide the selection and funding of SET projects. Accordingly, SET will temporarily phase out and stand up again in FY09 when iNET is better defined. SET will complete its current, ongoing projects: 10 in FY07 and 3 in FY08. No new starts will be funded until the iNET architecture is defined and advanced technology developments required to support iNET are clear.

**B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM**

	FY 2006	FY 2007	FY 2008	FY 2009
Spectrum Efficient Technology	3.493	3.585	0.650	2.217

**FY 2006 Accomplishments:**

Continued efforts initiated in prior fiscal years. Highlights for these projects included:

- Completed X-band Tracking of a rocket in flight. This effort demonstrated the technology necessary to modify



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existing telemetry assets to support operation in the SHF band.

- Completed Steerable Beam directional antenna concepts ground and flight demonstration of a prototype steerable beam system with closed loop capability to steer telemetry signals to reduce data dropouts and minimize the effects of antenna to antenna interference.
- Continued Super High Frequency (SHF) Channel Modeling and Implementation efforts to incorporate effects of multipath 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.
- Continued Spectrally Efficient High Data Rate Telemetry System in 3-30Ghz range effort which will combine physically compact digital technology and complex software modulation schemes capable of mitigating effects of communications channel multipath error at high Doppler rates, while achieving implementations that are both power and spectrally efficient.
- Continued Phased Array Antenna effort to use low complexity centroid-based antenna algorithms to improve pointing accuracy and speed.
- Continued RF MEMS effort to develop a low cost, low profile, multifunctional phased array antenna using switchable micro elements which will enable rapid antenna geometry reconfiguration for specific test needs.
- Continued Beamformer Antenna effort to develop continuously steering, directional phased array antenna technology enabling high data rates for air vehicles during roll maneuvers which traditional omni-directional or fixed antennas can not support.

Initiated new research efforts including:

- Laser Telemetry to combine the latest components from a rapidly developing commercial market into a prototype test system to demonstrate that Free Space Optical (FSO) problems of the past have been overcome by technical advances
- Smart Modulating Retroreflectors will develop a lightweight, low power and low pointing complexity laser communications system for flight vehicles to augment limited RF spectrum.
- Broadband Telemetry Antennas will develop a single form, fit and function antenna covering three frequency bands, in a novel switched-beam array of 4 blade antennas, thereby providing a directional capability and increased gain with low complexity.
- Improved Linear Power Amplifiers to develop hybrid power amplifiers for telemetry applications using high power and high electron mobility resistors to achieve highest possible power supply and transmit amplifier efficiency.
- Medium Access Control to provide decentralized and distributed access to wireless media while supporting mobile and ad hoc behaviors.
- Aeronautical Network Telemetry to develop two way telemetry communications and dynamic data flow control as specified in the iNET architecture.

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- Enhanced Forward Error Correction to reduce Forward Error Correction (EFEC) code processing complexity while improving coding gain to improve aeronautical telemetry link availability and extend operating range at the MRTFB.
- Optical Communications and Advanced Telemetry Study will provide an in-depth analysis of existing FSO communications technologies and define requirements for FSO systems for the T&E community.

### **FY 2007 Plans:**

Continue efforts initiated in prior fiscal years:

- Complete Super High Frequency Channel Modeling flight test data reduction and final report.
- Complete Spectrally Efficient High Data Rate Telemetry System for SHF flight-testing for real-time capability and deliver transition plan and final report.
- Complete RF MEMS system integration, package development, ground testing, flight testing, test data analysis and delivery of final report.
- Complete Beamformer Antenna software development, attitude control software interface and ground testing. Integrate payload with rocket for launch and deliver final report.
- Complete Laser Telemetry effort equipment integration and flight testing; deliver final report.
- Complete Smart Modulating Retroreflector modulator fabrication and systems analysis, characterize link stability and throughput, deliver phase 1 final report, perform dynamic testing and deliver data reduction report.
- Complete Broadband Telemetry Antenna fabrication, integration, test and delivery of antennas 1 and 2. Complete pointing algorithm development, ground and flight testing and deliver final report and hardware.
- Complete Improved Linear Power Amplifier phase 1 and deliver two amps. Complete phase 2 design and fabricate and test final amplifiers; deliver four amps and final report.
- Complete Aeronautical Network Telemetry coordinated layer-2 & layer-3 Quality of Service (QoS) approach, confirm transport layer interoperability and complete final architecture refinement; deliver final report.
- Complete Optical Communications and Advanced Telemetry Study – deliver results of analysis
- Continue Phased Array Antenna dynamic pointing test, flight test planning, and analysis.
- Continue Medium Access Control planning, scripting and analysis; optimize and upgrade model, rerun simulation and deliver initial report; develop high-fidelity (HF) model and prepare for HF simulation.
- Continue Enhanced Forward Error Correction (EFEC) by extending results from phase 1 to characterize the performance of the test suite of EFEC codes on the second and third of the three common telemetry modulation schemes; develop simplified coherent and noncoherent decoders for pulse code modulation/frequency modulation (PCM/FM) and advanced range telemetry continuous phase modulation (ARTM CPM) modulation schemes.

### **FY 2008 Plans:**

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Continue efforts initiated in prior fiscal years. These efforts will provide risk mitigation and advanced technologies to support CTEIP's iNET project and include:

- Complete Phased Array Antenna flight tests and analysis of results; deliver final report.
- Complete Medium Access Control high fidelity simulations and deliver final report.
- Complete EFEC search of EFEC codes and finalize the coherent and noncoherent decoders; deliver detailed design of decoders with performance table identifying the best combinations of EFEC codes and decoders with any necessary design and implementation details along with final report.

Initiate a BAA in FY 2008 to select efforts for FY 2009 award.

**FY 2009 Plans:**

Reactivate the SET focus area to provide risk mitigation and advanced technologies to support CTEIP's iNET project.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			MULTI-SPECTRAL TEST					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Multi-Spectral Test	4.371	5.372	8.641	11.930	11.720	11.823	12.006	12.189

**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 2006	FY 2007	FY 2008	FY 2009
Multi-Spectral Test	4.371	5.372	8.641	11.930

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### **FY 2006 Accomplishments:**

Continued efforts initiated in prior fiscal years. Highlights for these projects included:

- Completed Ultra-Violet Light-Emitting Diode (UV LED) efforts to characterize the LEDs and conducted tests to determine the feasibility of using these LEDs to enable performance evaluation of missile warning systems (MWS) and signal processing algorithms by stimulating the UV sensors.
- Continued Dynamic Hyperspectral Thermal Signature Model (DHTSM) efforts to evaluate real-time performance of the DHTSM using High Performance Computing (HPC) assets to support real time hardware in the loop (HWIL) hyperspectral sensor testing. This signature model will allow generation of synthetic infrared imagery to provide a repeatable test environment for multi-spectral and hyperspectral imaging systems.
- Continued Multi-Spectral Stimulator Injection Test Method (MSSITM) efforts to demonstrate closed loop scene generation outputs with synchronized infrared (IR) and RF outputs to support hardware-in-the-loop testing of multi-spectral weapon systems in the mid-wave IR (MWIR), long-wave IR (LWIR) and millimeter wave frequency bands.
- Continued Hyperspectral Testbed efforts to develop a capability to generate multiple realistic hyperspectral targets across a broad span of environmental conditions and projection technology with realistic spatial and spectral radiance and high dynamic range at moderate frame rates in a large array format.

Initiated new research efforts including:

- A follow-on effort to UV LED to characterize thermal response under load.
- Super-lattice LEDs to use advanced semiconductor growth and processing techniques to develop high power superlattice LED's that provide output in multiple spectral bands from a single device, with apparent temperatures of 1000-3000 degrees Kelvin.
- A Multi-Spectral/Hyperspectral Sensor Survey (MS/HS SS) effort to better understand the interface, operational and performance requirements that must be satisfied by a MS/HS stimulator in order to adequately test the capabilities of existing and future MS/HS sensor systems.

### **FY 2007 Plans:**

Continue efforts initiated in prior fiscal years. These efforts to include:

- Complete DHSTM efforts including scene builder, graphical user interface, and scenario editor; provide software, run-time analysis and final report along with user manuals and support documentation.
- Complete MSSITM efforts by providing results of HWIL demonstration, engineering drawings, deliver user manuals, final report, and prototype system.
- Complete Hyperspectral Testbed demonstration; complete and provide software, deliver user manuals and final report.
- Continue Super-lattice LED test and deliver MWIR array; begin design, fabrication and testing of LWIR array; begin

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development of multi-spectral processing protocols.

Initiate future investigations to address T&E technology challenges in this focus area for:

- UV/short wave infrared (SWIR) & Passive LWIR Polarization Signature Model (LPSM)
- UV-MWIR Micro-Plasma Projector (MPP)
- MS&HS Polarized Scene Projector (PSP) with Bandwidth Control
- Next Generation Read-in Integrated Circuits for IR Scene Projection (RIIC-IRSP)
- Dual-Band Scalable IR Projection System (DB-SIPS), and Dynamic Polarimetric Scene Generator (DPSG)

Initiate a BAA to select efforts for FY 2008 award.

### **FY 2008 Plans:**

Continue efforts initiated in prior fiscal years. These efforts to include:

- Complete Super-luminescent LED by delivering 64x64 MWIR and LWIR arrays; optimize 512x512 MWIR and LWIR SLEDs and couple the two to form a monolithic two-color IR emitter for delivery; deliver scalability study for 1024x1024 or larger arrays, and final report
- UV/SWIR & Passive LWIR LPSM, UV-MWIR MPP, MS&HS PSP, Next Generation RIIC-IRSP, DB-SIPS and DPSG.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Modeling and simulation tools to generate high resolution visible and near IR background signatures including both polarized and non-polarized imagery.
- Projection and injection technologies for the presentation of Short-Wave IR images to multi-spectral and hyperspectral sensors
- Metrics and test methodologies to evaluate the spatial, temporal, and spectral performance of next-generation multi-spectral and hyperspectral sensors and seekers.

Initiate a BAA in FY 2008 to select efforts for FY 2009 award.

### **FY 2009 Plans:**

Continue efforts initiated in prior fiscal years. These efforts to include:

- UV/SWIR & Passive LWIR LPSM, UV-MWIR MPP, MS&HS PSP, Next Generation RIIC-IRSP, DB-SIPS and DPSG.
- Modeling and simulation tools to generate high resolution visible and near IR background signatures including both polarized and non-polarized imagery.
- Projection and injection technologies for the presentation of Near IR images to multi-spectral and hyperspectral sensors

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- Metrics and test methodologies to evaluate the spatial, temporal, and spectral performance of next-generation multi-spectral and hyperspectral sensors and seekers.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Additional methodologies to evaluate multi-spectral and hyperspectral data fusion algorithms, including data mining algorithms
- Additional projection and injection technologies for the presentation of visible and near IR images to multi-spectral and hyperspectral sensors
- Additional advanced modeling and simulation tools to create synthetic scenes for testing of multi-spectral and hyperspectral whole sky imagers

Initiate a BAA in FY 2009 to select efforts for FY 2010 award.

**C. (U) OTHER PROGRAM FUNDING SUMMARY NA**

**D. (U) ACQUISITION STRATEGY NA**

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			NON-INTRUSIVE INSTRUMENTATION					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Non-Intrusive Instrumentation	3.229	5.094	8.379	10.915	10.721	10.798	10.965	11.132

**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 (NII) 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 NII into new platforms during design and development, and, in some cases, into existing platforms. NII 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 NII 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 NII focus area will also advance T&E technologies needed to facilitate compliance with CJCSI 3170.01D.



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B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM

	FY 2006	FY 2007	FY 2008	FY 2009
Non-Intrusive Instrumentation	3.229	5.094	8.379	10.915

**FY 2006 Accomplishments:**

Changed the name of this focus area from Embedded Instrumentation (EI) to Non-Intrusive Instrumentation (NII) to more accurately describe the technologies under development to meet the Major Range and Test Facility Base (MRTFB) missions and to expand the breadth of research areas within this focus area.

Continued efforts initiated in prior fiscal years. Highlights of these projects included:

- Completed Compact Holographic Data Storage efforts to fabricate and test a brassboard high density storage device. The storage device will be suitable for incorporation into 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.
- Completed Gas Turbine Engine Probe efforts to design and fabricate a gas extraction probe capable of being embedded within a combustor and housing the Carbon Monoxide Emissions Sensor for Gas Turbine Engines. This will enable measurement of chemical species in the combustor region of gas turbine engines to provide improved evaluation of system performance.
- Completed Software Architecture for Embedded Instrumentation efforts to design and demonstrate extensible, platform-independent reusable software architecture. This architecture will support integration of non-intrusive instrumentation onto multiple weapon systems.
- Completed non-intrusive integrated telemetry efforts to test and evaluate microelectromechanical systems (MEMS) resonator technology for use in telemetry and datalink clocking applications for harsh environments to support smart munitions test.
- Completed Fiber Sensors Integrated Monitoring efforts to design, fabricate and test a breadboard smart sensor array. The smart sensor will be suitable for integration on a fiber sensor network for high temperature testing.
- Continued Advanced Munitions Flight Test Instrumentation efforts to fabricate second generation sensors through iterative runs within Jazz semiconductor process to implement on chip common electronics for multiple types of sensors and to test second generation packaged sensors.
- Continued High Speed and Temperature Diagnostics efforts to conduct bench hardware fabrication and test of optical, Mach flow angular, temperature and pressure probes.
- Continued MEMS Fiber Optic Sensors efforts to integrate pressure, temperature and shear stress sensors into a single

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- sensor head module. Efforts continued in the development color Moire system for 2-D shear stress measurement.
- Continued Digital Communications Test Data Bus efforts to develop smart sensor nodes, a subsystem controller and software for embedded architectural elements.
  - Continued Open Modular Embedded Instrumentation Architecture efforts to design and develop an open, modular, and scalable embedded system architecture. Efforts continued to build the High-Temperature Superconducting generator embedded instrumentation module for large scale architecture demonstration.
- Initiated new research efforts into Self Powered Chip, On-Board Wireless Data Communications, Wideband Location Positioning System, and Harsh Environment D-Fiber Sensors.

### **FY 2007 Plans:**

Continue efforts initiated in prior fiscal years:

- Complete Advanced Munitions Flight Test Instrumentation efforts to develop, fabricate and flight test 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 High Speed and Temperature Diagnostics efforts to develop and demonstrate 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 efforts to design, fabricate, and demonstrate 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. .
- Complete Digital Communications Test Data Bus efforts to develop and demonstrate 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 On-Board Wireless Data Communications efforts to develop and demonstrate a prototype wireless data bus for use with smart sensors on a SUT. This will enable integration of non-intrusive instrumentation into test articles with minimal impact to the SUT.
- Continue Open Modular Embedded Instrumentation Architecture efforts to design and develop an open, modular, and scalable embedded system architecture. This architecture will be demonstrated in tests of the Multi-Megawatt Electric Power System being developed for directed energy weapons applications.

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- Continue Self Powered Chip efforts to design power mixer-supply system integrated circuit, sensor system integrated circuit and fuel cell-lithium ion brassboard. Efforts continue to test, evaluate and optimize wireless telemetry and sensor common off the shelf technologies.
- Continue Wide Band Location Positioning System efforts to develop acquisition waveform and algorithm to test acquisition and tracking software and to design and test receiver and transmitter reference frequency.
- Continue Harsh Environment D-Fiber Sensors efforts to enhance D-Fiber sensor such as improving the spectral response, reducing fiber brittleness and improving sensor packaging. Efforts continue to enhance the fiber sensor integrated monitoring to develop high speed monitoring and wavelength sweeping source.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Time Space Positioning Information (TSPI) instrumentation to provide accurate TSPI in extremely high dynamic environments..
- Advanced non-intrusive sensors that are survivable in extreme environments and that extend the state of the art in measurement accuracy while reducing weight and size.

Initiate a BAA in FY 2007 to select efforts for FY 2008 award.

**FY 2008 Plans:**

Continue efforts initiated in prior fiscal years.

- Complete Open Modular Embedded Architecture efforts to demonstrate an NII architecture that can be configured for incorporation into any SUT. This architecture will support incorporation of smart sensors and provide a standardized interface protocol for development of advanced non-intrusive sensors.
- Complete Harsh Environment D-Fiber Sensors efforts to integrate robust D-fiber sensors with an integrated monitoring system to create a fiber optic sensor suite. This NII package will be usable as either embedded instrumentation or as NII for integration into existing platforms.
- Continue Self Powered Chip efforts to fabricate and test mixer-supply system integrated circuit, sensor system integrated circuit and fuel cell-lithium ion brassboard. Efforts continue to design the system in package integration.
- Continue Wideband Location Positioning System to design and test miniature receiver prototype and to design and fabricate four portable transmitter prototypes.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Synthetic instrumentation that combines hardware and software to create instrumentation that can be reconfigured based on required measurements.
- Non-conventional power sources to provide continuous or peak power to non-intrusive instrumentation. These power sources include radioisotope power generators and MEMS-based fuel cells.

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- Advanced wireless data and communications techniques, including the use of vehicle power lines 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.
- Initiate a BAA in FY 2008 to select efforts for FY 2009 award.

**FY 2009 Plans:**

Continue efforts initiated in prior fiscal years.

- Complete Self Powered Chip efforts to design, integrate and demonstrate a self contained, MEMS sensor package that integrates a sensor and power supply into a package that is a few cubic centimeters in size. This integrated sensor design will support the incorporation of different sensors into non-intrusive sensor packages.
- Complete Wideband Location Positioning System efforts to develop and demonstrate a location positioning system using wide band radio frequency transmissions to provide position information in Global Positioning System (GPS) - denied environments. This will support T&E of systems in urban environments.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Telemetry on a Chip to provide miniaturized telemetry that is compatible with soldier-borne weapons.
- Tunable MEMS transceiver to provide small integrated local area communications between sensors packages to create ad-hoc instrumentation networks.
- Electro-adhesives to facilitate rapid installation and removal of appliqué instrumentation packages on SUTs.
- Advanced data fusion algorithms to support real-time assessment of test events with multiple instantiations of instrumentation networks.

Initiate a BAA in FY 2009 to select efforts for FY 2010 award.

**C. (U) OTHER PROGRAM FUNDING SUMMARY NA**

**D. (U) ACQUISITION STRATEGY NA**

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			DIRECTED ENERGY TEST					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Directed Energy Test	5.093	8.828	14.575	23.067	23.069	22.945	23.287	23.415

**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 T&E of DE systems. 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 2006	FY 2007	FY 2008	FY 2009
Directed Energy Test	5.093	8.828	14.575	23.067

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**FY 2006 Accomplishments:**

Tailored this focus area to develop the advanced technologies required to mitigate risks identified through strategic planning for the Central Test & Evaluation Investment Program (CTEIP) Directed Energy Test & Evaluation Capability (DETEC) project.

Continued efforts initiated in prior fiscal years. Highlights for these projects included:

- Completed Directed Energy Data Acquisition Transformation (DEDAT) development and test of a simultaneous trigger capability. The simultaneous trigger will be used with the previously developed Compact Remote Data Acquisition (CRDAQ) system for conducting T&E of HPM systems.
- Completed Range Profiles of Turbulence efforts to integrate and demonstrate a brassboard Differential Image Motion (DIM) Light Detection and Ranging (LIDAR) system. The DIM LIDAR data was compared with truth data to verify system performance. This will support characterization of the test environment during HEL T&E events.
- Completed Microwave Test Diagnostics efforts to fabricate and test a prototype compact self-contained HPM field diagnostic system. This survivable diagnostic sensor is compatible with integration into test articles to capture test data to support T&E of HPM systems.
- Continued QWIP efforts to integrate a QWIP and Near Infrared (NIR) Indium-Gallium-Arsenide (InGaAs) focal plane array (FPA) with a Computed Tomographic Imaging Spectrometer (CTIS). The QWIP/NIR/CTIS camera will allow remote analysis of HEL interaction with targets to characterize laser performance.
- Completed 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.
- Continued T&E Adaptive Optics System efforts to design and fabricate hardware to build the prototype adaptive optics design. Efforts continued in software design to resolve target clipping and to improve imagery by using multi-frame blind deconvolution (MFBD) techniques.
- Continued Dielectric Electromagnetic Field Probes efforts to design E-field sensor arrays to evaluate detection methods for multiplexing and addressing individual sensor performance.

Initiated new research efforts into Holographic Target Board, Reflectance & Data Fusion Models, Multiple Waveband Temperature Sensor, Bistatic Optical Imaging Sensor, Dielectric Antenna Electro-Optical Sensor, Laser Irradiance T&E Tool, and Delivered Irradiance Assessment Tool.

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### **FY 2007 Plans:**

Continue projects initiated in prior years. These efforts will provide risk mitigation and advanced technologies to support CTEIP's DETEC project and to include:

- Complete T&E Adaptive Optics System efforts to integrate and test an adaptive optics system to support remotely measure HEL temperature with high spatial and temporal accuracy. The adaptive optics system will be integrated into the Advanced Pointer Tracker at HELSTF.
- Complete QWIP efforts to test an integrated QWIP, NIR FPA, and CTIS. The prototype camera system will be demonstrated in both lab and field environments. The QWIP/NIR/CTIS camera system will allow off-board analysis of HEL beam interaction with a target to characterize the laser weapon performance.
- Complete Dielectric Electromagnetic Field Probes efforts to develop and demonstrate dielectric-based field probes based on planar waveguide technology 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 Reflectance and Data Fusion Model efforts to develop and demonstrate improved bidirectional reflection distribution function models to predict the laser irradiance based on reflected energy measurements from various target material compositions. This effort will also develop a dynamic data fusion model that will support projecting 2-dimensional HEL imagery onto 3-dimensional target representations. This will allow more detailed analysis of HEL-target interaction during T&E.
- Complete Delivered Irradiance Assessment Tool efforts to assess approaches for determining HEL irradiance delivered to the target. This will combine data from multi spectral imagery sensors and sensor/atmospheric propagation models to determine HEL irradiance to the target.
- Continue Holographic Target Board efforts to design, fabricate and test a small scale holographic HEL target board using photo-thermo-refractive (PTR) glass to measure HEL irradiance of the an incident laser beam.
- Continue Multiple Wave Temperature Sensor efforts to design a multi-band camera system for target surface temperature measurement.
- Continue Bi-static Optical Imaging Sensor efforts to design and fabricate a prototype ground based HEL diagnostics sensor and to install and characterize the prototype sensor.
- Continue Dielectric Antenna Electro-Optical Sensor efforts to design and fabricate a prototype device consisting of a Dielectric resonance antenna (DRA) and Electro-Optical (E-O) resonator.
- Continue Laser Irradiance T&E Tool efforts to develop algorithm for in-band and thermal imagery to determine incident irradiance from temperature distributions.

Initiate future investigations to address T&E technology challenges in this focus area for:

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- Wide-spectrum, single substrate imagers to enhance imaging and detection of HEL beams from a variety of systems and sources.
  - Inverse heat conduction sensor technology to determine laser energy deposition onto the target during lasing.
  - HEL and HPM hardened flight termination system/range destruct package to safely and reliably provide for termination of a target, even when high concentrations of DE are present on the target.
  - Physics-based HEL and HPM models that incorporate virtual geographical representations of T&E ranges to provide 3-dimensional, geodetically accurate models of beam propagation, beam spread, lethal range, and atmospheric effects.
- Initiate a BAA in FY2007 to select efforts for FY 2008 award.

**FY 2008 Plans:**

Continue efforts initiated in prior years. These efforts will provide risk mitigation and advanced technologies to support CTEIP's DETEC project and to include:

- Complete Bi-static Optical Imaging Sensor efforts to develop, fabricate and demonstrate a brassboard hyperspectral imager by utilizing a fiber-based field sensor. This effort will develop the technology to use a bi-static hyperspectral imager to remotely characterize multiple HEL beam wavelengths and power level signatures to support HEL test events.
- Complete Laser Irradiance T&E Tool efforts to develop a modeling and simulation tool that supports test safety and hazard prediction in a cost effective and timely manner. This tool will predict the range space that can be impacted during an HEL T&E event. This will improve range safety and allow multiple test events to occur simultaneously.
- Complete Dielectric Antenna Electro-Optical Sensor efforts to fabricate and test a dielectric antenna with an embedded electro-optic crystal to measure changes in the electric field during an HPM engagement. This sensor will allow non-intrusive measurement of HPM environments with minimal impact on the fields measured.
- Continue Holographic Target Board efforts to design, fabricate and test a large scale holographics HEL target board using PTR glass to measure HEL irradiance of the an incident laser beam.
- Continue Multiple Wave Temperature Sensor efforts to integrate multi-band focal plane array, electronics and operating software and to characterize the multiple wave temperature sensor performance.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Methods to measure optical transmissivity with a 100 fold increase in sampling rates over current measurement techniques at different wavelengths along laser beam paths to support HEL T&E.
- Physics based Modeling and Simulation (M&S) tools to simulate HEL target interaction in operationally relevant engagement environments to assess laser effects and target responses to supplement live-fire T&E.



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- HPM surrogate materials to replace energetic materials such as explosive, fuel and solid propellants with non hazardous materials that emulate the electric and magnetic field properties of the material with little or no effects on HPM live fire test results.
- HPM propagation environment measurement techniques for near real-time monitoring of soil and water conductivity, dielectric constant, atmospheric temperature and relative humidity conditions as well as the absorption of scattering effects of atmospheric obscurants within HPM beams to provide a baseline of test conditions during HPM T&E.

Initiate a BAA to select efforts for FY 2009 award

**FY 2009 Plans:**

Continue projects initiated in prior years. Highlights of these efforts to include:

- Complete Holographic Target Board efforts to fabricate and demonstrate large-scale holographic HEL target board that using PTR glass to measure HEL irradiance of an incident laser beam. The reusable system will deliver test data that is both spatially and temporally resolved.
- Complete Multiple Waveband Temperature Sensor efforts to fabricate and demonstrate a remote four-waveband infrared temperature sensor that allows measurement of target surface temperature during HEL field tests.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Advanced physics based M&S tools to predict HEL-Target interactions in real time.
- Advanced HEL measurement techniques that do not affect target dynamics or response to laser irradiation.
- Advanced HPM measurement techniques that do not perturb the RF environment and provide a reliable measurement of field strength in an HPM engagement.

Initiate a BAA to select efforts for FY 2010 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			NETCENTRIC SYSTEMS TEST					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Netcentric Systems Test	1.852	5.373	11.547	17.977	18.339	18.950	19.310	19.671

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

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 2006	FY 2007	FY 2008	FY 2009
Netcentric Systems Test	1.852	5.373	11.547	17.977

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### **FY 2006 Accomplishments:**

Tailored this focus area to provide risk mitigation and advanced technologies to support the Central Test & Evaluation Investment Program (CTEIP) Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Interoperability T&E Capability (InterTEC) project and CTEIP's Joint Information Assurance Test Suite – Web Enabled Test (JIATS-WET) project.

Continued projects initiated in prior fiscal years. Highlights for these projects included:

- Completed development and demonstration of the Tactical-Report Generation Test Bed (TGT) for C4ISR Systems. The TGT combines the Repeatable Performance Evaluation and Analysis Tool (REPEAT) with the Automated Scriptor Simulator Exercise Trainer (ASSET) to generate realistic sensor data and formatted message data streams from operational and exercise scenarios to support T&E of Service Oriented Architectures in a realistic netcentric test environment..

Initiated new efforts including:

- Executable Architecture Analysis Modeling
- Middleware for Netcentric Simulations
- Analyzer for T&E Confederations
- Status Monitoring and Adaptive Control
- Technology and Tools for Joint Testing
- Joint Virtual Netcentric Warfare

### **FY 2007 Plans:**

Continue efforts initiated in prior years to include:

- Executable Architecture Analysis Modeling to develop architectures that can support T&E of C4ISR systems. These architectures will support both operational and developmental testing and allow for analysis of alternatives by allowing the user to replace system components in the architecture model.
- Middleware for Netcentric Simulations to improve on the efficiency of distributed netcentric operation for test infrastructures and Live-Virtual-Constructive (L-V-C) battlespace environments by extending state-of-the-art network coding approaches to provide robust operation of integrated network enhanced telemetry (iNET) and test and training enabling architecture (TENA) middleware.
- Analyzer for T&E Confederations to develop web-based test automation tools for complex pre-event test planning. This technology will support T&E of L-V-C based test assets in a federated system of systems environment.
- Status Monitoring and Adaptive Control, a battlespace awareness tool that integrates sensor imagery data with other Joint Mission Environment test data projected into the battlespace providing a more precise capability to determine in-

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system location errors.

- Technology and Tools for Joint Testing to develop and demonstrate web-based technologies for a netcentric system interface repository that can support the reuse and exchange of system interface information between entities in a netcentric test environment. This will support T&E of netcentric systems within a joint mission environment.
- Joint Virtual Netcentric Warfare to develop real time distributed simulations of communication networks using a common, scalable, standard simulation architecture running on High Performance Computer assets. This will enable T&E of netcentric systems in a L-V-C environment.
- Validation for Netcentric Systems to develop a software validation testbed within the netcentric-end-to-end simulation system by constructing robust statistical and analytical techniques to validate models and identify the range of scenarios in which they are valid. This effort will complete in FY07.

Initiate investigations to address T&E technology challenges in this focus area for:

- Feasibility study to determine the potential for candidate technologies to be developed into a multi-level security (MLS) capability for T&E. This effort will complete in FY07.
- A battlespace awareness tool that integrates sensor imagery data with other Joint Mission Environment test data
- Service-Oriented Architecture T&E Toolset effort to create an automated method to extract critical data from the weapon system under test, thus enabling network and interoperability testing of netted weapons using realistic trajectories of network participants.
- Configurable Situational Awareness Displays effort to develop a situational awareness 3D visualization tool for integrated test networks, tailorable to meet the needs of each netcentric test event.

Initiate a BAA in FY 2007 to select efforts for FY 2008 award.

### **FY 2008 Plans:**

Continue projects initiated in prior years. These efforts will provide risk mitigation and advanced technologies to support CTEIP's InterTEC and JIATS-WET projects and to include:

- Complete Executable Architecture Analysis Modeling architecture, perform testing and deliver final technical report and software development plan.
- Complete Middleware for Netcentric Simulation efforts to apply phase 1 analysis and develop approach to a middleware architecture in terms of sub-layer mechanisms. Integrate into a T&E/S&T middleware platform to improve on the efficiency of distributed netcentric operations for test infrastructures and L-V-C environments.
- Complete Analyzer for T&E Confederations efforts; finish development of test event analyzer and supporting tools; integrate, validate and demonstrate the analyzer; deliver prototype analyzer software and data along with final report.
- Complete Service-Oriented Architecture T&E Toolset efforts that will provide a web-enabled display and

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- manipulation of test architectures.
- Complete Configurable Situational Awareness Displays effort; demonstrate and deliver final 3D visualization tool and final report.
- Continue Technology and Tools for Joint Testing effort; develop agile C2 data mining algorithm prototype; conduct data mining advanced visualization.
- Continue Joint Virtual Netcentric Warfare effort; demonstrate virtual communication link technology enabling visualization of transmit events, link connectivities, terrain cross sections, and line-of-sight visibilities.

Initiate future investigations to address T&E technology challenges in this focus area for:

- Integrated architecture testing to evaluate the performance of Service Oriented Architectures in the Global Information Grid environment.
- Synthetic battlespace environment M&S tools to create realistic complex virtual environments for use in L-V-C testing of netcentric weapon systems.
- End-to-End mission thread testing tools to evaluate the effectiveness of data links by tracing mission events from sensor to shooter.

Initiate a BAA in FY 2008 to select efforts for FY 2009 award.

**FY 2009 Plans:**

Continue projects initiated in prior years. These efforts will provide risk mitigation and advanced technologies to support CTEIP's InterTEC and JIATS-WET projects and to include:

- Complete Joint Virtual Netcentric Warfare effort; demonstrate virtual mobile ad-hoc network (MANET) technology and real-time virtual communication network; deliver final report.
- Continue Technology and Tools for Joint Testing; deliver system interface repository, transition plan, software documentation and final report.

Initiate future investigations to address T&E technology challenges in this focus area for:

- 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.

Initiate a BAA in FY2009 to select efforts for FY 2010 award.

**C. (U) OTHER PROGRAM FUNDING SUMMARY NA**

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**D. (U) ACQUISITION STRATEGY NA**

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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2)							February 2007	
DEFENSE WIDE RDT&E (0400) Budget Activity 3, PE 0603941D8Z			UNMANNED AND AUTONOMOUS SYSTEMS TEST					
\$ in Millions	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Unmanned and Autonomous System Test	0.138	2.033	4.251	5.635	5.636	5.719	5.824	5.929

**A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION**

The next generation of unmanned warfighting support systems are in development and will rapidly transition from research efforts into acquisition programs. In addition, ongoing research into autonomous and semi-autonomous systems indicates such systems will soon emerge as a new test challenge. The Unmanned and Autonomous Systems Test (UAST) Focus Area is addressing the current and emerging challenges associated with T&E of these important warfighting assets. As the complexity of Unmanned and Autonomous Systems (UAS) increases, the capability to test these systems must also be developed. UAS T&E, technology advancements are required to enable testing the behavior of learning unmanned and autonomous systems. Ranges and installed system test facilities must be able to characterize UAS responses to mission priorities in densely-packed battlespaces, and predict from the data how these systems will respond in the future. The DoD must have the capability to test these systems' ability to interact safely and effectively with large groups of humans and determine how UAS respond to unscripted scenarios. This requires the development of technology to accurately collect and compare autonomous systems' situational awareness to the ground truth situation; test unmanned systems in a net-centric environment; maintain non-line-of-sight tracking; and execute controlled, repetitive and realistic stimulation of systems under test.

**B. (U) ACCOMPLISHMENTS/PLANNED PROGRAM**

	FY 2006	FY 2007	FY 2008	FY 2009
Unmanned And Autonomous Systems Test	0.138	2.033	4.251	5.635

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### **FY 2006 Accomplishments:**

Initiated start up of UAST. This focus area was initially entitled Software Test (SWT). During a detailed review of the primary drivers for the T&E/S&T Program, the program office determined that the goals of the SWT focus area were better addressed in UAST. This aligns the focus area topics with operationally relevant challenges and avoids development of test technologies that are not focused on emerging weapons T&E challenges. In order to validate this change in emphasis, the T&E/S&T Program conducted a Test Technology Investment Workshop, which brought together leadership from both the T&E and S&T communities. The workshop participants wholly endorsed the change from SWT to UAST. Following this workshop, the program office completed initial planning for this new focus area:

- Generated draft roadmap identifying efforts in the 2006-2013 time frame
- Identified potential working group members with expertise in unmanned and autonomous systems
- Identified candidates for executing agent

### **FY 2007 Plans:**

Initiate a BAA to select efforts for FY 2007 award. Initiate research efforts to address T&E technology challenges in this focus area for:

- Technologies to accurately collect and compare autonomous system's situational awareness to the ground truth.
- Modeling and simulation tools to provide controlled, repetitive, and realistic stimulation of systems under test
- Technologies to conduct T&E of unmanned systems in a net-centric environment where UAS-UAS and UAS-human interactions will occur.
- Off-board, remote instrumentation for miniature UAS T&E where SUT space and weight considerations preclude on-board instrumentation.

Initiate a BAA in FY 2007 to select efforts for FY 2008 award.

### **FY 2008 Plans:**

Continue efforts initiated in prior fiscal years.

Initiate new research efforts to address T&E technology challenges in the focus area for:

- Development of a common architecture allowing integration of diverse systems from across the services and enabling distributed live, virtual, and constructive testing of unmanned and autonomous systems.
- Command and control techniques to safely control multiple lethal unmanned systems in densely packed battlespaces (air, land, & sea and combinations of all three).
- Techniques to test and control UAS in an unscripted scenario.
- Technologies to conduct Non-line-of-sight (NLOS) tracking of UAS during T&E events.



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- Creation, manipulation, and reproduction of the full battlespace environment for test of unmanned and autonomous systems' learning algorithms.

Initiate a BAA in FY 2008 to select efforts for FY 2009 award.

**FY 2009 Plans:**

Continue efforts initiated in prior fiscal years.

Initiate new research efforts to address T&E technology challenges in the focus area for:

- Modeling of semi-autonomous/autonomous systems to facilitate prediction of UAS performance in scenarios to supplement development and operational T&E events.
- Techniques to conduct T&E in deep sea operations (data rates, telemetry, way points, off-board sensors) for unmanned undersea vehicles.
- Methods for testing autonomous space systems (accessibility, latency, safety/health hazards, etc.) in an operationally relevant environment.
- Tools to evaluate the cognitive behavior and predict future performance of learning algorithms in semi-autonomous and autonomous systems.

Initiate a BAA in FY 2009 to select efforts for the FY 2010 award.

C. (U) **OTHER PROGRAM FUNDING SUMMARY** NA

D. (U) **ACQUISITION STRATEGY** NA

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603942D8Z - Technology Transfer**

Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total Program Element (PE) Cost	16.856	12.202	2.234	2.173	2.280	2.281	2.298	2.325
P343 Homeland Defense First Responders Technology Transfer	1.187	1.115	0.000	0.000	0.000	0.000	0.000	0.000
P942 Technology Link	15.669	11.087	2.234	2.173	2.280	2.281	2.298	2.325

**A. Mission Description and Budget Item Justification:** Defense Technology Transfer was referred to in previous budgets as Defense Technology Link (TechLink). This program title change serves to distinguish the Technology Transfer program from one of the program's successful contractors, TechLink of Montana State University.

Defense Technology Transfer is an element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into 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 Technology Transfer 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.

Technology Transfer 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 350 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 Technology Transfer for its outstanding achievements.

In FY 2006, the Defense Technology Transfer Program began assisting DOD's Homeland Defense Office on first responder initiatives. The Homeland Defense First Responder Technology Transfer Project enhances efficiency and 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. In FY 2008, the Homeland Defense First Responders Technology Transfer project has been transferred to PE 0305186D9Z under the auspices of the Assistant Secretary of Defense (Homeland Defense).

<b><u>B. Program Change Summary</u></b>	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	16.321	6.822	7.070	7.320
Current BES/President's Budget (FY 2008/2009)	16.856	12.202	2.234	2.173

**OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)**

Date: February 2007

APPROPRIATION/ BUDGET ACTIVITY  
RDT&E/ Defense Wide BA# 3

PE NUMBER AND TITLE

**0603942D8Z - Technology Transfer**

Total Adjustments	0.535	5.380	-4.836	-5.147
Congressional Program Reductions		-3.400		
Congressional Rescissions		-0.074		
Congressional Increases		8.850		
Reprogrammings	1.000			
SBIR/STTR Transfer	-0.465			
Other		0.004	-4.836	-5.147

**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
08						

Comment: 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)

For FY 2008, establish patent license agreements (PLAs) totalling 34% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)

For FY 2009, establish patent license agreements (PLAs) totalling 35% of all DOD PLAs and assist in the brokering of over 30 Cooperative Research and Development Agreements (CRADAs)

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603942D8Z - Defense Technology Link (TechLink)</b>					PROJECT <b>P343</b>	
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	
P343      Homeland Defense First Responders Technology Transfer	1.187	1.115	0.000	0.000	0.000	0.000	0.000	0.000	

**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.

Starting in FY08, this program has been transferred to PE 0305186D9Z under the auspices of the Assistant Secretary of Defense (Homeland Defense).

**B. Accomplishments/Planned Program:**

Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Homeland Defense First Responders Technology Transfer:	1.187	1.115	0.000	0.000

FY 2007 Plan: 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.

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OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)		Date: February 2007
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603942D8Z - Defense Technology Link (TechLink)</b>	PROJECT <b>P343</b>
<p><b><u>C. Other Program Funding Summary:</u></b> Not Applicable.</p> <p><b><u>D. Acquisition Strategy:</u></b> Not Applicable.</p> <p><b><u>E. Major Performers</u></b> Not Applicable.</p>		

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>									Date: February 2007									
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3			PE NUMBER AND TITLE <b>0603942D8Z - Defense Technology Link (TechLink)</b>					PROJECT <b>P942</b>										
Cost (\$ in Millions)	FY 2006 Actual	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013										
P942      Technology Link	15.669	11.087	2.234	2.173	2.280	2.281	2.298	2.325										
<p><b><u>A. Mission Description and Project Justification:</u></b> Defense Technology Transfer was referred to in previous budgets as Defense Technology Link (TechLink). This change serves to distinguish the Technology Transfer program from one of the program's successful contractors, TechLink of Montana State University.</p> <p>Defense Technology Transfer is an element in the Department's technology transfer, transition, and acquisition activities. Its three-fold mission is (1) integration of advanced commercial-sector technologies into 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&amp;D projects with the private sector for cost-sharing of new dual-use technology development.</p> <p>Defense Technology Transfer 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.</p> <p>Technology Transfer 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 350 Cooperative Research and Development Agreements (CRADAs) and other R&amp;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 Technology Transfer for its outstanding achievements.</p>																		
<p><b><u>B. Accomplishments/Planned Program:</u></b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: left; padding: 5px;"><b>Accomplishment/Planned Program Title</b></td> <td style="text-align: center; padding: 5px;">FY 2006</td> <td style="text-align: center; padding: 5px;">FY 2007</td> <td style="text-align: center; padding: 5px;">FY 2008</td> <td style="text-align: center; padding: 5px;">FY 2009</td> </tr> <tr> <td style="padding: 5px;">Marketing of DoD Technologies</td> <td style="text-align: right; padding: 5px;">1.500</td> <td style="text-align: right; padding: 5px;">1.415</td> <td style="text-align: right; padding: 5px;">1.324</td> <td style="text-align: right; padding: 5px;">1.313</td> </tr> </table> <p>FY 2006 Accomplishments: Actively marketed DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's Congressionally mandated technology transfer directives.</p> <p>As an example, TechLink (Montana State University) facilitated a patent license agreement of a perimeter security and surveillance system developed by the Naval Undersea Warfare Center, Newport, Rhode Island. The Navy and their commercial partner are working to incorporate the Navy technology with the commercial partner's geographic information system software to pinpoint the location and interpretation of a remotely located acoustic event such as a human or animal footprint or movement of airborne or ground-based vehicles. The technology offers great promise for activities such as remote border security or</p>									<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009	Marketing of DoD Technologies	1.500	1.415	1.324	1.313
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009														
Marketing of DoD Technologies	1.500	1.415	1.324	1.313														

<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603942D8Z - Defense Technology Link (TechLink)</b>			PROJECT <b>P942</b>
perimeter protection of critical infrastructure.				
FY 2007/2008/2009 Plan: Continue active marketing of DoD-developed technologies to US companies to establish Patent License Agreements to commercialize these technologies for both civilian and military applications. The multiple objectives of this technology marketing activity are to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's Congressionally mandated technology transfer directives.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Dual Use Technology Deployment	0.490	0.560	0.585	0.560
FY 2006 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 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. Continued to provide critical support to DoD labs by facilitating 31% of all of DoD's PLA's for the fiscal year. Also brokered over 35 new CRADA's between DoD labs and industry, thereby enabling DoD and industry to leverage technology development efforts by both parties.				
FY 2007/2008/2009 Plan: Continue to actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. 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.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Spin-On of Advanced Commercial-Sector Technologies	0.258	0.300	0.325	0.300
FY 2006 Accomplishments: Actively 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 2007/2008/2009 Plan: Continue to actively promote the DoD Small Business Innovation Research (SBIR) (focus on Phase III contracts) and Independent Research and Development (IR&D) programs to companies 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.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Technology Transfer IEE (Congressional Add)	1.700	1.450	0.000	0.000
Technology Transfer IEE is officially called the "Department of Defense's National Center of Excellence for Commercialization and Technology Transfer for First Responder Technologies" and is called FirstLink. The website for it is <a href="http://www.dodfirstlink.com">http://www.dodfirstlink.com</a> .				
FY 2006 Accomplishments: Coordinated activities with Department of Homeland Security (DHS) to establish a First Responder needs list to query against DoD laboratories for technologies to transfer. Facilitated 30 partnerships, including CRADAs, grants, SBIR awards, and PLAs. One of the Patent License Agreements facilitated is between NUWC Newport and GCS Resesarch. The technology is called Blue Rose. Blue Rose is a buried fiber optic line to relay acoustics to a central station for perimeter site monitoring. It meets a need for intrusion detection and surveillance for first responders. This action facilitates both civil and military first responder response action.				

OSD RDT&E PROJECT JUSTIFICATION (R2a Exhibit)			Date: February 2007	
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603942D8Z - Defense Technology Link (TechLink)</b>		PROJECT <b>P942</b>	
FY 2007 Plan: FirstLink assesses user needs and priorities, collects and evaluates potential DoD technologies for first responder use, identifies non-DoD technologies that address DoD and first responder needs, and creates and executes a marketing plan for these technologies. Measures of success include technologies made available for first responder use.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Remote Presence (Congressional Add)	1.700	0.000	0.000	0.000
Remote Presence and Environmental Bioterrorism Detection (EBD) are two projects being management through Virginia's Center for Innovative Technology and it's Institute for Defense and Homeland Security (IDHS). IDHS is a pilot program for bringing in private industry and university capabilities, matching with DoD laboratory research in these two areas, and jointly developing the capability for both civil and military needs.				
FY 2006 Accomplishments: Under the EBD effort, seven projects were selected; under Remote presence, four projects were selected. All 11 projects were began in February with results pending. Plan of action developed, 11 projects initiated. The outcome is anticipated to be a roadmap for transition/technology insertion with Concepts of Operation, not point solutions.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Technology Mapping (Congressional Add)	2.000	0.000	0.000	0.000
The Technology Mapping effort (known as TechMatch) facilitates technology transfer from the DoD laboratories to the commercial sector. The goal is to ensure commercial production of technology developed in DoD so it can be inserted into DoD items through the normal acquisition process. There are three key objectives to meet this goal:: 1) Foster collaboration activities between DoD, academia, and industry with emphasis on small business, 2) Facilitate a minimum of fifteen (15) partnerships between DoD laboratories and academia/private sector using technology transfer mechanisms such as, but not limited to, CRADAs, SBIRs, PLAs, educational partnership agreements, and contracts, and 3) Incorporate the Intellectual Property Management Information System (IPMIS) functionality as part of the automated capability in the DoD TechMatch System ( <a href="http://www.dodtechmatch.com">http://www.dodtechmatch.com</a> ) to assist in better management of intellectual property for transfer.				
2006 Accomplishments: TechMatch began work on the DoD Intellectual Property Management Information System (IPMIS) with requirements identification, system design, and coordination among the Services/Agencies and DTIC, where the information will be housed. Additionally, TechMatch facilitated five CRADAs. TechMatch facilitated transfer of robotics technology from Tyndall AFB to a start-up company in West Virginia to produce a BomBot for use in Iraq; the company reduced manufacturing costs and increased durability & reliability. As a result, the Navy awarded a \$9.6M contract in January 2006 for 2,325 BomBots with first delivery in April 2006 successfully met.				
Accomplishment/Planned Program Title	FY 2006	FY 2007	FY 2008	FY 2009
Springboard (Congressional Add)	7.021	6.362	0.000	0.000
Spring Board is a congressionally added effort to facilitate technology transfer from the DoD laboratories to the commercial sector in Alaska. The goal is to ensure commercial production of technology developed in DoD so it can be inserted into DoD items through the normal acquisition process.				
There are 2 key objectives to meet this goal: 1) Foster collaboration activities between DoD, academia, and industry with emphasis on small business, and 2) Facilitate a minimum of 7 partnerships between DoD laboratories and academia/private sector using technology transfer mechanisms such as, but not limited to, CRADAs, SBIRs, PLAs, educational partnership agreements, and contracts. The focus is on Alaska's emerging technology sectors.				



<b>OSD RDT&amp;E PROJECT JUSTIFICATION (R2a Exhibit)</b>		Date: February 2007		
APPROPRIATION/ BUDGET ACTIVITY RDT&E/ Defense Wide BA# 3	PE NUMBER AND TITLE <b>0603942D8Z - Defense Technology Link (TechLink)</b>		PROJECT <b>P942</b>	
FY 2006 Accomplishments: The Partnership Intermediary Agreement for this effort was signed on July 24, 2006, with kick-off in October 2006.				
FY 2007 Plan: 1) foster collaboration activities between DoD, academia, and industry with emphasis on small business, and 2) facilitate a minimum of seven partnerships between DoD laboratories and academia/private sector using technology transfer mechanisms such as, but not limited to, CRADAs, SBIRs, PLAs, educational partnership agreements, and contracts. Increase capability for all partnership intermediaries to share information and facilitate communication among/between DoD technology transfer activities.				
<b>Accomplishment/Planned Program Title</b>	FY 2006	FY 2007	FY 2008	FY 2009
Techlink Southeast (T2 Bridge) (Congressional Add)	1.000	1.000	0.000	0.000
T2 Bridge is a congressionally added effort to facilitate technology transfer from the DoD laboratories to the commercial sector in the southeast U.S. The goal is to ensure commercial production of technology developed in DoD so it can be inserted into DoD items through the normal acquisition process.				
Congressional approval was given, and the partnership intermediary agreement was signed October 31, 2006.				
FY 2007 Plan: There are two key objectives: 1) foster collaboration activities between DoD, academia, and industry with emphasis on small business, and 2) facilitate a minimum of 10 partnerships between DoD laboratories and academia/private sector using technology transfer mechanisms such as, but not limited to, CRADAs, SBIRs, PLAs, educational partnership agreements, and contracts.				
<b><u>C. Other Program Funding Summary:</u></b> Not Applicable.				
<b><u>D. Acquisition Strategy:</u></b> Not Applicable.				
<b><u>E. Major Performers</u></b> Not Applicable.				