Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Office of Secretary Of Defense										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*				R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	88.163	78.244	89.925	-	89.925	103.089	98.844	126.981	130.853	Continuing	Continuing
P826: *Quick Reaction Fund*	19.229	29.577	24.883	-	24.883	25.304	28.383	54.795	55.229	Continuing	Continuing
P828: *Rapid Reaction Fund*	51.138	48.667	48.486	-	48.486	59.885	53.091	54.425	57.085	Continuing	Continuing
P829: *Technology Transition Initiative (TTI)*	17.796	-	-	-	-	-	-	-	-	Continuing	Continuing
P830: *RDT&E Architecture and Integration*	-	-	10.625	-	10.625	11.527	11.192	11.424	11.814	Continuing	Continuing
P831: *Joint Rapid Acquisition Cell Support*	-	-	1.771	-	1.771	1.968	1.970	2.053	2.272	Continuing	Continuing
P832: *Software Producibility/ Technology from Non-Traditional Sources (TNTS) Initiative*	-	-	4.160	-	4.160	4.405	4.208	4.284	4.453	Continuing	Continuing

Note

In FY 2012, Quick Reaction Special Projects (QRSP) introduces three new project codes to the program element and reflect OSD interests and DoD priorities in Overseas Contingency Operations.

A. Mission Description and Budget Item Justification

Quick Reaction Special Projects (QRSP) Program supports six separate projects that provide rapid funding to expedite new development and transition of new technologies to the warfighter. The projects that are part of the QRSP are the Quick Reaction Fund (QRF), Technology Transition Initiative (TTI), the Rapid Reaction Fund (RRF), The RDT&E Architecture and Integration (RAI) program, Joint Rapid Acquisition Cell (JRAC), and the Software Producibility/TNTS initiative (SPTI). QRSP provides the flexibility to respond to emergent DoD issues and address technology surprises and needs within the years of execution outside the two-year budget cycle.

The Technology Transition Initiative (TTI), authorized by Title 10 and Section 215 of the FY2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the DoD science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. Since the program's inception in FY 2003, 78 projects have been initiated and 50 are complete. Of the 50 completed projects, 35 (70%) have successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L).

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The Quick Reaction Fund (QRF) program is focused on responding to emergent needs during the execution years that take advantage of technology breakthroughs in rapidly evolving technologies. Examples of the types of projects that are envisioned include: accelerating promising research that will enable transformation; or will fill critical gaps in DoD acquisition programs and will last no longer than 12 months; or maturation of technologies critically needed by combatant commanders (COCOMS) for operations. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.

The Rapid Reactions Fund (RRF) objectives are to leverage the DoD science and technology base and those of the other Federal Departments; stimulate interagency coordination and cooperation; accelerate the fielding of capabilities and concepts to counter emerging threats; and provide feedback to the S&T community to guide long term developmental strategies. The task force works to anticipate adversaries' exploitation of technology, including available and advanced capabilities. Additionally, the task force works to exploit technology developed outside of DoD in the commercial sector, in academia and international arenas as well as anticipate adversary's application of available and advanced technology. The average length of a RRTO program falls within an 8-12 month range in order to more effectively aid the warfighter. RRF consistently exceeds the transition objective of 30% for demonstration programs (DoD Strategic Objective 4-3).

The RDT&E Architecture and Integration (RAI) program objectives are to enhance and expand the Joint Experimentation Range Complexes (JERCs) venue and spectrum of evaluations to include analysis of a cohesive Forward Operating Base (FOB) defensive architecture, future homemade explosives (HME), future Improvised Explosive Devices (IEDs), counter IED capability development and characterization of future electro-magnetic environments. These focal areas range beyond the implementation and execution window of the Joint Improvised Explosive Device Defeat Organization (JIEDDO) program and aligns under the Quadrennial Defense Review (QDR) focal area “Institutionalizing Rapid Acquisition Capability” and its third tenant “assessing alternatives and executing a solution (acquisition)”.

The Joint Rapid Acquisition Cell (JRAC) objectives are focused on responding to Joint Urgent Operational Needs (JUONS) that have been submitted by Combatant Commanders and validated by the Joint Staff. The JRAC’s objective is to manage the delivery of capability as requested by the COCOM in a time frame acceptable to the COCOM. The JRAC manages the overall effort to fulfill JUONS. Efforts, in most instances, are conducted outside of the processes described for the Defense Acquisition System in DoD Directive 5000.1 and utilize contingency and other rapid acquisition authorities.

Software Producibility/ TNTS Initiative objectives are to discover emerging technologies generally from small innovative companies that have not done prior business with DoD, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under operational conditions. To facilitate early interactions and meaningful information exchanges between the innovative companies and operational users. And, accelerate the application of emerging technical solutions to DoD needs, reduce development costs, and avoid potentially disastrous technological surprises.

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B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	73.583	78.244	86.662	-	86.662
Current President's Budget	88.163	78.244	89.925	-	89.925
Total Adjustments	14.580	-	3.263	-	3.263
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	16.550	-			
• SBIR/STTR Transfer	-1.861	-			
• DDR&E Baseline Review	-	-	7.053	-	7.053
• Defense Efficiency-Report, Studies, Boards and Commissions	-	-	-2.349	-	-2.349
• Defense Efficiency-Contractor Staff Support Efficiency	-	-	-1.169	-	-1.169
• Economic Assumptions	-	-	-0.272	-	-0.272
• Other internal adjustment	-0.109	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: P828: *Rapid Reaction Fund*		
Congressional Add: *Small Craft Threat Identification (SCTI)*	1.200	-
Congressional Add Subtotals for Project: P828	1.200	-
Congressional Add Totals for all Projects	1.200	-

Change Summary Explanation

Note: In FY 2011, Technology Transition Initiative (TTI), resources will be transferred from Quick Reaction Special Projects to PE 0603942D8Z (Technology Transfer and Transition) as part of an effort to more effectively align interwoven program efforts that will benefit management communications, budget justification, fiscal tracking and improve overall program resource management of Technology Transfer and Transition efforts. Additionally, three new project codes were created in FY 2012 to reflect DOD/DDR&E priorities (P830 - RDT&E Architecture and Integration, P831 - Joint Rapid Acquisition Cell Support, P832 - Software Producibility/TNTS Initiative).

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DDR&E Baseline Review. DDR&E implemented a zero-based review of the organization to align resources to the most critical priorities and eliminate lower priority functions. $7.053M was added to fund three new projects P830, P831, and P832.

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

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

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P826: *Quick Reaction Fund*	19.229	29.577	24.883	-	24.883	25.304	28.383	54.795	55.229	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects (QRSP) Program supports six separate projects that provide rapid funding to expedite new development and transition of new technologies to the war-fighter. QRSP provides the flexibility to respond to emergent (Department of Defense) DoD issues and addresses technology surprises and needs that may arise outside the two-year budget cycle.

The Quick Reaction Fund (QRF) Program, which is a program within QRSP, focuses on responding to emergent needs during the execution years that take advantage of technology breakthroughs in rapidly evolving technologies. Examples of the types of projects include: accelerating promising research that will enable transformation; filling critical gaps in DoD acquisition programs and will last no longer than 12 months; or maturation of technologies critically needed by combatant commanders for operations. Typically these projects are on the technology maturity scale where an idea or technology opportunity is proven and demonstrated.

The QRF Program also provides Services, Components, Combatant Commanders and Force Providers opportunities to capitalize on technologies that are at a relatively high Technology Readiness Level (TRL), and to rapidly field-test promising new operational prototypes that can immediately have an impact on military operations. It should be noted that QRF initiatives are limited to those that will deliver a military operational prototype application within 6 - 12 months of being funded.

The QRF program is focused on selecting proposals that have the potential to address conventional, disruptive, catastrophic and irregular threats. More specifically, initiatives that address the following interest areas:

- Base Protection
- Electromagnetic Bandwidth and Spectrum Enhancement
- Large Data Decision Aids
- Persistent Intelligence, Surveillance, and Reconnaissance (ISR)
- Alternative Energy, and Energy Efficiency and Reduction Technologies
- Newly Emerging National Threats
- Directed Energy Capabilities
- Low-Cost Precision Engagement Capabilities
- Operational Field Demonstrations
- Unmanned and Robotics Systems

FY 2011 and FY 2012 QRF plans will continue to identify and fund new projects that are best equipped to respond to critical operational needs and new technology opportunities. Current and future efforts that show significant effectiveness can be leveraged by additional investments in order to accelerate transition of capabilities.

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Starting in FY 2011, increased emphasis will be placed on maximizing the execution of QRF Projects in Government Integration Facilities (GIFs) within the Services, Federally Funded Research & Development Centers (FFRDCs), and National Laboratories. In particular, the QRF Program will seek to establish a Quick Reaction Community (QRC) made up of key GIFs. The QRC will focus on the execution of QRF Projects that require operational prototyping, experimentation, and demonstration in order to address critical needs identified in Joint Urgent Operational Needs Statements (JUONS), Urgent Operational Needs Statements (UONS), and Operational Needs Statements (ONS), with an emphasis on transitioning resultant capabilities to active Areas of Responsibility (AORs) as quickly as possible.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Black Dart 2010 ***Description:*** During Black Dart exercises in FY 2008 and FY 2009, the high energy laser (HEL) system successfully demonstrated the ability to spot and actively track Unmanned Aerial Vehicles (UAVs), Man Portable Air Defense Systems (MANPADS), and Rocket, Artillery and Mortar (RAM) targets. In addition, the HEL successfully negated multiple small tactical UAVs. This project (Black Dart 2010), will be executed by the US Air Force Research Laboratory (AFRL), and will build upon the success of the previous two years and focus on maximizing HEL fluency on targets, improving tracker algorithms for single, and swarming scenarios of UAVs, and prepare for connectivity to the Air Picture Situational Awareness at Black Dart exercises. The overall objective of this project is to increase tactical negation ranges of UAVs utilizing the HEL system with quicker response times against more representative targets. ***FY 2010 Accomplishments:*** The project completed and accomplished increased laser through-put and negation of UAVs at longer range with shorter dwell times at the FY 2010 Black Dart exercise. The results of this project show potential for negating harder targets such as RAM and MANPADS with higher power lasers. Demonstration of the system in more realistic conditions provided critical interface and system information. This project demonstrated a multi-function / multi-threat area protection system with speed of light engagement, infinite magazine, increased area coverage, reduced collateral damage, and persistent engagement.	0.750	-	-
Title: Energy Efficient Water Purification ***Description:*** The objective of this project, is to improve Humanitarian Assistance (also referred to as Capacity Building) and Disaster Relief (HA/DR) capabilities with respect to small unit and public water purification. ***FY 2010 Accomplishments:*** The project identified, demonstrated, and assessed multiple water purification systems during Crimson Viper 2010, which is a combined Thai-US military technology development exercise with warfighter participation. The payoff was a successful assessment and a recommendation of suitable and effective water purification technologies. The Project's study and assessment results and technology recommendations have been detailed in a report by the Pacific Command (PACOM) Science and Technology Office. This report along with the assessed water purification systems are available to DoD Pre-Positioned	0.350	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Expeditionary programs as well as Joint Capability Technology Demonstrations (JCTDs) projects related to energy and water purification.			
Title: Hostile Fire Identification (HFI) using the AAR-57, Common Missile Warning System (CMWS) ***Description:*** This project will provide a Hostile Fire (HF) detection capability through the Generation 3 Electronic Control Unit (ECU) scheduled for fielding on the existing Common Missile Warning Systems (CMWS) which is already installed on the US Special Operations Command (USSOCOM) MH-47G and MH-60M rotary wing aircraft. Small arms fire is the most prolific threat to Special Operations rotary-wing aviation, and no current capability exists to alert the aircrew to the presence of hostile fire directed at the aircraft. The proposed HFI capability will enable the aircrew to employ Tactics, Techniques, and Procedures (TTP) to evade or conduct counter-fire operations and will significantly improve aircrew and aircraft survivability and mission success. The initiative is in support of an urgent requirement for the USSOCOM validated Initial Capabilities Document (ICD) for a Hostile Fire Indication System (HFIS). This is a software solution provided to the 160th Special Operations Aviation Regiment (SOAR), with further benefit to regular Army forces. This project will not require airframe modifications, nor add weight to the aircraft. This project will leverage experience in software and testing. Specifically this project will focus on incorporating the software algorithms previously developed and refined for the new MWS Generation (Gen) 3 Electronic Control Unit (ECU) processor. ***FY 2010 Accomplishments:*** The contract was awarded and the project initiated. The majority of the project outputs will be produced in FY 2011. ***FY 2011 Plans:*** FY 2010 funding will continue to produce additional FY 2011 outcomes. At project completion, two fully operational Gen3 ECUs with User Data Modules (UDMs) and reprogramming accessories will be delivered to the Government. Additionally, HFI software algorithms, performance specifications, Software Version Description/Version Description Document (SVD/VDD), test plans/ reports, and live fire test reports will be delivered.	0.660	-	-
Title: Deployable Inflatable Satellite Antenna X-band and 1 Meter Variant ***Description:*** This project will deliver a refined and field prototype 1 meter class variant of the inflatable antenna technology for determination of applicability in the field. Additionally, it will complete the initial design, and field a prototype of an X-band tracking kit for inflatable antenna systems. The payoff to the government will be a reduced volume and weight antenna for rapid deployment of 1 meter class Satellite Communications (SATCOM) capability, and the ability to augment currently fielded inflatable antenna systems with tracking components to enable operation with inclined orbit satellites. ***FY 2010 Accomplishments:***	1.030	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 accomplishments include the generation of a project schedule, test plan, procedures, and initial design and development activities. Operational parameters from the implementation teams designated to field the 1 meter class antenna and tracking systems were generated. Procurement of required tooling and hardware to produce the initial prototype system was accomplished. Tests to obtain performance indicators for certification submissions to regulatory agencies was conducted. Final deliverable hardware components were manufactured and assembled, and electronics were integrated to test the refined system. The contractor integrated the system for final checkout and shipping, and generated unit-specific documentation and operator manuals. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outputs. The contractor will ship the prototype 1-meter class antenna for implementation teams to conduct field training, and will retrofit a currently fielded system with X-band tracking components for field evaluation. The contractor will provide support to the fielded units, initiating rapid replacement or repair where required. The final two months of performance will consist of gathering data and providing the required final program briefing, and issuing an "after-action" report to prepare for commercialization and wide product release within DoD communications community.			
Title: Small-Base Leader Entry Control Point (ECP) Technologies Assessment CD ***Description:*** The objective of this project is to provide small-base leader quick practical guidance for small-base Entry Control Point (ECP) development and operation. Instruction material on the functional components of an effective ECP and the capabilities and limitations of technology solutions will be developed. Technology solutions will be determined through guidance from appropriate Program Managers (PMs) and Program Executive Officers (PEOs), and systems procured in response to Joint Urgent Operational Needs Statements (JUONS). The resultant product will contain two interactive user "exercises" consisting of scenarios that permit the user to test their understanding. The product will be provided in a Compact Disc/Digital video disc (CD/DVD) format. ***FY 2010 Accomplishments:*** Small-Base Leader Entry Control Point (ECP) Technologies Assessment CDs were completed, produced and made available for the User Assessment Groups/Services.	0.300	-	-
Title: Small-Base Leader Mission Planning/Training Compact Disc (CD) for Sensor Employment ***Description:*** The objective of this project is to develop and deliver Small-Base Leader mission planning training tools. Cerberus is a sensor integration architecture consisting of a detection assessment capability. Several variants have been configured and fielded to address a wide variety of perimeter security/border surveillance needs. Currently the U.S. Army and U.S. Marine Corps have fielded four of the variants. The systems are best employed along the ground, but can be used in mountainous regions and terrain as well. When used in mountainous terrain the users and commanders must have a thorough understanding of the	0.360	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
system capabilities and limitations. This training tool will educate the leaders and users of those capabilities and highlight optimal emplacement locations based on terrain and Cerberus variant configurations. This tool will enable better employment of sensor systems by creating awareness of capabilities and interactions of sensors with the terrain. The training CDs should be tailored in a manner that provides operator training, as well as leader training. Focus will be on the Cerberus Suite in Base Expeditionary Targeting and Surveillance System-Combined (BETSS-C), Cerberus Lite, and Ground Based Operational Surveillance System (GBOSS). ***FY 2010 Accomplishments:*** The project completed and delivered 5,000 CD based copies of the Computer Based Trainer.			
Title: Expeditionary Water Systems for the United States Marine Corps (USMC) ***Description:*** Water purification and distribution has become a logistical burden to deployed troops, relying mostly on bottled water. Potable water is available in most locations, but there are concerns with contamination and distribution. The USMC has established an experimental facility at the Marine Corps Base Quantico for evaluating water, energy and shelter devices and systems. This facility, called the Experimental Forward Operating Base (ExFOB), provides a simulated USMC Company-sized FOB environment suitable for demonstrating the operational efficacy of currently available products which could be deployed to support troops in theater. This project will support the water portion of the ExFOB. The project will also include the procurement of water purification and/or water packaging systems which support follow-on testing and acquisition of products. The ExFOB effort will be executed on an accelerated time schedule with the goal to find small expeditionary products and not duplicate water purification systems found on large bases. ***FY 2010 Accomplishments:*** The project was completed and the following delivered: • ExFOB final report including test data and evaluations of power, shelter, and water systems • Additional test reports detailing further evaluations of water systems • Procurement and deployment of water systems to theater • Safety Assessment and Safety Assessment Reports for each deployed water system • Training packages for deployed and deploying Marine Corps units • Extended User Evaluations with Marine Corps units • Transfer of information to the Pre-Positioned Expeditionary Assistance Kits Joint Capabilities Technologies Demonstration project.	0.650	-	-
Title: Adaptive Versatile Engine Technology (ADVENT) Engine Demonstration: Engine Low Spool Design Initiation and Critical Long Lead Hardware Procurement	7.500	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will engage near term critical activities necessary to enable an engine demonstration in early 2013. It will accelerate turbine engine research to fully align competitive ground engine demonstrators for future technology development and maturation. If implemented and fully developed, the advanced engine design offers the potential to increase F-35 radius by 30%, increase long range strike range / loiter envelop by 25%, enable long range/high speed capabilities in the 6th generation fighter aircraft, and significantly reduce tanker burden across the fleet. The activity supports DoD guidance on competitive prototyping. ***FY 2010 Accomplishments:*** Completed project delivered: fan vane design, specialized hardware, detailed rotor blisk drawings, and release forgings. Additionally, finalized forging drawings, critical core hardware forgings, mechanical systems, and outline of assembly & instrumentation processes were created.			
Title: Power Surety Task Force (PSTF) ***Description:*** The Power Surety Task Force (PSTF) was created to reduce the fossil fuel requirement within the Department of Defense (DoD) and was the operational arm for the Energy Security Task Force. This project provided funds for essential technical and engineering services to complete demonstration and installation of alternative energy saving measures at fixed, forward-deployed overseas locations, and to support stand-up of the newly authorized DoD Office of Operational Energy Plans and Programs (DOEP&P). The objective of the PSTF is to identify and demonstrate potential energy solutions and pursue procurement of prototypes from Commercial Off The Shelf (COTS) and Government Off The Shelf (GOTS) sources to assist DoD efforts to operationalize efficient structures and devices, intelligent power management, and alternative/ renewable power generation. The PSTF will assist DoD coordination efforts within the Energy Security Task Force to synthesize, coordinate, and report on programs/projects within the services that address platforms, futures, and installations in order to reduce the operational, economic and environmental vulnerabilities associated with the use and transportation of fossil fuels and other forms of non-renewable energy. ***FY 2010 Accomplishments:*** The project produced a final report delivered to the Departement of Energy (DOE). The PSTF worked with key DoD and interagency entities, working groups, and industry to define, highlight and address energy issues within DoD. The PSTF also worked with commands such as Central Command (CENTCOM) and Special Operations Command (SOCOM), Research and Development (R&D) commands, and Program Offices in order to determine technological solutions that could reduce the amount of fossil required by DoD. The PSTF set up processes to identify technology, integrate stakeholders, demonstrate solutions, and monitor lessons from deploying energy technologies into theater. The PSTF worked on individual projects such as the Tactical Hybrid Electrical Power System (THEPS) and Tactical Garbage to Energy Refinery (TGER), and then moved into larger	0.850	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
system-of-system approaches. The PSTF worked as the Technical Manager (TM) on the Net Zero+ (NZ+) Joint Capabilities Technology Demonstration (JCTD), which was a large-scale demonstration that addressed many of the integration issues that affected operational energy. The result of this effort became a test bed to evaluate technology that could make a difference in the amount of fuel consumed by DoD. Overall, the PSTF determined that the approach of demand reduction, systems engineering (such as micro grids, distributed power and demand response), and alternative renewable power is the correct approach to reduce the demand for fossil fuel. Demand reduction was highlighted as the quickest and most cost effective approach. As a direct result of the efforts of the PSTF, the Quick Reaction Fund (QRF) initiated an additional FY 2010 funded Project called Prototype Operational Warfare Energy Reduction and Efficiency demonstration (POWERED) to implement and demonstrate the Systems Engineering approach.			
Title: Helicopter ALert and Threat Termination (HALTT) (Rapid Insertion) ***Description:*** The objective of this project is to provide operational H-60 Blackhawk aircraft with the HALTT Hostile Fire (HF) detection and localization capabilities. HALTT HF leverages Defense Advanced Research Projects Agency (DARPA) developed acoustic detection technologies and consists of a microphone array system that detects all incoming bullets, warns the H-60 aircrews, and localizes the shooter(s). Funds are provided to DARPA to rapidly deploy 4 UH-60 helicopters equipped with the HALTT HF system into theater for an Extended User Evaluation. This initiative addresses two Army Hostile Fire Operational Needs Statements (ONSs). ***FY 2010 Accomplishments:*** This project resulted in the integration and test of HALTT systems onto UH-60 aircraft, ground and live fire tests, a Test Report, Rapid Insertion Deployment Plan, aircraft modifications, crew training, and shipment of integrated systems into theater. In addition, this effort led to full certification of HALTT-A for operational use by the US Army. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outputs. The US Army G-3 Aviation (USA G-3 AVN) is currently working details of integrated UH-60 HALTT fielding in OEF for an operational user assessment with the 10th Mountain Division. The results of the overall effort will be provided to the Common Infrared Countermeasures Program of Record (CIRCM POR).	0.700	-	-
Title: Rapid Information Propagation & Planning for Lifelike Exercises (RIPPLE) Systems of Systems Support ***Description:*** An increasing number of combat training facilities ranging in size from small home stations to large combat training centers use the RIPPLE system as a foundation for Joint and coalition extensions to support effective training on interoperable systems. The intent of this project is to identify Systems of Systems (SoS) based engineering, management, and architecture principles to guide the evolution of RIPPLE in order to meet the objectives of training for modular, tactical-level Joint and coalition inter-operation.	0.100	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: This initiative produced a final report and resulted in close engagement and participation in Functional Capability Boards (FCBs) and Coalition coordination efforts to include: US Chair for Joint Fires bilateral with the United Kingdom (UK) on the Interoperability Commission; Technology Interoperability Lead on Digital Joint Close Air Support; Net Centric (NC), Battlespace Awareness (BA), and Command and Control (C2) FCB and Working Group.			
Title: SHIVA Phase 2 ***Description:*** Project Shiva is a wide area search, multi-intelligence fusion effort designed to locate likely home-made explosive (HME) manufacturing and Improvised Explosive Device (IED) related activity in areas of interest worldwide. The wide area search concept is further oriented on cueing other narrow focused sensors to more efficiently locate threat activities. Project Shiva requires no additional theater footprint, is rapidly adaptable, and can operate in denied airspace, worldwide. The resultant information is timely, precise, and when correlated with other systems, is intended to materially assist local combat commanders' ability to detect and destroy HME before it can be used as a weapon. Additional details of this effort are classified. ***FY 2010 Accomplishments:*** Required materials were purchased and fused with multi-intelligence data and then analyzed by Joint IED Defeat Organization (JIEDDO) to determine likely areas of HME activity. These locations were forwarded to the responsible theater decision maker for further analysis and dissemination and used to confirm/deny the derived locations. SHIVA completed an Operational Demonstration on 31 October 2010, which highlighted that targeting, tasking, and dissemination proved beneficial to the warfighter. The plan, in-process briefing materials and reports were completed. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outcomes: The technical and final report are scheduled to be delivered in Q2 FY 2011. Additional algorithm work to improve the overall quality of the product is being planned.	0.540	-	-
Title: Windfarm Interference Negation Demonstration (WIND) ***Description:*** This project will provide for the development and demonstration of an adaptive clutter map algorithm to mitigate the false target detections resulting from wind farms within the Air Route Surveillance Radar (ARSR-3) radar coverage area. The algorithm will ensure that the number of uncorrelated detections resulting from wind turbines remains low and prevent the ARSR-3 from being desensitized. Initial testing will occur at the ARSR-3 Program Support Facility (PSF) radar at the Mike Monroney Aeronautical Center in Oklahoma City, followed by key site testing at the ARSR-3 site in the vicinity of the Fossil, Oregon windfarm area. This project will require the close coordination of a group of over ten US Government stakeholders including the Department of Defense (DoD), Federal Aviation Administration (FAA), and Department of Homeland Security (DHS).	0.540	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: The project identified scheduling points needed to ensure development of the adaptive clutter map algorithm prototype . ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outputs. An adaptive clutter map algorithm prototype will be developed and integrated onto an auxiliary processor, and then tested on the ARSR-3 PSF Test Radar. Briefings documenting the functional requirements, algorithm, site installation plan, and all testing results will be developed. Upon successful completion, the WIND system is targeted for transition to the US Air Force for further implementation.			
Title: Iron Crosshairs ***Description:*** This project will enhance the Defense Advanced Research Projects Agency (DARPA) Iron Curtain (IC) Active Protection System (APS) electronics in preparation for emplacement on a Mine Resistant Ambush Protected (MRAP) system for fielding. The IC APS was proven in a recent government live fire test and evaluation to be an effective system for addressing current and anticipated future Rocket Propelled Grenade (RPG) threats. The system is much more effective than currently employed approaches, and is expected to result in lower casualty rates and increased mission effectiveness for certain types of engagements. This technology addresses one of the highest ranked Joint Urgent Operational Needs Statement (JUONS). ***FY 2010 Accomplishments:*** The project generated Requirements and Interface Control Documents, preliminary electrical and mechanical design and fabrication activities, initial systems and safety analyses, and initial subsystems testing. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outcomes. In support of the larger effort to integrate and field the IC APS onto an MRAP platform, the contractor will provide monthly reports, a project plan, an Iron Curtain Capabilities Document (CD), an Iron Curtain Phase 1 Design Document. Additionally, the Live-Fire technical test plan and the final report will be completed.	0.800	-	-
Title: S150 Fuel Cell ***Description:*** This project addresses the need for portable battery chargers sized for small squad operation, and will advance the state of technology of the S125 battery charging system to Technical Readiness Level (TRL) 7. This effort will culminate in a robust, lightweight system capable of charging military batteries from a liquid fuel source. The contractor will develop a 150 Watt portable generator based on solid oxide fuel cells. This generator will use hydro-treated renewable jet fuel or de-sulfurized JP8 as fuels and will be capable of operating as a battery charger or direct power unit. With a mass of less than 6 kg (14 lb), the battery charger-based system will fit within a backpack, save 60% of the weight of current solutions, and save more than 80% of the weight of primary batteries.	1.350	1.768	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Developed plans for the manufactoring, designing, and testing for the Solid Oxide Fuel Cell (SOFC) Systems needed to advance the state of technology of the S125 Battery Charging system to Technical Readiness Level (TRL) 7. ***FY 2011 Plans:*** The contractor will provide an initial milestone schedule within ten working days after receipt of order and a revised schedule within ten working days after notification of approval of the development strategy. Four Solid Oxide Fuel Cell (SOFC) Systems will be designed, manufactured, tested and delivered. The in-process reports and a final report will be completed.			
Title: Prototype Operations Warfare Energy Efficiency and Reduction Demonstration (POWERED) ***Description:*** This project will install and assess “microgrid” power distribution technology in Afghanistan Area Of Responsibility (AOR). This project will validate the utility of microgrids in a relevant Operational Environment, scientifically demonstrate reduction of DoD Fossil Fuel consumption, establish a verifiable business case analysis for microgrid technology, develop specifications for standardized microgrids, identify relevant standards/interfaces, and facilitate Logistics Civil Augmentation Program (LOGCAP) contract language for microgrid technology. ***FY 2010 Accomplishments:*** The project developed a progress schedule and identified key components needed from contract support. ***FY 2011 Plans:*** This project will be executed by the US Army (USA) Program Manager Mobile Electric Power (PM-MEP) in conjunction with the USA Research Development and Engineering Command (RDECOM) and selected support contractors. The following outputs will be produced : 1. Conduct Site Surveys in the Afghanistan AOR. 2. Installation and assessment of a 3 kilowatt (kW) hybrid system (integrated solar, generator and batteries), Tactical Modular Mobile Microgrid Power System (TM3PS), Electrical Power Conditioning and Control (EPCC), Heavy Expanded Mobility Tactical Truck (HEMTT) mounted hybrid system, and a 60 kW Tactical Quiet Generator (TQG) HI-Power based microgrid controllers 3. Integrate a one megawatt (MW) Microgrid into a Battalion-sized Forward Operating Base (FOB) and compare it in a 600 man Force Provider configuration. This will include the installation and assessment of technologies from the Joint Capabilities Technology Demonstration project titled Net Zero Plus (NZ+)	0.520	1.517	-
Title: MACY	0.840	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: MACY addresses the identification of asymmetric, low-tech airborne threats at a distance. This effort will provide the signatures of asymmetric, low-tech threat platforms as detected by select sensors, characterize the performance of those sensors, and support the development of a notional program to develop, integrate, test, and transition technology solutions. Further details of this project are classified. ***FY 2010 Accomplishments:*** MACY played an integral part in the development of a counter-threat capability. ***FY 2011 Plans:*** FY 2010 funds will continue to produce FY 2011 outputs. Air Force Research Laboratory (AFRL) will construct a demonstration detection system that will be tested against static and moving threat targets. Massachusetts Institute of Technology Lincoln Laboratories (MIT/LL) will explore Radar Signatures of the threats. The Naval Postgraduate School (NPS) will obtain and release multiple surrogate targets, acquire and analyze Light Detection and Ranging (LIDAR) data using two different LIDAR cameras for short and long range targets, and assess performance limits for detection approaches. NPS will generate a final report.			
Title: Ultra Short Pulse Laser (USPL) ***Description:*** This project will integrate, test and demonstrate an existing Government-owned Ultra Short Pulse Laser into an existing USPL test vehicle. The resultant system will prosecute the unique USPL susceptibility of Intelligence Surveillance and Reconnaissance (ISR) and Electro-Optic (EO) systems via associated physical effects generated by material interactions to include Radio frequency (RF), electro-Magnetic Pulse (EMP), and white light super-continuum generation. This USPL Test Asset System (UTAS) will have the unique potential to develop into defensive and offensive weapons against multimode guided systems. ***FY 2010 Accomplishments:*** The project was initiated and identified periods of performance, test, and demonstration plans for the Ultra Short Pulse Laser (USPL) test vehicle. ***FY 2011 Plans:*** This project, under the leadership of Naval Sea Systems Command Program Manager Ships 405 (PMS-405), will be executed by a consortium of contributors. This effort will involve the design, engineering, development, integration, testing and field demonstration of the UTAS. Efforts will include the generation of a Maritime USPL Test Plan, installation and verification of data collection equipment, testing in maritime environment, complete maritime characterization, preparation of the UTAS Mobile	0.549	1.500	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Vehicle, installation of the USPL, and final testing. Documentation will be delivered and include UTAS design and operation documents, along with the final report.			
Title: Explosive Ordinance Disposal (EOD) Disruptor Technologies ***Description:*** This project will directly address Explosive Ordinance Disposal (EOD) Joint Urgent Operational Needs Statement (JUONS) CC-0407. This effort will complete development, modification, integration, and testing EOD disruption technologies to be used EOD robotic systems. ***FY 2010 Accomplishments:*** The project developed and prepared EOD disruption technologies for integration and testing in EOD robotic systems. ***FY 2011 Plans:*** FY 2010 funding will continue to produce FY 2011 outcomes. The contractor will test EOD disruption technologies, design and implement modifications, and integrate and test the technologies with EOD robotic systems.	0.300	-	-
Title: Digital Rocket Launcher (DRL) ***Description:*** This project will directly address a key component of an overall offensive weapon system solution to the U.S. Naval Forces Central Command (NAVCENT) Urgent Operational Need Statement (UONS) for Counter Swarm of Fast Attack Craft/ Fast Inshore Attack Craft (FAC/FIAC). A Digital Rocket Launcher (DRL) is necessary to accommodate new generation, longer, precision-guided, 2.75 inch rockets such as the Low Cost Guided Imaging Rocket (LOGIR), and the Advanced Precision Kill Weapon System (APKWS). This project is a low-risk effort to quickly design, develop, manufacture, integrate and demonstrate a 16-tube DRL, and will be executed in-house by the Naval Air Warfare Center Weapons Division (NAWCWD) China Lake. When complete, the DRL will be utilized by the Medussa Joint Capabilities Technology Demonstration (JCTD) project in order to advance its Technology Readiness Level (TRL), reduce its technical risk, and to accelerate its transition to fielding. The combination of Medussa and DRL will provide a low-cost, fire & forget, guided weapon system, capable of striking from increased safe distances. This will result in increased number of targets killed in available time, a greatly reduced cost per kill, and a significant reduction in Warfighter risk. ***FY 2010 Accomplishments:*** The project was initiated and identified periods of performance, test, and demonstration plans for a A Digital Rocket Launcher (DRL) . ***FY 2011 Plans:***	0.540	2.500	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
NAWCWD China Lake will use existing conventional 2.75 inch LAU-61 Rocket Launchers, and design, develop, integrate and demonstrate a 16-tube DRL sufficient to accommodate LOGIR, APKWS, and conventional 2.75 inch rocket systems. Two 16-tube DRLs will be produced, tested and demonstrated with the Medussa JCTD.			
Title: Electromagnetic Bandwidth and Spectrum Enhancement (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Electromagnetic Bandwidth and Spectrum Enhancement new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to reduce prime power, weight and space of RF components, increased level of integration of related components. In addition, projects will include novel bandwidth compression techniques with emphasis on on-board data processing and reduction technologies. Rapid Reaction Technology Offense (RRTO) will ensure QRF efforts are not duplicative with other Electromagnetic Bandwidth and Spectrum Enhancement efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to developing future Electromagnetic Bandwidth and Spectrum Enhancement efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Electromagnetic Bandwidth and Spectrum Enhancement efforts.	-	4.711	4.148
Title: Alternative Energy, and Energy Efficiency and Reduction Technologies (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Alternative Energy, and Energy Efficiency and Reduction Technologies new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to reduce consumption of fossil fuels and increase energy efficiency within forward deployed operating units. Emphasis will be on the integration and demonstration of technologies that directly reduce the overall cost and logistics footprint of fossil fuel sourced energy within forward deployed units. RRTO will ensure QRF efforts are not duplicative with other Alternative Energy and Energy Efficiency and Reduction Technologies efforts and will seek to leverage other such efforts. ***FY 2011 Plans:***	-	3.516	4.147

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Alternative Energy, and Energy Efficiency and Reduction Technologies efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing future Alternative Energy, and Energy Efficiency and Reduction Technologies efforts.			
Title: QRF FY 2011 and FY 2012 New Start Focal Area Plans - Newly Emerging National Threats ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Newly Emerging National Threats new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to address unusual needs and capability gaps directly affecting the combined missions of DoD and other government agencies. Included in these efforts are projects requiring significant cross-agency coordination. RRTO will ensure QRF efforts are not duplicative with other developing Newly Emerging National Threats efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to developing Newly Emerging National Threats efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to developing Newly Emerging National Threats efforts.	-	3.516	4.147
Title: Directed Energy Capabilities (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal areas for FY 2011 and FY 2012 QRF Directed Energy Capabilities new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to counter threats with speed-of-light, precision, deep	-	3.517	4.147

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
magazine, and low collateral engagement modalities. Emphasis will be on Laser engagement technologies to include Short Pulse, Ultra Short Pulse, and High Energy Laser technologies integrated and demonstrated on tactical manned and unmanned vehicles with Joint mission applicability. Rapid Reaction Technology Office (RRTO) will ensure QRF efforts are not duplicative with other Directed Energy Capabilities efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Directed Energy Capabilities efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Directed Energy Capabilities efforts.			
Title: Low Cost Precision Engagement Capabilities (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 QRF Low Cost Precision Engagement Capabilities new project starts include efforts to develop capabilities in anticipation of emerging needs to include: technologies to address the need for low cost precision engagement systems applicable to small, tactical, manned and unmanned systems. Emphasis will be on modification and enhancement of conventional munitions components and systems. RRTO will ensure QRF efforts are not duplicative with other Low Cost Precision Engagement Capabilities efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical to Low Cost Precision Engagement Capabilities efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations	-	3.516	4.147

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical to Low Cost Precision Engagement Capabilities efforts.			
Title: Operational Field Demonstrations (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 QRF Operational Field Demonstrations new project starts include efforts to develop capabilities in anticipation of emerging needs to include: operational prototyping and field demonstration of technologies, components and fully integrated systems in direct response to critical operational needs. Emphasis will be on demonstration of conventional technologies with transition within a period of no more than one year. RRTO will ensure QRF efforts are not duplicative with other Operational Field Demonstrations efforts and will seek to leverage other such efforts. ***FY 2011 Plans:*** QRF investment decisions are made during the execution year in response to combatant commander, service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, Federally Funded Research and Development Centers (FFRDCs), other government agencies, industry and academia will help identify areas critical Operational Field Demonstrations efforts. ***FY 2012 Plans:*** Investment decisions during the budget year will respond to combatant commander, Service and other government organization requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD, FFRDCs, other government agencies, industry and academia will help identify areas critical Operational Field Demonstrations efforts.	-	3.516	4.147
Accomplishments/Planned Programs Subtotals	19.229	29.577	24.883

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Utilizing FY 2010 funds, the QRF Program provided funding to 13 unique projects in FY 2010, six (6) unique projects in FY 2011, and approximately three (3) more projects to be added during FY 2011. Although each project is unique, all QRF projects were/are monitored for schedule deviation and transition outcome, as well as for meeting reporting requirements such as periodic status reports, quad charts, financial reporting, and briefing materials. Additionally, some projects were/are monitored for the delivery of additional deliverables such as test reports, studies, components, and equipment as well. Generic performance metrics applicable to

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the Quick Reaction Fund (QRF) includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on war-fighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year. During FY 2010 the QRF achieved a transition rate of approximately 70% and exceeded the objective of 30%.

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P828: *Rapid Reaction Fund*	51.138	48.667	48.486	-	48.486	59.885	53.091	54.425	57.085	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects Program (QRSP) (Program Element 0603826D8Z) supports six separate projects that provide rapid funding to expedite the development and transition of new technologies or initiatives that support the warfighter.

The Rapid Reaction Fund (RRF) is fully executed through the Combating Terrorism Technology Task Force (CTTTF), which was re-designated as the Rapid Reaction Technology Office (RRTO). The CTTTF was stood up to provide rapid response to enhance operations in Iraq, Afghanistan and other theaters in support of Overseas Contingency Operations (OCO); and, to accelerate the transition of high-potential science and technology projects into operationally useful products in the execution years. CTTTF/RRTO leverages the Department of Defense (DoD) science and technology base and those of the other Federal Departments; stimulates interagency coordination and cooperation; accelerates the fielding of capabilities and concepts to counter emerging threats; and, provides feedback to the Science & Technology (S&T) community to guide long term developmental strategies. RRTO anticipates adversaries' exploitation of technology, including available and advanced commercial capabilities. In prior years RRTO has explored methods and approaches of persistent surveillance stimulation for counterinsurgency; developed alternate power sources for sensors and systems; expanded human, social and cultural knowledge, increased small unit situational awareness, advanced the interface between law enforcement and military operations, developed biometrics and forensics capabilities, supported denied area operations, strategic multi-layer assessment and established an Open Business Cell that is facilitating better interactions with small innovative companies that do not normally do business with the DoD. In FY 2011 and FY 2012, RRTO will continue to explore new and emerging capabilities to support Irregular Warfare operations while working to support Under Secretary of Defense (Advanced Technology & Logistics) (USD (AT&L)) and Director, Defense Research & Engineering (DDR&E) goals. With final project selection occurring during the execution year, potential areas for FY 2011 and FY 2012 Rapid Reaction Technology Office (RRTO) projects include: Forward Operating Base (FOB) protection, persistent surveillance, Intelligence, Surveillance, and Reconnaissance (ISR) architecture, interface of law enforcement and military operations, biometrics and forensics, autonomous operations, cyber security, explore new and emerging cell phone technologies, support border patrol initiatives, counter proliferation initiatives, capabilities to exploit denied areas, strategic communications and multi-layer assessments and nontraditional approaches to leverage innovative businesses. The average length of a Rapid Reaction Technology Office project falls within a 6-12 month range in order to more effectively aid the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Accelerated Nuclear Deoxyribonucleic Acid (DNA) Equipment (ANDE)	0.700	-	-
Description: The field-deployable ANDE program is a technology development effort enabling automated rapid DNA profiling, while minimizing analytical complexity and user manipulations, for battlefield biometrics and forensics applications. The prototypes will enable warfighters without technical training to generate and match DNA profiles directly from buccal swab reference samples in approximately 1 hour. Rapid DNA profile matching will allow commanders to make actionable decisions concerning the release or detainment of persons of interest. This effort is also supported by the Biometrics Science & Technology			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(S&T) Program Element with a consortium of other U.S. Government sponsors (Defense Threat Reduction Agency, Federal Bureau of Investigation, and Department of Homeland Security) committing funding at $18.600 million for the program. ***FY 2010 Accomplishments:*** Developed a Risk Reduction Plan, conducted first and second quarter reviews, demonstrated individual module integration and conducted the Preliminary Design Review. ***FY 2011 Plans:*** FY 2010 funds will continue to produce additional deliverables in FY 2011. In FY 2011 this project will conduct the Critical Design Review, conduct the System Acceptance Test and deliver one prototype to the Defense Biometrics Program Office for an operational evaluation.			
Title: Maritime Media Collection ***Description:*** This project, in support of maritime boarding parties, will develop hardware, software, and concept of employment for the collection of data from digital devices (e.g. Personal Digital Assistants (PDAs), cell phones and computers). The device produces output that meets the data requirements for the Office of Naval Intelligence's SeaPort database , improves interoperability; and, using communications systems, provides rich data to the intelligence community for rapid analysis and exploitation. Quick return of the results to maritime boarding parties enables them to take swift action against our adversaries. ***FY 2010 Accomplishments:*** A completed prototype device was delivered to the Navy along with source code, users manual and a Concept of Operations (CONOPS).	0.175	-	-
Title: Free-Space Optical Communication Atmospheric Link (FOCAL) for Multi-Aperture Sparse Imager Video System (MASIVS) ***Description:*** Building on this successful flight demonstration in Sep-Oct 2009, the Free-Space Optical Communication Atmospheric Link (FOCAL) will make improvements necessary for deployment, namely increased bandwidth to 10 Gbps and reduced size, weight, and power (SWaP). The initial flight demonstration is at Empire Challenge 2010 where FOCAL will integrate with the MASIVS. Further FOCAL development is planned for FY 2011 with development of a prototype suitable for deployment. ***FY 2010 Accomplishments:*** Developed a mobile ground station and integrated and demonstrated MASIVS with FOCAL on one aircraft for Empire Challenge 2010. The FOCAL capability will be integrated on long endurance ISR platforms that require high bandwidth downlinks.	1.500	-	-
Title: Submerged Launch System for a Fuel Cell Powered Long Endurance Expendable Unmanned Aerial System (UAS) for ISR	0.500	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The Naval Research Laboratory will develop a Fuel Cell Powered Long Endurance UAS for ISR. The project will develop a submerged launch capability for the UAS. ***FY 2010 Accomplishments:*** This project integrated a novel Unmanned Aerial vehicle (UAV) into a standard submarine launch canister to provide the Navy an extended reach ISR asset equipped with a high quality real-time video. Conducted in close coordination with Navy operational users the capability will transition after successful flight demonstrations. Flight demonstrations are planned to occur in FY 2011.			
Title: Blue Dart 2 ***Description:*** This project is a focused experiment exploring the asymmetric attack threat posed by unmanned maritime systems (UMS) built using publicly available information and low cost, commercial-off-the-shelf (COTS) components. Independent red teams consisting of college students with little or no maritime experience were sponsored in order to demonstrate the capability of educated, motivated individuals to design and develop UMS homemade devices to meet specific mission profiles. The program culminated in a maritime field demonstration with the UMS red teams engaging countermeasure system blue teams. ***FY 2010 Accomplishments:*** The Blue Dart 2 joint-DoD field demonstration was held April 21, 2010 in Key West, FL. The results of the demonstration have helped inform the Navy and intelligence communities on maritime force protection gaps.	0.500	-	-
Title: Tactical Operational Foliage Penetrating (FOPEN) Laser Imaging Detection and Ranging (LIDAR) Extension ***Description:*** This project provides incremental funding to support a Naval Sea Systems Command (NAVSEA) task providing sensor design and prototyping, test and evaluation, and analysis of technologies and systems for warfighters. This project accelerates and enhances the results and post mission analysis from the Guidelight Foliage Penetration system effort that was operationally demonstrated in dense jungle canopies in the Philippines. ***FY 2010 Accomplishments:*** Provided near-term analysis and assessment of the FOPEN LIDAR data and a transition plan for operationalization within ARMY G2 and US Special Operations Command (SOCOM). Systems are scheduled to deploy to Afghanistan in FY 2011.	0.100	-	-
Title: Counter Swarm Tactics ***Description:*** Speed limitations, inertia and lack of maneuverability make US Navy ships vulnerable to attacks by swarms of smaller, faster, and potentially heavily armed boats. In order to disrupt a swarm attack and buy itself time to address the multiple threats, a commander needs to resort to non-traditional tactics to disrupt the implicit coordination mechanisms that underlie swarm	0.300	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
attacks. This effort will build a computer simulation model of asymmetric naval swarm tactics, and use it to design and test counter-tactics to disrupt swarm attacks. ***FY 2010 Accomplishments:*** The project demonstrated the feasibility of using a small group of Unmanned Surface Vehicles (USVs) to disrupt asymmetric swarm tactics with the payoff being the ability to deal successfully with the increasing asymmetric threat that swarms of speed boats represent.			
Title: Stiletto Project ***Description:*** Stiletto is a high speed maritime vessel with a robust "electronic keel" and space to host new technologies. The vessel was developed to provide DoD a dedicated maritime Research & Development (R&D) platform. As a non-program of record, Stiletto streamlines the experimental process and helps facilitate the rapid testing and exploration of emerging technologies. This effort will provide upgrades and additions to the Stiletto effort. ***FY 2010 Accomplishments:*** Accomplished an upgrade to Stiletto's electronic keel and communications suite, supported approximately 120 days of underway experimentation and demonstrated numerous new technologies during maritime operations. Several of these technologies have transitioned to operational users.	0.600	-	-
Title: Hydrogen Power Unit ***Description:*** The Hydrogen Power Unit (HPU) is a self-contained, stackable electrical generation system powered by a water-based, non-flammable, non-explosive and non-toxic Liquid Safety Fuel (LSF). The system operates by extracting hydrogen gas from the LSF. Hydrogen is delivered 'on-demand' directly into integrated fuel cell(s) for real-time, immediate use. LSF is made from water and a proprietary additive. LSF can be made at the point of use or at a central location. ***FY 2010 Accomplishments:*** Executed in coordination with Central Command (CENTCOM) the project demonstrated a prototype HPU in late FY 2010. A multiservice technical evaluation team is assessing the results of the demonstration.	0.500	-	-
Title: Open Business Cell Idea Management System ***Description:*** The objective of the Open Business Cell (OBC) (online at DefenseSolutions.gov) is to reach out to small innovative companies, especially those that have no experience dealing with the Department of Defense, to identify potential solutions to military needs. The OBC uses the Idea Management System (IMS) software tool to collect, distribute, track, evaluate, and store all ideas submitted to the DefenseSolutions.gov website.	0.200	0.150	0.534

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: This effort allowed for continuous operation of the DefenseSolutions.gov website and the Idea Management System as in excess of 100 submitted proposals were reviewed and selected for implementation. ***FY 2011 Plans:*** The Idea Management System will complete its second capability upgrade and will continue to support OBC efforts to engage non-traditional businesses. It processes all ideas and proposals submitted through the DefenseSolutions.gov website. In FY 2011, more than 200 submitted ideas and proposals will be received and processed through this system, leading to five awards for prototyping and solutions. ***FY 2012 Plans:*** Funding will maintain the IMS software and provide for enhancements requested by users in the future and selection of 2012 projects supporting Battlefield Forensics and the Joint Non-lethal Weapons Directorate.			
Title: Advanced Imaging and Multifunction Sensing System (AIMS) ***Description:*** This effort will develop an advanced multifunction sensor that can provide revolutionary sensing and imaging capability. The proposed effort significantly expands the capability of current systems by adapting and applying recent advances in ultra-wideband optical waveform technology and developing new device technologies to greatly expand the operational utility of Laser Detection & Ranging systems. ***FY 2010 Accomplishments:*** Fabricated an advanced sensor that was demonstrated in a short-range (< 100 m) building-to-ground experiment. Work in FY2011 will integrate and demonstrate the capability on an airborne platform. ***FY 2011 Plans:*** Integrate the system aboard a manned aircraft and demonstrate the capability at tactically significant ranges.	1.250	0.700	-
Title: Non-Lethal Vehicle Stopping ***Description:*** Vehicle borne Improvised Explosive Devises IEDs (VBIED) are a significant threat to operational forces. Being able to stop a potential VBIED without harming passengers is a critical joint warfighting need. The RRF in coordination with DoD Joint Non-Lethal Weapons Directorate (JNWD) sought innovative solutions from companies that do not typically do business with DoD. The focus of this effort is develop methods to stop potentially hostile medium size vehicles (trucks) from approaching friendly forces in convoys and at checkpoints. ***FY 2010 Accomplishments:***	0.750	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
From among the ideas received, eight proposals reviewed by JNLWD subject matter experts, were selected for funding. These projects were started in late FY 2010 and will produce prototypes in late FY 2011/early FY 2012.			
Title: Strategic Multi-Layer Assessment (SMA) Effort ***Description:*** This effort will expand Rich Contextual Understanding (RCU) support to International Security and Assistance Forces (ISAF) in Afghanistan by providing additional RCU materials (e.g., district, issue assessments), on-demand Quick Look Reports (QLRs), an enhanced RCU-visualization tool and an integrated, rigorous framework for metrics design, data exploitation and statistical analyses to monitor and assess progress on ISAF objectives. ISAF requires an RCU of forces for conflict and for peace in the Afghanistan-Pakistan area of operation (AOR). ***FY 2010 Accomplishments:*** Conducted in close coordination with ISAF leadership the project responded to an ISAF requirement with a two track approach. One track developed an integrated, rigorous framework for collecting, monitoring and analyzing progress on ISAF objectives. The second track provided support to the ISAF host nation information requirements team with additional RCU materials (e.g., district, issue assessments) for 48 districts, on-demand Quick Looks via the RCU team network and an enhanced RCU data visualization tool in a collaborative environment.	1.700	-	-
Title: Rapid Reaction Technology Office (RRTO) Technology Assessments at Yuma Proving Grounds (YPG) ***Description:*** The Joint Experimental Range Complex (JERC) is a remote test site located at the Yuma Proving Grounds that is designed to rapidly test prototype technologies. These limited proof-of-concept tests allow for integration and development of Intelligence, Surveillance, and Reconnaissance (ISR), training, and Concept of Operation (CONOPS) development. Since its establishment in late 2003, RRTO has sponsored evaluation of more than 250 systems at the JERC. This funding will be utilized to provide emergent ugrades and capabilities to the site. ***FY 2010 Accomplishments:*** This effort provided the facility and manning to assess new force protection technologies and CONOPS. The support included development of project test plans, execution of the tests, evaluation of collected data and preparation of post test reports. The post test reports have been distributed to government and appropriate industry representatives. ***FY 2011 Plans:*** Continue to sponsor 5 to 6 two week evaluation periods a year for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use the results of these evaluations to inform the development/ procurement process for future enhanced capabilities. ***FY 2012 Plans:***	9.600	1.780	1.780

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Continuation of the 5 to 6 two week evaluation periods ayear for interested industry and government representatives to test emerging capabilities in a realistic desert environment. Use the results of these evaluations to inform the development/ procurement process for future enhanced capabilities.			
Title: Assessment of Foreign Unmanned Underwater Technologies (Project: Nautilus) ***Description:*** The effort will be utilized to perform a technology survey and future threat assessment into foreign-based unmanned underwater technology that could enable High Endurance Unmanned Underwater Vehicle systems (HEUUV). ***FY 2010 Accomplishments:*** This project provided input to the vulnerability of U.S maritime interests and a foundation for the development of countermeasure solutions to HEUUV underwater threats. The classified study has been distributed to Navy personnel and is informing decision makers on focus areas to counter the future HEUUV threat.	0.200	-	-
Title: Transitioning From Counterinsurgency to Lesser Forms of Engagement ***Description:*** This effort will provide recommendations on the procedures and capabilities required to successfully transition from counterinsurgency (COIN) operations to some lower level of conflict, to include police-led operations, peacekeeping and/or the training and equipping of local forces. The results will identify specific science and technology areas that could potentially support and enhance the transition from counterinsurgency operations to a lower level of conflict. ***FY 2010 Accomplishments:*** The research identified procedures for the Department of Defense (DoD) and other U.S. government agencies to transition successfully from COIN to sustained stability operations. The data has been used by decision makers working to transition from COIN operations.	0.400	-	-
Title: Building Effective Institutions Pilot Project ***Description:*** This project enhances the military understanding of and ability to support the task of building effective states. The effort will provid an operational framework for approaching countries and regions facing instability; utilizing an existing framework consisting of ten interrelated functions and expanded the framework to include providing relief in disasters and transitional justice. ***FY 2010 Accomplishments:*** Conducted in coordination with Department of State (DoS) and United States Agency for International Development (USAID), the project delivered a proof of concept for the practical implementation of the existing Institute for State Effectiveness (ISE)	0.500	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
framework in any United States Government (USG) entity, developed practical tools for country specific strategic plans and delivered an actionable plan to be implemented by U.S. country teams.			
Title: Afghan Counter Insurgency (COIN) Web Portal ***Description:*** The project allowed the expansion and development of materials to include more detailed tribal maps, provincial and district summaries, political and tribal leadership profiles, and security analysis reports. The development work provided relevant research in support of current COIN and reconstruction programs in Afghanistan. ***FY 2010 Accomplishments:*** This project expanded and developed ongoing research and dissemination of socio-cultural / human terrain information on Afghanistan via an open-source web portal. It provided comprehensive assessments of tribal and clan networks in coordination with ongoing COIN operations and needs. The web portal is used by U.S., NATO ISAF and non-governmental organizations in Afghanistan.	0.100	-	-
Title: Emerging Explosives Threat Database Tool ***Description:*** The global threat of homemade explosives (HME) continues to grow. The project funding will be utilized to identify and document emerging energetic material information from one specific region of interest. The database identifies threat vs. non-threat material and their characteristics and is a reference for various U.S and NATO users. ***FY 2010 Accomplishments:*** Provided a technical assessment of open source energetic material information that provides valuable data regarding potential emerging threats. Data is being used by the Services, and Joint Improvised Explosive Device Defeat Organization (JIEDDO).	0.600	-	-
Title: Covert Modulating Retroreflector (CMR) for High Speed Asymmetric Lasercom ***Description:*** This effort is providing a high speed covert data link capable of transmitting live, high quality video and other data. This program builds on the successes of previous RRF modulating retroreflector lasercomm efforts and will incorporate the downlink capability aboard a small UAV. ***FY 2010 Accomplishments:*** Completed a successful demonstration of a high-speed CMR with pointing feedback on an airborne platform. The FY 2010 funding will allow the integration of the capability aboard a UAV in FY2011.	0.420	-	-
Title: Applications of Analytical Tools for Counter-Terror Social Network Analysis and Intent Recognition (AAT for CT-SNAIR) on International Crime and Terrorism Data	0.400	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will extend the advancement and application of the predictive analytics using additional data sources with a more strategic problem set. The project objective is to improve the ability of the decision maker to understand the complex relationship between regional political or economic issues and criminal and/or terrorist activity. By correlating across disparate data sets, historical data can be used to model and predict future areas of increased criminal or terrorist activity. ***FY 2010 Accomplishments:*** The system was demonstrated on a more complete data set covering an entire region of interest and encompassing multiple strategic variables. An initial technology transition of the graphical and prediction tools and techniques to selected intelligence community users including Joint Inter-Agency Task Force (JIATF), Electronic Privacy Information Center (EPIC), and National Security Agency (NSA) was completed.			
Title: Hostile Fire Detection System (HFDS) – High Speed ***Description:*** This is a high speed infrared imaging system designed to identify the location of a small arms shooter. This technology is a significant improvement over current technologies because it provides a 360 degree field of view and a high frame rate (10,000 frames/second) detector. The high frame rate has been shown experimentally to reduce the number of false positives. This project is a follow on effort to the first HFDS proof of concept effort and will provide initial test units for firing range testing, with a proposed follow on hardened prototype fielding into the Afghanistan and/or Southern Command (SOUTHCOM) theaters. ***FY 2010 Accomplishments:*** This effort has delivered 2 range experimentation units for user evaluation and the design for a hardened prototype. ***FY 2011 Plans:*** After successful user evaluation of the experimental units, the project will develop a hardened prototype for an operational demonstration.	1.100	0.310	-
Title: PHOSPHOR ***Description:*** This project will address the problem of increasingly sophisticated communications protocols being used against Blue Forces. Through development of a better understanding of emerging communications standards and protocols and developing tools to take best advantage of these changes, this project will provid DoD the technical underpinnings required to address the evolving communications environment. Details of the outcomes of this research are classified. ***FY 2010 Accomplishments:***	0.900	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
This effort proposed sensor modifications and provided a proof of concept validation. Further details relating to the outcomes of this effort are classified.			
Title: Thunderstorm Program Support ***Description:*** This project will address the FY 2010 Massachusetts Institute of Technology (MIT) Lincoln Laboratory support for the ongoing Thunderstorm exercise effort. This support will consist of test planning and spiral execution to ensure that Thunderstorm proceeded with quantitative rigor and integrated data architecture. The project will ensure that the exercise spiral development is consistent within an overall framework and develop refined exploitation algorithms. The results will feed into the operations infrastructure. ***FY 2010 Accomplishments:*** This effort delivered an integrated test plan and exploitation algorithms for Thunderstorm exercise Spirals 3 and 4. Data discovered during the Thunderstorm spirals has informed operational decision makers in Joint Inter-Agency Task Force, South (JIATF-S) and has been widely distributed to government users.	1.500	-	-
Title: Wide Area Chemical Sensing ***Description:*** Massachusetts Institute of Technology (MIT) Lincoln Laboratory and the United States Air Force Academy will continue to the development of a chemical sensing system that enables the detection and mapping of atmospheric chemical effluents over large geographic areas at high spatial-resolution and high-sensitivity. ***FY 2010 Accomplishments:*** A building to building hardware demonstration was completed and flight ready hardware was delivered and transferred to another government sponsor. ***FY 2011 Plans:*** Development of the pointing mirror control system, flight readiness review, air-to-ground local demonstration and remote field test of the completed system.	1.250	1.250	-
Title: Multimodal Analysis ***Description:*** The objective of this effort is to enable Central Command's (CENTCOM) cells to identify, standardize, and integrate variable and unstructured data so that modeling and simulation (M&S) tools could be applied to support the ISAF requirements for understanding complex human behavior in real time. ***FY 2010 Accomplishments:***	0.400	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Delivered a prototype Model for the Emergence of Insurgent Leaders (MEIL) tool to CENTCOM cells that can anticipate the rise of new insurgent leaders.			
Title: Project Saiph ***Description:*** This project will apply advanced decision concepts to more comprehensively exploit non-traditional data sets and communities of interest to establish a strategic level methodology for narrowing the area of military concern. This research effort will focus on identifying patterns in events with respect to distance to infrastructure features such as road types, buildings, bridges, market places, as well as cultural features such as tribal and ethnic boundaries. These patterns are available to provide a beginning point for informed strategic planning in an ever-evolving, complex combat environment. ***FY 2010 Accomplishments:*** Explored the contributions of non-traditional data sources, techniques, methodologies, and tools to provide insight for the commander's decision process. Embedded in the research was an effort to integrate exploitation of the social sciences (i.e., the social, economic, political, and cultural domains) within a spatial framework. Physical/demographic geospatial and cultural factors were examined to develop advanced thinking and non-conventional models, methodologies, and tools focused on the defeat of illicit trafficking supported by criminal networks in the SOUTHCOM area of responsibility.	0.600	-	-
Title: Tracking Illicit Networks and Linkages Facilitating Jihadist Terrorist Attacks Using New Methods of Analysis & Communication ***Description:*** This project is a collaborative research effort involving the Institute for the Study of Violent Groups (ISVG) and Midshipmen at the United States Naval Academy who will study patterns of interaction and communication among various types of illicit networks operating within and across U.S. boundaries. The results of these analyses will be summarized and linked to earlier studies in an existing semantic wiki data base at the U.S. Naval Academy that is designed to track transnational Jihadist terrorist activities worldwide. ***FY 2010 Accomplishments:*** This project provided junior naval officers, with a wealth of new analytical skills and knowledge about real and potential links among criminal and jihadist networks. These skills will be very helpful as the Midshipmen begin their naval careers. Information from this program is supporting formal open source intelligence on terrorist and criminal activity.	0.120	-	-
Title: Winning in Afghanistan ***Description:*** This effort will develop a comprehensive framework to help understand the dynamics of war and politics in Afghanistan, and a range of options to achieve objectives in this region effectively and efficiently.	0.400	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: This project produced an independent study that offers a potential way ahead for the United States in Afghanistan. The study will be on the Leadership of the ISAF in Afghanistan and be using the study to inform their decision making.			
Title: Enhancing Inter-Agency Collaboration Capabilities for Stability Operations through Synthetic Environments for National Security Estimates (SENSE) ***Description:*** SENSE serves to focus a diverse set of players (inter-agency, international, etc.) on a problem whose successful management requires establishing chains of collaboration across agency seams and with non-US Government (USG) protagonists. This effort will facilitate the development and deployment of training environments for interagency/international collaboration based upon a new iteration of SENSE technology that models the political, security, economic and cultural conditions of Afghanistan. ***FY 2010 Accomplishments:*** This most recent iteration of SENSE was made operational via seven separate simulations. An impact evaluation of the SENSE training on participants was delivered.	0.500	-	-
Title: Collaborative Graph Building ***Description:*** The project will continue the development of a set of tools to improve the ability of analysts to rapidly construct large relationship graphs. Exploitation of large graphs is critical to a variety of intelligence applications including social network analysis, pattern of life estimation and anomalous activity detection. ***FY 2010 Accomplishments:*** The project developed algorithms to automate the extraction of graph elements such as named entities (people, places, events, etc.) and relationships from large repositories of intelligence reports. A baseline search capability for automatically extracted graph element, graph refinement tools and an objective graph-driven search capability was implemented with this effort.	0.500	-	-
Title: Force Directed Layout (FDL) Research and Engineering for Social Network Analysis ***Description:*** This project will develop and test, with service partner's data, the application of advanced visualization software for social network analysis and situational awareness. Software was developed that computes effective visualizations of social networks. Data feed integration software will be developed that improves tactics and planning functions associated with maritime operations. ***FY 2010 Accomplishments:***	0.600	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Final FDL software was delivered to government partners. FDL was used for the Joint Inter-Agency Task Force-South Operations Table data integration in support of Thunderstorm Spiral 3 and improved knowledge discovery, data understanding, and situational awareness.			
Title: Wide-Area Infrared System for Persistent-Surveillance (WISP) ***Description:*** The effort will enable night capable persistent day or night surveillance over large areas. WISP produces nearly a full hemisphere (100 x 360 degrees) infrared image every 1.5 seconds. Unlike still cameras using fish-eye lenses, WISP scans the field quickly to produce very high resolution and low noise data over the entire scene. Operating in the longwave infrared (LWIR) spectrum, WISP can operate day or night without loss of performance. ***FY 2010 Accomplishments:*** The project provided a partial capability sensor, controller, processor, and data viewer. The Air Force wide area persistent surveillance program has a requirement for wide area day/night performance and has expressed interest in WISP to provide day/night wide area capability.	1.500	-	-
Title: Advanced Architecture ***Description:*** This project will provide the overarching concepts for an integrated information architecture that enables the capture, processing, and distribution of almost all of the data that DoD, the Intelligence community and ISR related systems generate globally in a rapid, relatively low cost, secure and open systems manner. ***FY 2010 Accomplishments:*** The Advanced Architectural effort provided a top-down flow against the problems by developing the specific goals and metrics for the sub-elements and various functional areas. These included the development of target insights, sensing and platform configurations and mission analysis. Further, response capabilities were included that range from anticipatory to routine crisis response. The architecture, metrics and supporting documentation are intended to help form the basis for an effective transition to a number of users in the services and agencies. ***FY 2011 Plans:*** Provide increased technical interoperability to improve analysis of mission data and better understanding of threats. Transition to one or more service or agency responsible for distributing large amounts of data.	0.100	0.150	-
Title: iDiplomacy ***Description:*** This effort planned and executed a November 2009 symposium that took place at the Gallup Organization in Washington DC. The main focus of the symposium was an open discourse on the evolving nature of public diplomacy in the	0.400	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
internet age due to new technologies, social networks and the democratization of communications. It focused on the application of these new tools across government and private organizations, as well as engaging individuals to work together as partners in public diplomacy. ***FY 2010 Accomplishments:*** Delivered a transcription, report and filmed footage that will be used to generate interest in a follow on symposium with a broader audience.			
Title: Special Studies ***Description:*** This effort will provide special studies and transition support to Rapid Reaction Technology Office (RRTO), integrating advanced Wide Area Surveillance (WAS) capabilities for Afghanistan focused missions with the goal of enhancing intelligence collection, exploitation, and analysis, while reducing the burden on theater resources. The effort will also provide project support and analysis of three ISR analysis projects separately funded through the Rapid Reaction Fund. ***FY 2010 Accomplishments:*** Conducted analysis, technical reviews and integration/transition support on WAS capability investments under the RRTO Broad Area Announcement (BAA), Thunderstorm exercise scenarios and experiments designed to test strategies for WAS employment in Afghanistan.	0.500	-	-
Title: Sociological Sensing ***Description:*** This effort will define surveillance and reconnaissance collection strategies and their associated intelligence analyses, to estimate sociological factors relevant to counter-insurgency (COIN) operations. The project will develop methods for using technical sensing to increase the speed and accuracy of assessing the state of sociological conditions. ***FY 2010 Accomplishments:*** Provided a set of draft Concept of Operations (CONOPS) and doctrine for both collection and analysis of sensor data to estimate sociological parameters of interest for COIN operations. The project is ongoing in FY 2011.	0.900	-	-
Title: Persistent Surveillance Test Bed (PSTB) Wide Area Persistent Surveillance Data Repository ***Description:*** This project will enable the continued distribution of a 50 terabyte set of electro-optical (EO) and ground moving target indicator (GMTI) data for the development of Intelligence, Surveillance, and Reconnaissance (ISR) analysis algorithms. The data set, with ground truth information, will be instrumental in the development and validation of numerous ISR analysis tools. ***FY 2010 Accomplishments:***	0.100	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
As part of this effort PSTB has provided uninterrupted test data distribution to in excess of 80 users and has developed an online architecture design and system diagram to facilitate access to various data sets.			
Title: Talon DASHBOARD ***Description:*** Talon DASHBOARD is a subscriber-based system with graphical user interfaces to assist in the exploitation of adversary weapons systems. Further details of this effort are classified. ***FY 2010 Accomplishments:*** Provided a subscriber-based visualization tool. Further details of this effort are classified.	0.500	-	-
Title: Blue Team Assessments ***Description:*** The funding will provide Lincoln Laboratory resources to provide inter-organizational technical bridges and continued support to Rapid Reaction Technology Office (RRTO) through special studies. Examples of special studies for RRTO in the past fiscal year include ground penetrating radar, change detection processing for Improvised Explosive Device (IED) detection, underground tunnel detection, feasibility study for a hybrid airship and classified tasks. ***FY 2010 Accomplishments:*** The completed written technical reports and briefings to document assessment study conclusions have been used to inform warfighters and decision makers.	0.400	-	-
Title: Intelligence, Surveillance, and Reconnaissance (ISR) Analysis and Architectures Support ***Description:*** The project will assess the value of ISR systems quantitatively by analyzing their role in the architecture of systems providing end-to-end mission effectiveness. The goal of this analysis is to provide information to the government to make better development, deployment and employment decisions with new ISR systems. ***FY 2010 Accomplishments:*** This effort provided assessments describing threat phenomenology and signatures for home-made explosives search, an ISR architecture implementing home-made explosive search with Measurement and Signatures Intelligence (MASINT) sensors and a report describing ISR sensor and system requirements for insurgent network discovery. The assessments are informing senior decision makers on focus areas for future developmental investments. ***FY 2011 Plans:*** Continue to assess value of ISR systems quantitatively by analyzing their role in the architecture of systems providing end-to-end mission effectiveness.	1.873	1.750	-
Title: Wide Area Video Exploitation Library (WaveLib)	0.400	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P828: *Rapid Reaction Fund*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: WaveLib was developed as a modular toolkit of video processing functions designed to ingest raw imagery and metadata from wide area airborne sensors, such as Constant Hawk, and produce accurately geo-stabilized contrast-enhanced imagery, vehicle detections and tracks. The FY 2010 effort is focused on integrating the library functions into the existing APIX (trade mark) viewer and developing easy to use APIX applications. ***FY 2010 Accomplishments:*** Provided improved automated tracking through dense traffic, move-stop-move maneuvers, obscurations, and variable lighting conditions. WaveLib provides easy integration with current and future exploitation tools, and was integrated with the widely used APIX viewer.			
Title: Applied Systems Thinking Approach to Support Combatant Command Theater Security Cooperation ***Description:*** The project will work with geographic Combatant Command (COCOM) operators to improve methods to analyze complex steady state environments and evaluate potential Theater Security Cooperation (TSC) activities to support prioritization of effort. The initial effort will be conducted in cooperation with European Command (EUCOM) personnel that are involved with TSC activity, organization and prioritization. ***FY 2010 Accomplishments:*** As a result of this project, EUCOM operators have an improved ability to focus research, frame complex steady state issues, facilitate more productive discussion, and support more rigorous planning and prioritization of steady state activities. The longer term impact is more effective Theater Security Cooperation (TSC) plans.	0.300	-	-
Title: Center for Identification Technology Research (CITeR) Project Post Mortem Ocular Biometric Analysis and CITeR Support ***Description:*** In this effort researchers will study post mortem ocular captures to assess the potential effects of death on ocular biometric score changes and other relevant imaging metrics. The project will answer the question: “How does an individual’s biological death affect their optical biometrics?” ***FY 2010 Accomplishments:*** The project produced a base-line post mortem ocular biometric analysis that will be used in the development of future biometrics products as well as the assessment of currently available ocular systems. ***FY 2011 Plans:*** Two workshops are planned to identify future projects in the field of ocular biometric analysis.	0.200	0.400	-
Title: Real-Time Persistent Surveillance (RTPS) Architecture Demonstration Support	0.200	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: The RTPS effort will develop a real time processing capability for wide area electro optical data to identify vehicle tracks in selected video areas of interest. This information is used to generate automated cues for a high-resolution EO sensor. The RTPS is also able to process cues from passive Radio Frequency (RF) sensors on the same platform. ***FY 2010 Accomplishments:*** This effort completed a demonstration of a real-time persistent surveillance architecture with a processing capability that provided tasking and cueing information. The capability is being incorporated aboard the Multiple-Aperture Sparse-Imager Video System (MASIVS) system.			
Title: National Technical Means (NTM) Communications Experiment ***Description:*** This project will demonstrate a technique to enhance wireless communications capabilities in challenging environments. Further details are classified. ***FY 2010 Accomplishments:*** The effort has improved the signal processing technology used with current SIGnals INTelligence (SIGINT) NTM sensors and demonstrated unique non-traditional applications of NTM sensors. Further details are classified.	0.400	-	-
Title: Critical Human Capital Reliability Detection in Contested Environments ***Description:*** This project is a proof-of-capability effort to gather available empirical data sources and baseline available electronic frameworks and information to help provide for enhanced insights of individual and organizational reliability / susceptibility. This project will develop a susceptibility index for assessing personnel. This initial data gathering effort will test commercial tools to provide an ongoing "continuous assessment" analysis within an area by determining a baseline and reporting changes by key factors. ***FY 2010 Accomplishments:*** Provided operational users an assessment tool for determining critical human or organizational reliability in a specific geographic area.	0.300	-	-
Title: Science-based Enhancements to Network Defense and Security (SENDS) ***Description:*** SENDS is a multidisciplinary approach to network operations and defense. It seeks synergy through the integration of basic sciences such as biology, physics and the social sciences with advanced modeling and simulation techniques and enlightened policies and educational concepts to produce more secure and resilient computer networks and warfighting operations environments. The project will develop and test SENDS capabilities to provide a neutral, highly collaborative	0.700	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
experimental setting that accommodated transparent interactions between heretofore discrete and non-interacting approaches to cyberspace operations. ***FY 2010 Accomplishments:*** Developed cyberspace operations defense simulation-based tools, a Center for Cyberspace Science and educational curricula for use by US Strategic Command. Additional users are law enforcement and other government operators in both routine and contingency operations.			
Title: NETWARS on the Borders ***Description:*** This effort will investigate networked forms of organizations among criminal and terrorist networks operating within and across US borders that take advantage of areas outside of effective US government control. (e.g. tribal reservations) ***FY 2010 Accomplishments:*** This understanding of the structure and functioning of criminal networks operating across US borders is helping the US government organize and operate more effectively to defeat these types of networks outside the US. The knowledge gained in this effort is informing the development of a pilot program for initial application at US borders with US Northern Command and subsequent application outside the US.	0.100	-	-
Title: Air Launched Cooperative Multiple Unmanned Aerial Vehicles (UAVs) for Intelligence, Surveillance and Reconnaissance (ISR) Missions ***Description:*** The project will develop a cooperative multiple autonomous vertical take-off and landing (VTOL) UAV system that provides warfighters with capabilities to continuously collect intelligence, conduct surveillance, and perform reconnaissance for mission planning and execution, friendly force protection, and exploitation of enemy weaknesses. ***FY 2010 Accomplishments:*** Conducted a final demonstration using two VTOL platforms launched from a manned aircraft that autonomously performed an ISR mission with tasking inputs from human operators. Air Force Special Operations personnel are working to integrate additional sensors aboard the UAVs.	0.500	-	-
Title: Project SHIVA ***Description:*** This effort will provide comprehensive and actionable intelligence regarding the manufacturing and storage of ammonium nitrate. Details of this effort are classified. ***FY 2010 Accomplishments:***	0.400	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
This effort has provided maps, coordinates and other related information regarding Home Made Explosives (HME) production and storage facilities in the Central Command (CENTCOM) area of responsibility. Operational users have successfully prosecuted targets using SHIVA products.			
Title: Communications Capability Demonstration ***Description:*** This effort will develop and demonstrate adaptive algorithms that allow for the processing of data to be transmitted across a sparse receiver array to suppress a stronger interfering signal while maintaining gain on a weaker signal of interest. ***FY 2010 Accomplishments:*** Demonstrated the capability to maintain a wireless communication link in the presence of a nearby strong co-channel interference source using a sparse receiver array. This capability is needed to facilitate robust wireless communications in a heavily-occupied RF spectrum, effective communication in the presence of strong jamming with minimal rate reduction, and communication with reduced detection profile.	0.300	-	-
Title: Active Electromagnetic Interference (EMI) Cancellation Techniques ***Description:*** This project, in coordination with the Defense Threat Reduction Agency (DTRA), will develop ideas for active cancellation of radio frequency (RF) noise. This capability will enable friendly communications in an RF jamming environment. The project will leverage a “crowdsourcing” approach to identify potential solutions. ***FY 2010 Accomplishments:*** In excess of 200 points of contact expressed interest in providing a solution to the posted problem. Seventeen solution ideas were submitted and reviewed by subject matter experts. None of the submitted ideas were deemed worthy of further pursuit. The project validated that innovative thinkers do not have ready solutions to this challenging problem.	0.100	-	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Compact L-Band and W-Band Antennas ***Description:*** This project, will conduct in coordination with the Joint Non-lethal Weapons Directorate, a novel “crowdsourcing” approach to find advanced methods and technologies that reduce the size of Radio Frequency (RF) tactical antennas. ***FY 2011 Plans:*** Multiple novel ideas were received and reviewed by JNLWD technical experts. The project started in late FY 2010 and evaluation of the novel ideas continues in FY 2011. As many as three projects may be subsequently awarded from this effort.	-	0.021	-
Title: Cat Eyes	0.100	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: Cat Eyes is a dual use autonomous (ground and aircraft capable) low light surveillance camera system with automated target recognition software and embedded geo referencing and target mensuration. The system incorporates technology for improved sensitivity over previous low light camera systems. This project benefits the Warfighter by providing surveillance technology to support more widespread positive target identification leading to removal of more target threats and offenders. ***FY 2010 Accomplishments:*** Cat Eyes development effort and testing was successfully completed September 2010.			
Title: Title: Contingent upon congressional appropriation and/or congressional new start authorization: LAAD Integrated Picture ***Description:*** The Low Altitude Air Defense (LAAD) Section Leader Vehicle (SLV) and Fire Unit Vehicle (FUV) currently have the ability to display air tracks via Link 16 messages. There is a new requirement to display ground tracks in the SLV and FUV. This project will use the System Integration Environment (SIE) technology (a software solution) to overlay the air and ground tracks on the Joint Range Extension (JRE) application currently fielded in the SLVs and FUVs. If successful this project would eliminate the need to install the Binary File Transfer (BFTs) (a hardware solution) in the FUVs. ***FY 2011 Plans:*** This project is developing a prototyped Joint Range Extension gateway and client with an integrated air/ground picture which will be used for acquisition certification.	-	0.700	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: SCUDDS ***Description:*** This project is modeling, designing, constructing, and field deploying a Self-Contained, Underwater Dispersant Delivery System (SCUDDS) that will aid in masking a Sea, Air, Land (SEAL) Delivery Vehicle during nighttime littoral missions. The objective of this project is to provide a small eco-friendly organic system which will allow suppression of a bioluminescent signature and, therefore, visual detection at night. The operator will be provided an active stealth capability which currently does not exist. ***FY 2011 Plans:*** SCUDDS will conduct an operational demonstration in June 2011 and provide an operational testing report in September 2011.	-	0.500	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Iris on Android ***Description:*** This effort extends existing government owned technology for Iris Biometric Identification on Android mobile phones to produce a functional prototype system for field evaluation.	-	0.300	-

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
FY 2011 Plans: Objective is to deliver a prototype and demonstrate adaptation of Components of the Shelf (COTS) Android handsets for Iris identification. This project leverages commercial development for base imaging and processing platform, contributing to a flexible, multi-use device.			
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Threat Finance Stock Take ***Description:*** This project will conduct a government-wide stock-take of organizations involved in the collection of financial data and information that could prove important to U.S. national security. The project provides preliminary roadmaps for follow-on activities that could enable the national and homeland security communities to share, collaborate, and make use of disparate data sources, consistent with all applicable laws and regulations. The project will be executed in coordination with the Technical Support Working Group. ***FY 2011 Plans:*** Stock-take report, database, and proposed roadmaps will be delivered to the sponsor office.	-	0.250	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: UAV Outer Control ***Description:*** Description: This project will demonstrate the potential ease and effectiveness of outer control of small tactical UAVs. Student researchers will demonstrate outer control capabilities using COTS radio control systems and autopilots. Their ability to achieve control is documented with their approaches, equipment selection, and effectiveness. ***FY 2011 Plans:*** The effort will demonstrate the interoperability of small tactical UAVs when used by our warfighters and the potential for its use as technology surprise by our adversaries. Final report and findings will be produced.	-	0.250	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Aluminum Combustor ***Description:*** This project is developing a fuel feed system for an aluminum combustion power system. The project significantly improves the availability and economy of fuel to power a high energy power source for unmanned underwater vehicles (UUVs). ***FY 2011 Plans:*** This project will deliver a large bulk fuel feed system capable of supporting a greater than four hour combustor test at full power and greater than 20 hour combustor test at reduced power.	-	0.600	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Analysis and Targeting for Radicalization Intervention	-	0.300	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Description: This project will pilot the use of its suite of graph, text, and web analytics to identify promising locations, websites, groups and individuals where intervention to prevent or reduce radicalization is most needed and can be most effective. Primarily using open-source information from the web, the project will identify and map relevant social and information networks, determine their virulence and effectiveness, map current influence flows and effects, and identify opportunities and candidate means for positive change. ***FY 2011 Plans:*** The project will produce a final report to include a counter-radicalization analysis as well as conclusions and recommendations regarding the general utility of these analytics for counter-radicalization targeting and planning. The final report will also include a plan laying out a path forward for full development, test, and deployment of software tools implementing the analytical process.			
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Red Team Tool ***Description:*** This project provides a construct to assess the susceptibility of technical solutions (sensors, algorithms, or architectural) to defeat by parties not intimately familiar with the technologies. The project is developing a construct that current or future Intelligence, Surveillance, and Reconnaissance (ISR) systems and sub-systems can be gamed against in a distributed desk top/table top environment against traditional and nontraditional players ***FY 2010 Accomplishments:*** Utilized a classified methodology to produce a Concept of Operations (CONOPS) as one component of support to an Intelligence Community Project. ***FY 2011 Plans:*** The results of Red Team exercises will provide a roadmap on which the services and agencies concerned can base future investment decisions.	-	0.100	-
Title: Contingent upon congressional appropriation and/or congressional new start authorization: Analysis of High Frequency (HF) Communications in Southern Command Atlantic Operating Region (SOUTHCOM AOR) ***Description:*** This project seeks to identify HF voice and data targets in SOUTHCOM AOR, capture existing tactical/ national capabilities against the target set, recommend COTS-based gap-filling capabilities, and develop and operationally test prototype capability. ***FY 2011 Plans:***	-	0.625	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
The project will characterize the current, emerging, and projected HF environment in the SOUTHCOM AOR, recommend capabilities to inform investment decisions, provide a template for other theaters, and test a prototype in a representative environment.			
Title: Dismounted Standoff Explosive Hazard Detection, Marking and Neutralization ***Description:*** This project will integrate ground penetrating radar (GPR)/electromagnetic induction metal detection arrays on existing Explosive Ordnance Disposal (EOD) robots to counter buried Improvised Explosive Device (IED) threats. This will provide dismounted soldiers and marines the ability to detect buried IEDs that are in areas not accessible to vehicle mounted IED detection sensors. Currently the only means of detecting buried threats in off-road environments is with hand held detectors, meaning personnel are within a few feet and completely vulnerable in the event of an inadvertent detonation. Providing a standoff detection, marking, and neutralization capability provides a significantly reduced risk approach to finding buried IEDs in complex terrain, interrogating them for forensic evidence that will assist with preventing future emplacements, and finally neutralizing them so that they no longer pose a threat. ***FY 2010 Accomplishments:*** Project developed three variations of prototypes within FY 2010 that are combinations of the two types of available EOD robots and the two types of sensor arrays. A sweeping array and forward-looking senor array will be integrated with the larger Talon EOD robot whereas only the seeping array will be integrated on the smaller Packbot EOD robot. Both types of sensor arrays are required to be able to search the various types of terrain in which dismounts are expected to operate and IEDs are likely to be buried. The thee configurations will undergo Technical Demonstration followed by an Operational Demonstration in FY 2011. Upon successful Operational Demonstration, the prototypes will be deployed to theater for user evaluation and potential upgrade if needed during FY 2012.	10.800	-	-
Title: Intelligence, Surveillance, and Reconnaissance (ISR) (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO ISR new start projects include improved surveillance sensors, tools to facilitate analysis of large data sets, methods to harvest meaningful intelligence from open and classified sources and establishment of an ISR architecture to facilitate integration of new and existing systems. ***FY 2011 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and	-	9.632	11.543

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future ISR capabilities.			
Title: Interface of Military ops with Law Enforcement and Border Patrol (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO Interface of Military ops with Law Enforcement and Border Patrol new start projects include collaboration and exercises with law enforcement organizations to identify overlap and synergies between military and law enforcement operations, exploitation of law enforcement data for use in an irregular warfare environment, development of improved border protection capabilities, and expanding the capabilities of biometrics and forensics tools. ***FY 2011 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities of interest to multiple federal organizations.	-	9.633	11.543
Title: Autonomous Systems and Behaviors (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO Autonomous Systems and Behaviors projects include improvement to power systems to facilitate increased performance of unmanned systems, enhanced capabilities for multiple autonomous systems to cooperatively interact, development of sensors for integration aboard unmanned platforms, improvements to data ex-filtration from unmanned sensors and “red teaming” to counter emerging unmanned threats from potential adversaries. ***FY 2011 Plans:***	-	9.633	11.543

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of unmanned autonomous aerial, surface and subsurface systems. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. RRF will support development of unmanned autonomous aerial, surface and subsurface systems.			
Title: Countering Violent Extremism and Planning Support (FY 2011 and FY 2012 New Start Focal Area Plans) ***Description:*** Focal area for FY 2011 and FY 2012 RRTO Countering Violent Extremism and Planning Support projects include studies of violent groups, collection of best-practices from a variety of federal organizations, deterrence, social network analysis, effective communication techniques in tribal environments, science and tech capabilities in support of strategic communications, social analysis to support counter-insurgency efforts, and development of multi-disciplinary multi-agency approaches to complex operational challenges. ***FY 2011 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to counter the spread of violent extremism. ***FY 2012 Plans:*** RRF investment decisions are made during the execution years in response to combatant commander, service and other government organizations' requirements and as new threats emerge or new opportunities are presented. Research and coordination with organizations throughout DoD and other government agencies will help identify areas critical to developing future capabilities to counter the spread of violent extremism.	-	9.633	11.543
Accomplishments/Planned Programs Subtotals	49.938	48.667	48.486

	FY 2010	FY 2011
Congressional Add: Small Craft Threat Identification (SCTI) ***FY 2010 Accomplishments:*** This effort was a congressional add to RRF in FY2010. SCTI provided enhanced situational awareness through the novel adaptation and combination of several existing technologies. Technology Systems Inc's (TSI), Augmented Reality Visualization for the Common Operational Picture	1.200	-

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	FY 2010	FY 2011
(ARVCOP) capability provides an integrated Common Operational Picture that is built from a variety of sources including Charts, Mission Plans, video, infrared, radar, AIS, Link16 and others. This effort added a capability to ARVCOP to further enhance situational awareness by evaluating and correlating clues developed from these inputs. SCTI resulted in a capability enhancement that is suitable for installation in a wide range of craft including the Special Operations Craft – Riverine (SOC-R), Riverine Patrol Boat (RPB), Riverine Command Boat (RCB), and the emerging Combat Craft Medium (CCM). This effort has produced 5 units that are undergoing a military utility assessment.		
Congressional Adds Subtotals	1.200	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target milestone dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to the Rapid Reaction Fund (RRF) includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year. During FY 2010 the RRF achieved a transition rate of greater than 75% exceeding the objective of 30%.

In FY 2011 and FY 2012, RRF investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats/ new opportunities.

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P829: *Technology Transition Initiative (TTI)*	17.796	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY 2011, Technology Transition Initiative (TTI), resources are being transferred from Quick Reaction Special Projects to PE 0603942D8Z (Technology Transfer and Transition) as part of an effort to more effectively align interwoven program efforts that will benefit management communications, budget justification, fiscal tracking and improve overall program resource management of Technology Transfer and Transition efforts.

A. Mission Description and Budget Item Justification

The Quick Reaction Special Projects Program (Program Element 0603826D8Z) has three sub-elements: the Technology Transition Initiative (TTI), the Quick Reaction Fund (QRF) and the Rapid Reaction Fund (RRF). The fiscal controls above represent the investment of the QRSP Program funding for the TTI Program.

The Technology Transfer and Transition (TT&T) program (Program Element 0603942D8Z) has two sub-elements: the Technology Transfer program (P942), and the Technology Transition Initiative (P949). The fiscal controls above represent the investment of the TT&T Program funding for the TTI Program (P949). The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the Department of Defense (DoD) science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter.

Since the program inception in FY 2003, 78 projects have been initiated and 41 are complete. Of the 50 completed projects, 35 (70%) have successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD (AT&L)).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Electronic Image Intensifier for Pilotage (Army)	2.286	-	-
Description: This project will integrate Electronic Image Intensifier (EI2) technology into a lightweight sensor for the Apache Modernized-Pilot's Night Vision System (M-PNVS). Four form-fit, function and flight ready EI2 prototypes will be engineered, built, and delivered to PM Apache for aircraft qualification and users evaluation flights. The EI2 camera will provide performance that is equal to or greater than the current aviator's night vision goggles and at the same time allow for image fusion with the second generation Forward Looking Infrared (FLIR) on the Apache helicopter. Program Outputs and Efficiencies: meet pilotage requirements for dynamic motion, resolution, and contrast through improved readout electronics and high definition format (1920 x 1080); exit criteria to be met include Aviator's Night Vision Imaging System			

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(ANVIS) performance and $35 thousand per camera cost; four pre-production prototype cameras delivered for operational flight testing in FY 2011. TTI funding accelerates the transition of this capability by two to three years. ***FY 2010 Accomplishments:*** Completed detailed design and fabrication of four pre-production prototype cameras; conducted initial reliability and environmental testing; initiated component qualification testing.			
Title: Fuel Cell Powered Long Endurance Expendable Unmanned Aircraft System (Navy) ***Description:*** The Navy and Special Forces have counterterrorism technology requirements that include an over the horizon (OTH) intelligence, surveillance and reconnaissance (ISR) capability using small unmanned aerial systems (UASs). Battery powered UASs, although inherently stealthy and safer to operate in most environments, lack the necessary endurance required for SOF/ISR operations and because of power and weight issues, have low grade electro-optical (EO) cameras. Currently, there is no existing UAS that can meet the needs and requirements. This technology gap prevents current SOF war plans from being executed. This project will mitigate the problem by completing the development and demonstration of a small, expendable, long endurance, fuel cell powered UAS (the XFC) with a real time high resolution electro-optical/infrared (EO/IR) payload. ***FY 2010 Accomplishments:*** Procured all components for the final build-out of the project deliverables and full-up demonstration. TRL levels of sub-systems increased to near ready field demonstration and eventual transition to industry. Flew seven XFC vertical Electrically Assisted Take Off flights with wings unfolded; all were successful. Neared completion of final tests of subsystems leading to the folded wings vertical launch. Completed several Safety Milestones required by NAVSEA and NAVAIR. Integrated into the Generation III XFC the demonstration 500 watt fuel cell propulsion unit and did first test flight 11 June; flight was completely successful with both airplane and Generation III propulsion system functioning on the mark. Efforts will result in the delivery of two-four XFC UAS with a ground Station and an end- to-end test of autonomous flight with linkages to a Navy surfaced ship, submarine or a land based ground control system so as to demonstrate industry readiness by 1Q FY 2011. Planned transition to Navy production is scheduled to start in FY 2011.	2.187	-	-
Title: Medium Caliber Cartridge Improvements using Micro Electro-Mechanical Systems and Direct Write Explosive Ink ***Description:*** 40 millimeter (mm) high-explosive, dual-purpose (HEDP) M433 and M430 cartridges have been in service since the 1950s and 1970s respectively, and are used with the M203 low-velocity grenade launcher and the MK-19 grenade machine gun by all Services. Both cartridges use point detonating fuzes with mechanical safe and arm (S&A) devices which do not reliably detonate on soft impact targets or high graze angles. The objective of this effort is to improve the reliability of these cartridges through a Micro-Electro-Mechanical (MEMS) fuzing system that incorporates electronic initiation, improved target sensing using	3.660	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
paired MEMS impact sensors, self-destruct capability, command arm enable, more accurate arming distance, and automated explosive ink loading. In addition to improved reliability, these design enhancements will reduce volume and cost. Outputs and efficiencies: Incorporate impact sensors that will sense initial impact and electronically send a signal to initiate the explosive train for improved lethality and improved reliability on soft targets (from 50 percent current performance to 90 percent), and also significantly reduce the number of duds on the battlefield and training ranges. The 40mm MEMS Fuze will also require less volume which will allow room for improvements in lethality or other future alternate applications. TTI accelerates transition of this technology from Army Armament Research, Development and Engineering Center (ARDEC) to Project-Manager Soldier Weapons (PM-SW) by approximately three years. ***FY 2010 Accomplishments:*** Completed initial Army Fuze Safety Review Board briefing; Built 150 test units; Completed technology demonstration; Award DOTC contract for MEMS S&A prime contractor 4QFY2010.			
Title: Solid State Laser Ignition (Army) ***Description:*** The Solid State Laser Ignition System (SSLIS) replaces the primer feed mechanism (PFM) and primers used in the LW155 M777 family of towed howitzers. The current PFM ignition system is complex and high maintenance with known operational issues due to mechanical jamming of the PFM and premature firing due to primer sensitivity. This SSLIS increases system safety by eliminating the manufacture, storage, resupply and demilitarization of explosive primers and reduces system costs associated with the logistics and maintenance required with primers and primer feed mechanisms. Program Outputs and Efficiencies: (1) an integrated design for M777 application where major risk areas have been mitigated or managed; (2) hardware availability to verify the design in system tests; and (3) a comprehensive assessment of the technology to support a production decision and an operational evaluation of its readiness for field insertion. This SSLIS effort will yield a system prototype and will accelerate the availability of this technology for fielding by four years. ***FY 2010 Accomplishments:*** A system overview and live fire demonstration of the diode pumped laser ignition system (DPLIS) was provided to the User during the Master Gunners conference held at Yuma Proving Ground (YPG). DPLIS hardware was integrated on the LW155 M777 howitzer and live fire engineering testing was conducted. The post preliminary design review (P-PDRA) was conducted and approval to enter into the advanced system demonstrator (ASD) phase of the program was obtained. Over 2,000 rounds were fired on a single set of DPLIS hardware. Improvements to the prototype hardware design were incorporated and captured in the DPLIS Technical Data Package (TDP). Prototype hardware was fabricated in support of the advanced system demonstrator	0.725	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
(ASD) test and valuation and live fire manned demonstration in accordance with the LW155 DPLIS Program test schedule. Test Readiness Review (TRR) for ASD test and live fire manned demonstration was conducted. Technology Readiness Assessments were performed. During FY2011, the TDP will be updated and TTI efforts will be completed. Technology will transition to JPMO LW155 and the SSLIS TTI project will be closed out.			
Title: Precision Fires Image Software Suite Handheld Capability (Navy) ***Description:*** Currently Overseas Contingency Operations (OCO) missions are planned using traditional means and require dismounted operators, (conventional and Special Operations Forces (SOF)), who do not carry laptop computers. The mission set is currently supported by paper. The objective of this project is to integrate Battlespace Awareness (Mission Planning, Force Protection, Direct Action, etc.) capability on a Windows CE/mobile handheld computer by building upon already proven and deployed technology. The availability of these software tools on a handheld computer will immediately advance warfighter capabilities by enhancing situational awareness, precision targeting, and rapid employment at the tactical level. Program Outputs and Efficiencies: This project will generate and transition a software suite that provides image, video, and geographical capabilities on the Army's Pocket Sized Forward Entry Devices (PFED) and compatible Special Operations Forces Windows CE/mobile handheld computers. These forward operating Battlespace Awareness applications will be built around the previously transitioned and deployed Precision Fires Image (PFI), which is a National Geospatial-Intelligence Agency (NGA) validated, Central Comand (CENTCOM) approved, image based targeting tool for coordinate seeking weapons. Integration to the handheld computer will be advantageous in achieving advanced mission capability with less weight, space, and provide shorter operational readiness delays. The TTI funding will accelerate the acquisition and integration of this handheld software capability by two to three years. ***FY 2010 Accomplishments:*** (1) Developed, tested, delivered, and transitioned handheld software (Version 1.2.3) into SOF and US Army PFED programs; (2) Worked with NGA, CENTCOM, and SOCOM to provide product validation and required training packages to schoolhouses for operator certification; (3) Worked with NGA and the USAF to develop PFI reach-back capability on the Secret Internet Protocol Router Network (SIPRNet) where operators can download imagery for most Areas of Responsibility AOR) in theater; (4) Worked with trainers at Ft. Sill (US Army Schoolhouse) to certify the Mobile Training Team (MTT) on PFI software tools; (5) Integrated Joint hotographic Experts Group (JPEG), JPEG 2000, New Universal Image (NUI), and Common Object capability into an alpha release (Version 2.0), which is currently being tested by a few operators; (6) Trained and certified 56 conventional and 73 special forces personnel; (7) Produced an "unclassified" generic PFI reader, which provides source code to third parties requesting PFI	1.587	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
capability in tanks, aircraft, and other platforms; (8) Produced a version of PFI software for operators using Windows Personal Computers (PC) in order to establish a training venue with the same look and feel of the handheld computer.			
Title: Magneto-Rheological (MR) Fluid Suspension System for Stryker (Army) ***Description:*** The objective is direct replacement of the Stryker Family of Vehicles (FoV) passive suspension system with the Magneto-Rheological (MR) Fluid Semiactive Suspension System during the Stryker Modernization Program (S-MOD). The MR Suspension System significantly reduces shock and vibration levels, improves vehicle mobility and handling, and improves chassis stability, thereby improving crew responsiveness during target acquisition and engagement as well as improving firing accuracy for the Mobile Gun System (MGS). Program Outputs and Efficiencies: The MR Suspension technology is low risk and will provide outstanding vehicle performance, including cross-country speed improvements up to 72%, vehicle hull shock and vibration reductions up to 60%, a 30% improvement in vehicle handling stability, and greater than 50% improvement in firing accuracy. The MR suspension improvement in ride performance will also reduce operator fatigue, thereby increasing crew sustainment and operational effectiveness. The TTI effort will accelerate the integration activity to the Stryker fleet by 8-12 months. ***FY 2010 Accomplishments:*** TACOM LCMC Assessments, Test Plans, Reports, and Misc.: Procured contracts, solicitated cost estimates and test plans from government testing facilities and generated reports of each of the testing phases as well as purchased parts for testing and shipped the test vehicle. The design iterations were made based on the performance of the vehicle and the MR Suspension System during the previous endurance tests. PMO SBCT in partnership with General Dynamics - Land Systems (GDLS), the Original Equipment Manager (OEM), will be hosting a vehicle demonstration as a part of the S-MOD program technology open competition at Aberdeen Proving Grounds (APG) during October 2010 through November 2010. This demonstration will measure the performance of the MR suspension as well as the other competing suspension systems that will be used to determine which suspension system will be selected. This action will fund contractor support during the demonstration. This is the seminal event that will transition the technology to PMO SBCT.	1.200	-	-
Title: Polymer Light Emitting Diode (PLED) Identification of Friend or Foe (IFF) (USSOCOM) ***Description:*** United States Special Operations Command users currently lack adequate,mutually recognizable, and intuitive IFF systems that are accepted and interpreted across the Command. An improved IFF system is required to mitigate potential friendly fire incidents within Special Operations Force (SOF). The objective of this project is implementation of a next generation IFF system incorporating PLED technology and standard Light Emitting Diode (LED) technology for laser interrogated response visible only to Generation III Night Vision Goggles (NVGs). This Technology Transition Initiative (TTI) will accelerate the program	0.350	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
by 12-18 months. In addition to accelerating the availability of technology, TTI funding will enable acceleration in manufacturing and production of PLED and LED emitters. Program Outputs and Efficiencies: The Program will deliver significantly enhanced IFF capability; providing an IFF emitter visible to GEN III NVGs operating in the near-Infrared (IR) spectrum and initiated only by modulated military laser interrogators (AN/PEQ-5); The effort will focus on developing brighter PLED material with extended emission range, improving efficiency of the system through integration of flat-cell batteries, and development of a streamlined, flexible form-factor that meets user requirements. ***FY 2010 Accomplishments:*** Planned accomplishments for FY2010 included the development and delivery of Spiral 2 PLED IFF Tag prototypes (200 units) and a limited user assessment of the Spiral 2 prototypes. Additionally, a variant involving a LED configuration was developed and 200 prototypes were delivered and tested alongside the PLED variant. During FY2011, the effort will continue transition into the Program of Record at USSSOCOM PEO SOF Warrior and finalize requirement documentation necessary for full-scale acquisition.			
Title: Improved Tactical Air Launched Decoy - Jamming (ITALD-J) ***Description:*** This project will transition a compact payload for a new variant of ITALD using component designs developed under ONR Future Naval Capabilities program funding. Additional information is For Official Use Only (FOUO). Program Outputs and Efficiencies: This project integrates and transitions a new payload into the currently fielded ITALD. Four form-fit systems and firmware will be delivered. ***FY 2010 Accomplishments:*** Vehicle and avionics modifications were completed and repackaged together. System hardware and firmware completed required effectiveness testing. Prototype vehicle and payloads were to have completed environmental and captive carry flight testing and are being integrated into test facilities schedules. Four prototypes were to be delivered to the transition program of record.	0.900	-	-
Title: Hellfire Height of Burst (HOB) Sensor (Army) ***Description:*** The Hellfire Height of Burst Sensor is a miniaturized radio frequency (RF) target detection device that will be integrated into the new Electronic Safe and Arm Device (ESAD) being incorporated into the next generation Hellfire missile (Hellfire R). The HOB sensor provides for improved lethality against targets in the open by detonating the warhead at a height above ground optimized for these targets. This TTI project funds the final design and engineering of the HOB sensor optimized for	1.724	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Hellfire, provides component and system level environmental and hardware-in-the-loop testing, and allows two flight tests of HOB sensor equipped missiles. Program Outputs and Efficiencies: The HOB sensor will be integrated into the Hellfire missile and undergo hardware-in-the-loop (HWIL), environmental, and flight testing as part of the TTI effort. The final outcome will be two missile flights incorporating the HOB sensor. The first flight will replace the warhead with a telemetry package to record the missile flight data as well as the point at which the HOB sensor triggers the warhead. The second flight will incorporate both the HOB sensor and the Hellfire warhead. Lethality data will be collected to validate the modeled performance against targets in the open. Simulation has shown that the HOB sensor will significantly increase the lethality when fired from platforms that allow a steep angle of impact. TTI accelerates the transition of this capability by two years. ***FY 2010 Accomplishments:*** Performed design verification of a prototype HOB sensor through laboratory and dynamic testing and determined the electrical and mechanical integration methods for the HOB unit into the Hellfire R missile			
Title: Hellfire II Next Generation Captive Carry Health Monitor (NG-CCHM) (Army) ***Description:*** The Hellfire II NG-CCHM is a missile health monitoring device that measures and records operational and environmental stresses tailored to the most recent Hellfire II missile design, the AGM-114R model. The unit will be a self-powered, low-cost autonomous system capable of measuring and recording key health status parameters. The unit will be an electronic data acquisition device embedded into each missile and will be optimized for long life to automatically monitor temperature exposure, drop shock events and record vibration levels that can cause degradation to the missile over time. Program Outputs and Efficiencies: The primary outputs and efficiencies to be demonstrated in the project are: (1) reduced Operations and Maintenance (O&M) costs and maintenance burden to Warfighter; (2) increased reliability; (3) enhanced system safety; and (4) increased readiness. TTI accelerates the transition of this capability by two years. ***FY 2010 Accomplishments:*** FY 2010 Accomplished: Developed performance based specification, completed systems requirements analysis and defined system architecture, completed preliminary component selection, conducted preliminary design review and began detailed design.	1.594	-	-
Title: Accelerated Interlocking Mortar Increment Container Technology (Army) ***Description:*** The objective of this program is accelerate the transition of interlocking mortar increment container (MIC) design and fabrication technology to ensure uniform propellant ignition and reduce differential pressures which will eliminate a noted safety	0.450	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
critical mechanism and reduce the possibility of critical short rounds <80% of intended range) due to shearing of fin blades and asymmetrical burn. The interlocking MIC design eliminates the potential alignment of the open ends of the propelling charges and will greatly reduce the chances of more propellant being on one side of the mortar fin boom. This eliminates the imbalance of the energetics and associated potential problematic pressure differential within the mortar tube. The warfighter will have no chance of a sheared fin failure due to unexpected alignment of propelling charges which, in turn, will reduce the possibility of a critically short flight 120mm rounds in theater. Accelerating the maturation, transition, and insertion of this interlocking "high hat" mortar increment container technology into the 120mm mortar ammo program of record (POR) will improve safety and accuracy for our light and dismounted ground forces. It will also lay the foundation for potential subsequent application to 60mm and 81mm mortar ammo if warranted. Program Outputs and Efficiencies: Provides the warfighter with safer mortar ammunition; further prevents the possibility of unexpected short flight of 120mm mortar rounds in theater; improves soldier safety during training. TTI accelerates the deployment of this capability by 18 months. ***FY 2010 Accomplishments:*** FY2010 Accomplishments: Baselined the final design, fabricated, tested, and qualified Interlocking Mortar Increment Container			
Title: Integrated Information Management System (IIMS) Transition ***Description:*** The Integrated Information Management System (IIMS) is a collaborative situational awareness tool which aids in the management of conventional and Chemical, Biological, Radiological, and Nuclear (CBRN) events at fixed, expeditionary and incident response sites. IIMS includes detector/ warning networks, access to CBRN models, and information exchange with civil sector and coalition partner organizations. IIMS is in the base defense component of the AF Theater Battle Management Core System – Unit Level/Unit Command and Control (TBMCS-UL/UC2). It addresses both conventional and CBRN incidents. It is replacing the Survival Recovery Center (SRC). It improves decision making and battle management activities in the event of a conventional or CBRN incident. The objective of this effort is to transition IIMS into TBMCS-UL/UC2 Increment Two, and subsequently into the final TBMCS-UC2. The additional IIMS capabilities will augment the fielded TBMC-UL/UC2 to extend original capabilities, provide a stand-alone capability, and to incorporate joint CBRN tools. A successful transition of IIMS to TBMCS-UC2 through this spiral development process will significantly increase the base defense/response capabilities available to the warfighter. Program outputs and efficiencies: TTI funding accelerates the SRC replacement with planned upgrades to IIMS that more efficiently identify and respond to issues preventing the flying mission by 1-2 years. TTI funding accelerates upgrades to integrate	0.050	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
sensor/detector networks and improve communications with off-base agencies by 4+ years. The transition of IIMS into the TBMCS-UC2 N-tier Service Oriented Architecture enables transition of new capabilities into TBMCS-UC2 through the IIMS framework and the adjudication of any Priority I or Priority II software trouble reports at the time of transition. The software will adhere to general quality and reliability standards and include standard software product sets upon delivery (i.e. source code, executable code, documentation, test results). ***FY 2010 Accomplishments:*** Accomplished: Prepared for and conducted testing at the AF 46th TS for transition to TBMCS-UL/UC2 Increment Two.			
Title: Surfactant System for Surface Chemical, Biological (CB) Agent Removal ***Description:*** Mature a multi-purpose surfactant technology to accelerate its transition to the Decontamination Family of Systems (DFoS). There is an immediate and unmet requirement for a cargo aircraft decontaminant. The primary means to decontaminate aircraft is ineffective in decontaminating most Chemical and Biological (CB) hazards and material compatibility issues exist with currently fielded decontaminants and aircraft exteriors. Current decontaminants are single purpose items and carry a significant logistics burden. The surfactant technology will provide the Warfighter with a multi-use, advanced formulation for mitigating CB hazards to operational (threshold) or thorough (objective) levels. MIL-PRF-87937D testing will be conducted to qualify the surfactant system as an aerospace cleaning compound and enable it to be inserted on the Qualified Products List (QPL). The surfactant technology can be used as a routine cleaning compound as well as an aircraft-cleaning compound. TTI accelerates transition by more than two years. Outputs and efficiencies: a) Validate chemical efficacy (via contact and vapor testing) on priority painted materials; b) demonstrate biological efficacy; c) MIL-PRF-87937D qualified product (physical, chemical, toxicological properties, environmental impact). ***FY 2010 Accomplishments:*** Initiated chemical efficacy validation and started surfactant concept of operation (application methods) to maximize chemical and biological removal efficacy	0.400	-	-
Title: Contamination Indicator/Decontamination Assurance Spray ***Description:*** Mature a contamination indicator / decontamination assurance spray technology to accelerate the transition of a nerve agent indicator spray to the Decontamination Family of Systems (DFoS). The capability to visually detect the location of contamination on various surfaces will reduce time, manpower, vehicle throughput, water, and decontaminant requirements as well as exposure hazard to Warfighters performing Detailed Equipment Decontamination (DED). Once the decontamination	0.683	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
process is complete, the spray could be re-applied to ensure the process was successful and complete, enabling a dual-use. Compared to currently fielded chemical agent detectors, it displays resistance to environmental and chemical interference. The objective of this project is to fill the gap in availability of the active ingredient and engineer the spray to be able to be used with currently fielded applicators. Completion of scale up of nerve agent formulation; Completion of encapsulation work and demonstration of compatibility with selected fielded sprayers; validation of spray performance with live agents; Delivery of quantities of nerve agent disclosure spray formulation for government testing; Obtaining Environmental Protection Agency (EPA) Toxic Substances Control Act (TSCA) approval for disclosure system; Preparing and delivering Technology Transition Data package including Manufacturing readiness Assessment (MRA) report and Technology Readiness Assessment (TRA) report. Outputs and efficiencies: a) a method of manufacturing large quantities of the active ingredient (enzymes) to ensure their availability to supply large-scale sprayers; b) encapsulated specific ingredients within shear coatings allowed for reformulation of the spray to a single powder that can be sprayed using currently deployed equipment. c) completion of chemical agent sensitivity verification testing. TTI accelerates transition by more than three years. ***FY 2010 Accomplishments:*** Accomplished: Started scale up nerve agent formulation and initiated encapsulation of substrate powder in shear-sensitive polymers shells.			
Accomplishments/Planned Programs Subtotals	17.796	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the project plans identified above as well. In addition, program completion and success will be monitored against program schedule and deliverable stated in the proposals. The metrics include items such as target dates from project work break down schedules, production measures, production goals, production numbers and demonstration goals and dates. The title of this objective is "Speed technology transition focused on warfighting needs". The metrics for this objective and the objective of TTI is to transition 30% of completing demonstrations program per year.

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In FY 2010, the Technology Transition Initiative demonstrated a transition rate of 70% and exceeded the 30% goal identified

FY 2011 Goal: In FY 2011, Technology Transition Initiative (TTI), resources are being transferred from Quick Reaction Special Projects to PE 0603942D8Z (Technology Transfer and Transition).

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P830: *RDT&E Architecture and Integration*	-	-	10.625	-	10.625	11.527	11.192	11.424	11.814	Continuing	Continuing

A. Mission Description and Budget Item Justification

The National Counterterrorism/Counterinsurgency Integrated Test and Evaluation Center (NACCITEC) at Yuma Proving Grounds consists of three Joint Experimentation Range Complexes (JERCs) which to date have been leveraged primarily to support development of counter IED technologies. The JERCs, with additional investments, are capable of functioning as a venue for a much wider spectrum of evaluations designed to support the QDR mandated development of an institutionalized “Rapid Acquisition Capability”. The requested funding supports the development of a representative forward operating base infrastructure designed to assess force protection systems and to support future rapid prototyping and rapid fielding initiatives. This expanded focus into FOB defense technologies and to future threat and capabilities assessments will range beyond the implementation and execution window of the Joint Improvised Explosive Device Defeat Organization (JIEDDO) program. Potential focal areas include analysis of future homemade explosives (HME), future IEDs, counter IED capability development, characterization of future electro-magnetic environments and the integration of multiple sensors and weapons in a cohesive FOB defensive architecture. This initiative aligns under the Quadrennial Defense Review (QDR) focal area “Institutionalizing Rapid Acquisition Capability” and its third tenant “assessing alternatives and executing a solution (acquisition)”.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Experimentation Range Complex Expansion	-	-	10.625
Description: To support the expanded JERC capabilities, these resources support a modest level of testing infrastructure improvement, personnel and test equipment. These resources support the ability to create and test in a representative environment the counters to future commercial wireless capabilities (4G) and IED activations, forward operating based systems, characterization of future HME precursor materials and assessment of Intelligence, Surveillance, and Reconnaissance (ISR) systems in both stand alone operations and within an operational context. This enhancement will support the Director Defense Research & Engineering (DDR&E)/JIEDDO Science & Technology (S&T) investment and acquisition strategy. ***FY 2012 Plans:*** Supports expanded JERC capabilities to provide a modest level of testing infrastructure improvement, personnel and test equipment. These resources support the ability to create and test in a representative environment the counters to future commercial wireless capabilities (4G) and IED activations, forward operating based systems, characterization of future HME precursor materials and assessment of ISR systems in both stand alone operations and within an operational context. This enhancement will support the DDR&E/ JIEDDO Science & Technology (S&T) investment and acquisition strategy.			
Accomplishments/Planned Programs Subtotals	-	-	10.625

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C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and successes are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target dates, production measures, fielding dates, and demonstration goals and dates. Generic performance metrics applicable to the RDT&E Architecture and Integration initiative includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs" and the metrics for this objective is to transition 30% of completing demonstrations program per year.

In FY 2012, investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats/new opportunities as they relate to technologies emerging from non-traditional sources.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P831: *Joint Rapid Acquisition Cell Support*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P831: *Joint Rapid Acquisition Cell Support*	-	-	1.771	-	1.771	1.968	1.970	2.053	2.272	Continuing	Continuing

A. Mission Description and Budget Item Justification

This funding includes support for the Joint Rapid Acquisition Cell (JRAC) to enable management and tracking of COCOM identified and Joint Staff validated immediate warfighter needs. This project is be under the cognizance of the JRAC and is responsible to:

(1) Coordinate review of validated Joint Urgent Operational Needs (JUON) and assign responsibility to appropriate DoD Components for timely funding and resolution.

(2) Serve as the review and approval authority for the DoD Components' strategy to fund and mitigate the identified JUON capability gap.

(3) Continually assess actions taken by the DoD Components to resolve JUONs and recommend to the USD(AT&L) any changes determined appropriate to improve their responsiveness to JUONs.

(4) Provide periodic reports to the Secretary of Defense on new and outstanding JUONs

(5) In coordination with USD(C)/ CFO, manage the Rapid Acquisition Fund (RAF) to allocate resources to priority unfunded JUONs.

(6) In coordination with the Office of the Chairman of the Joint Chiefs of Staff and the USD(C)/ CFO, make programmatic, budget, and acquisition recommendations for JUONs and identified capability gaps to the Secretary of Defense.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Joint Rapid Acquisition Cell (JRAC) Management Support	-	-	1.771
Description: This funding is utilized to support the staff manning of the (JRAC to enable management and tracking of COCOM identified and Joint Staff validated immediate warfighter needs. This baseline is being initiated in FY 2012 to preclude ad hoc and unstable historical programmatic and financial support to the JRAC staff. ***FY 2012 Plans:*** Support for the Joint Rapid Acquisition Cell (JRAC) to enable management and tracking of COCOM initiated and Joint Staff validated immediate warfighter needs.			
Accomplishments/Planned Programs Subtotals	-	-	1.771

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

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

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	**PROJECT** P831: *Joint Rapid Acquisition Cell Support*

E. Performance Metrics

JRAC performance metrics are specific to each JUON and include measures identified in the management approach for each JUON. In addition, JUON completions and successes are monitored against schedules and deliverables stated in the JUON management approach. The metrics to which JRAC support correlates is to the number of full time personnel identified in the JRAC support contract with associated pay rates and shall not exceed the specified amounts/hourly rates and/or firm fixed price.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P832: *Software Producibility/Technology from Non-Traditional Sources (TNTS) Initiative*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
P832: *Software Producibility/ Technology from Non-Traditional Sources (TNTS) Initiative*	-	-	4.160	-	4.160	4.405	4.208	4.284	4.453	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Software Producibility/TNTS initiative includes support to find, evaluate, and test innovative technologies emerging from non-traditional sources. Private sector investment has created rapid advances in technology across a broad field of capabilities. Obtaining an early, accurate understanding of the technological advances that are emerging from small, innovative companies has been problematic for the Department of Defense (DoD) due to these types of companies either overlooking or even avoiding federal sales opportunities. Further, once such innovative technologies become commercially available they can be rapidly obtained by insurgents for terrorist actions. These program funds will be used to discover emerging technologies, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under DoD conditions. The facilitation of early interactions and meaningful information exchanges between the innovative companies and DoD users will accelerate the application of emerging technical solutions to DoD needs, reduce development costs, and avoid potentially disastrous technological surprises from insurgent use of such new technology. In addition, it is important to understand how developments in commercial technology might impact existing DoD programs and systems. Equally important, new commercial technologies may require new DoD policies on the use of the technology or a modification to existing DoD policy.

These funds were transferred from PE 0603781D8Z: Software Engineering Institute (SEI) starting in FY 2012.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Innovative technologies emerging from non-traditional sources	-	-	4.160
Description: These funds will be used to discover emerging technologies, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under DoD conditions. The facilitation of early interactions and meaningful information exchanges between the innovative companies and DoD users will accelerate the application of emerging technical solutions to DoD needs, reduce development costs, and avoid potentially disastrous technological surprises from insurgent use of such new technology. In addition, it is important to understand how developments in commercial technology might impact existing DoD programs and systems. Equally important, new commercial technologies may require new DoD policies on the use of the technology or a modification to existing DoD policy.			
FY 2010 Accomplishments: Reflected in PE 0603781D8Z: Software Engineering Institute (SEI)			
FY 2011 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Office of Secretary Of Defense		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603826D8Z: *Quick Reactions Special Projects (QRSP)*	PROJECT P832: *Software Producibility/Technology from Non-Traditional Sources (TNTS) Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Reflected in PE 0603781D8Z: Software Engineering Institute (SEI) ***FY 2012 Plans:*** Continue workshops and technology assessment efforts to discover emerging technologies, evaluate their potential to fit DoD needs, and where appropriate conduct critical tests of the components or software under operational conditions.			
Accomplishments/Planned Programs Subtotals	-	-	4.160

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA

E. Performance Metrics

Project performance metrics are specific to each effort and include measures identified in the specific project plans. In addition, project completions and success are monitored against schedules and deliverables stated in the proposals and statements of work. The metrics include items such as target milestone dates, production measures, fielding dates, and demonstration goals. Generic performance metrics applicable to innovative technologies emerging from non-traditional sources includes attainment of DoD Strategic Objective 4-3. The title of this objective is "Speed technology transition focused on warfighting needs."

In FY 2012, investment decisions will be made during the execution year, to rapidly respond to combatant commander requirement and new threats/new opportunities as they relate to technologies emerging from non-traditional sources.