ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE
6 - Management support	**0605326A - Concepts Experimentation Program**

	COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
	Total Program Element (PE) Cost	28873	33918	23445
308	Concepts Experimentation	8116	5740	
312	Army/Joint Experimentation	18916	10452	11759
317	CURRENT FORCE CAPABILITY GAPS		15839	9694
33B	SOLDIER-CENTERED ANALYSES FOR THE FUTURE FORCE	1841	1887	1992

A. Mission Description and Budget Item Justification: Funding for the Army Concept Development and Experimentation Campaign Plan mission enables integrated examinations with US Joint Forces Command (USJFCOM), Army Test and Evaluation Command (ATEC), Research, Development, and Experimentation Command (RDECOM), Army battle laboratories, operational units, research labs, materiel developers, industry and academia for the development, refinement, and assessment of future force concepts and concept capability plans to inform the Capability Integration Development System (CIDS) process and shape future requirements, enabling identification and acquisition of critical Doctrine, Organizational, Training, Materiel, Leader Development, Personnel and Facilities (DOTMLPF) capabilities for the future force in order to provide the land power capabilities needed by the Joint Force commander and establish the Army as a purposely interdependent and expeditionary component of the future Joint force. Enables the Air Assault Expeditionary Force Spirals, the Army's principle live discovery experiments to determine impacts on leaders from increased mental demands and complexities from enhanced situational awareness, requirements of sensor planning, employment and management of accelerated decision cycles in a network-enabled force, training requirements of new technologies (e.g. Unmanned Ground Vehicles, Unmanned Aerial Vehicles, and battle command systems and communications); Digital Warfighter Exercises addressing the required capabilities of future echelons above Brigade command posts; and Battle Command On The Move developments. Support Brigade experiments inform higher echelons of which intelligence, surveillance, and reconnaissance capabilities products are focused on synchronization, and support full spectrum operations. Functional Enabling experiments inform logistics, medical, civil support, as well as rapid transitions, and joint mobility. Subordinate Command experiments with airlift capabilities and operational capability over strategic distances.

The Asymmetric Warfare program provides a method for Army to keep the Current Force current/relevant as adversaries adapt and the operating environment changes. As capability gaps identified by deployed forces reveal shortfalls that impact effectiveness or interoperability, and these capability gaps are prioritized by Army, this program provides the ability for Army to evaluate high priority/high leverage solutions from industry during the current year, with highest priority going to candidates that cover multiple capability gaps. Funding provides the ability to identify and insert leading-edge technology from industry to deployed forces in an incremental manner by leveraging the best ideas of best-positioned Program Manager/Program Executive Officers and pulling, or spiraling, them forward for immediate use in the theater. Asymmetric Warfare program will ensure that a solution's proposed gain in capability is not offset by a disruption caused by integration problems. Program enables the holistic demonstration, assessment and deployment of critically needed capabilities to the current force in an integrated environment in the current year.

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B. Program Change Summary	FY 2008	FY 2009	FY 2010
Previous President's Budget (FY 2009)	29652	28271	22328
Current BES/President's Budget (FY 2010)	28873	33918	23445
Total Adjustments	-779	5647	1117
Congressional Program Reductions		-113	
Congressional Rescissions			
Congressional Increases		5760	
Reprogrammings			
SBIR/STTR Transfer	-779		
Adjustments to Budget Years			1477

Change Summary Explanation: Funding - FY 09: Congressional Add: $.800 million Gunfighter Detection Systems for Unmanned Aeriel Vehicles, $.960 million Arabic Language Training Program, $1.600 million Automated Communications Support System for Warfighters, Intelligence Community, Linguist, and Analyst, $1.200 million Moving Vehicle BAT Face Recognition Surveillance System, $1.200 million Technology for Rapid Foreign Language Acquisitions for Specialized Military and Intelligence Purposes. These Congressional Adds total $5.760 million.

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May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0605326A - Concepts Experimentation Program**	**308**

COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
308 Concepts Experimentation	8116	5740	

A. Mission Description and Budget Item Justification: A. Mission Description and Budget Item Justification:

UAV Gunfire Detection System: Radiance Technologies Inc. has developed a wide angle weapons detection sensor that can detect, classify and locate a variety of weapon fires including Rocket Propelled Grenades (RPGs), MANPADS, small arms, mortars, tanks and artillery. This Weapons Watch (WW) Technology can process these events in near real time (less than a second) and disseminate the information over existing command and control channels immediately. This sensor, detecting from a variety of airborne platforms can cue other sensors or weapon systems to positively identify and neutralize the hostile weapon system. The basic sensor technology has been demonstrated as part of the Overwatch ACTD and has also been deployed to support current operations. At less than 30 pounds, it has flown on both manned and unmanned aircraft proving its ability to accurately detect at extended ranges while on the move. The Army Aviation Center is ready to integrate this technology on both manned and unmanned aircraft to provide both enhanced targeting and aircrew survivability. In concert with AMRDEC- Huntsville), PM UAV (Huntsville) and the Directorate of Combat Developments (Ft. Rucker), Radiance Technologies will provide simulation software and WW hardware to the USAAVNC for testing and certification through the Aviation Technical Test Center (AATTC). Radiance will employ aviation experts from both the Wiregrass area and Huntsville to develop the techniques, tactics and procedures to fully employ the capabilities of this system.

Online Arabic Language Learning Community: (USAIC Tracking Number LTO 09-03/APC RKD9/Amount: 925K) This is a language tool that is interactive multimedia and mission focused. In this case the mission is to respond and report to an IED event. This is the third in a series of language learning modules developed under the TALON platform developed by Little Planet Learning. The first was titled "Find a Suspect" and the second "Conduct a Census." Learning module topics throughout this ongoing project have been selected through a process of identifying language learning requirements by Army MI HUMINT operators. Feedback from the field is that these mission focused learning modules are of great benefit for HUMINT linguists.

Automated Communication Support System for Warfighters: (USAIC Tracking Number LTO 09-05/APC RKC9/Amount: 1.542M) This is new functionality to be developed for an existing information extraction software that is applied to live or taped audio. Specifically the software will be enhanced to automatically identify correctly among over 100 languages. The enormous amount of audio that has been recorded is far greater than the ability of the trained human linguist pool to fully exploit. Language identification (and other information extraction tools) are extremely important triage tools in order to fully exploit the intelligence in these materials. This software suite is the information extraction software of choice for NSA and the CIA. This Language Identification capability requirement was articulated by several entities within the Intelligence Community to include NSA.

Face Recognition Survey (actually Surveillance)System: Moving Vehicle Facial Recognition (USAIC Tracking Number 09-04/APC RKB9/Amount: 1.157M) This proof of concept is a facial recognition using a moving vehicle mounted camera as the capture device. Current facial recognition technology is limited a full frontal capture of the face, and is thus limited to ideal conditions. This experiment extends 2D to 3D Normalization of a face captured at less than ideal angles and incorporates the capture by the camera from a moving vehicle. This is an extremely important capability to develop in order to exploit the "face in the crowd" concept of facial capture/recognition.

Technology for Rapid Foreign Language Acquisitions: (USAIC Tracking Number LTO 09-02/ APC RKA9/Amount: 1.157M). This proof of concept takes a new approach targeted to adults learning a second language. The MI Audience is MOS 35M who are interrogators who no longer institutionally learn a foreign language until their first reenlistment. The MI Corps has learned that rudimentary language skills in specific interviews topics is a must for these newly minted interrogators to function. The proposed language learning tool is designed to get an individual with a DLPT score of 0/0 to 1+/1+.

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
UAV Gunfire Detection System (Congressional Add)	1545	800	
Online Arabic Language Learning Community - Pilot (Congressional Add)	776	925	
Automated Communication Support System for Warfighters (Congressional add)	1545	1540	
Face Recognition Survey System (Congressional add)	2318	1157	
Tech for Rapid Foreign Language Acquisitions (Congressional Add)		1157	
Synchronization and Visualization Tool for Battle Command (Congressional Add)			
Fingerprint Capture Device (Congressional Add)	1932		
SBIR/STTR		161	
Total	8116	5740	

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0605326A - Concepts Experimentation Program**	**312**

COST (In Thousands)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
312	Army/Joint Experimentation	18916	10452	11759

A. Mission Description and Budget Item Justification: A. Mission Description and Budget Item Justification: The Army Experimentation mission enables integrated examinations with US Joint Forces Command (USJFCOM), Army Test and Evaluation Command (ATEC), Research, Development, and Experimentation Command (RDECOM), Army battle laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinement, and assessment of future force concepts. The intended outcome of this integrative effort is to develop concept capability plans that inform the Capabilities Integration Development System (CIDS) process and define future requirements, enabling identification and acquisition of critical Doctrine, Organization, Training, Materiel, Leader Development, Personnel and Facilities (DOTMLPF) capabilities for the future force to provide land power capabilities needed by Joint and Army commanders. In FY 2009, RDT&E funding specifically enables Subordinate Command Experiments, Support Brigade Experiments, and the World Class Blue Force (subject matter experts overseeing and coordinating experiments efforts from ARCIC proper in collaboration with the Schools and Centers). Program supports enhanced situational awareness, planning requirements, employment and management of accelerated decision cycles in a network-enabled force, and training requirements of new and emerging technologies.

(FY 2008 only) Asymmetric Warfare mission (previously referred to as Spiral Developments program) provides rapid capability development and the insertion of new warfighting capabilities into deployed Army units. Two significant problem sets exist in this area for the Army and TRADOC. First, there is a significant difference between the way Army forces are operating in the field and the way they were designed to operate. Secondly, there is a fast-growing backlog of capabilities that need to be assessed in terms of how well those capabilities are doing what they were intended to do. These two problem sets have never been more evident and critical than today, when the pace at which units and technology are evolving is being driven by the need to adapt to an enemy that not only employs asymmetric means, but also quickly adjusts to our own changes. This creates significant challenges for TRADOC - challenges of integrating key activities across DOTMLPF associated with accelerated capabilities development. Specific examples include integrating those activities that support the full spectrum of complex operations associated with asymmetric warfare in the areas of defeating improvised explosive devices (IED), Electronic Warfare (EW), Information Operations (IO) and Force Protection (FP).

Asymmetric Warfare funding has been transferred to from Project 312 to Project 317 in FY09 - FY13.

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
Experimentation - World Class Blue Force analysts	3300	3376	3162
Experimentation - Maneuver Brigade Experiments will address 1) integration of Heavy-Brigade Combat Teams (H-BCT)s with spin out capabilities; 2) integration of Interim Brigade Combat Team (IBCT) /Stryker Brigade Combat Team (SBCT) with Future Brigade Combat Team (FBCT) and H-BCTs with spin out capabilities; 3) development of future IBCT, SBCT and HBCT capability DOTMLPF requirements and DOTMLPF solutions and 4) acceleration and integration of capabilities for current force BCTs.			1003
Experimentation - Support Brigade Experiments addresses basic issues such as organization, how-to-fight, and how-to-Command and Control (C2) to refine and detail the concept as well as develop the required capabilities across the DOTMLPF imperatives. Addresses integration - both within Army organizations and across Joint interdependencies.			

Experimentation - Air Assault Expeditionary Force Experiment (AAEF)			
Experimentation - Functional Enabling Experiments designed to address Combat health, Airlift Capabilities and Supply Support for the Future Modular Force	437	423	
Experimentation - This mission replicates the Operational Environment to competitively challenge Blue concepts and strategies in each TRADOC experiment. Without the Red Cell effort, experiments and concept information would not be valid because the Operational Environment and threat representation would be untested against credible threats.		1400	1400
Experimentation - Subordinate Command Experiments designed to address Future Modular Force operational maneuver from strategic distances and intra-theater operational maneuver when capabilities are degraded or absent	812	1044	
Experimentation - Air/Ground Distribution			
Experimentation - Support Brigade Experiments designed to provide situational awareness and enables situation understanding to all echelons in all conditions conducting complex and urban terrain and multinational operations	795	3917	
Capstone Integration - Provides ramp up costs in support of the Army Concept Development and experimentation Campaign Plan (ACDEP) Phase I Capstone Experiment to include modeling and simulation enhancements; scenario environment modifications; hardware and software upgrades that require approximately 9-12 months of development. Experiment designed to conclude Phase I of the ACDEP with a major experiment demonstrating initial 2017 Future Force capabilities for the Joint Warfighter; these findings will provide the foundation to support transitioning compelling capabilities to the Current Force, including Current Force capability gaps and spinout of Future Combat Systems (FCS) capabilities to 2010 Modular-Brigade Combat Team (M-BCT).			6194
Asymmetric Warfare - Improvised Explosive Device Defeat (IED-D) Integrated Concept Development Team (ICDT)	6200		
Asymmetric Warfare - Sniper Defeat ICDT	4305		
Asymmetric Warfare - Electronic Warfare - Base Expeditionary Target and Surveillance System Combined (BETSS-C)	544		
Asymmetric Warfare - Information Operations	1500		
Asymmetric Warfare - Control, Communications, Computers and Intelligence, Surveillance and reconnaissance (C4ISR)	1023		
Small Business Innovative Research/Small Business Technology Transfer Programs		292	
Total	18916	10452	11759

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May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0605326A - Concepts Experimentation Program**	**317**

COST (In Thousands)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
317 CURRENT FORCE CAPABILITY GAPS		15839	9694

A. Mission Description and Budget Item Justification: Asymmetric Warfare - Asymmetric Warfare - Integrating events such as the Comprehensive Force Protection Initiative (CFPI) mandated by the Assistant Secretary of the Army will support Force Protection, Soldier Protection, and Network Information Assurance and provide enhanced warfighting capabilities. These enhanced capabilities improve warfighting effectiveness, improve the survivability, and reduce the vulnerability of the Army's current force. Demonstrations will assess near term technologies (next 6-18 months) that could potentially support the war effort by working to identify gaps and prescribe changes to protect soldiers and convoys from threats such as Improvised Explosive Devices (IED). These demonstrations also allow decision makers to view what off-the-shelf technology capabilities are available today, from a host of vendors that could be used in near to midterm operations for all overseas contingencies. Additionally, these integrating events will provide comprehensive plans (with alternative options) for solving capability shortfalls in the Army's current force and approaches for engagement with Army, and Joint communities as related to the development of selected new warfighting capabilities.

NOTE: This is not a new program. FY 08 funds for this project were in project 312.

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
Improvised Explosive Device (IED) Integrated Concept Development Team		5892	3653
Sniper Defeat Integrated Concept Development Team		3500	2012
Demo/Assess Electronic Warfare - Base Expeditionary Target and Surveillance System Combined (BETSS-C)		2003	1550
Demo/Assess Information Operations		1200	744
Demo/Assess Command and Control, Communications, Computers, Inetlligence, Surveillance and Reconnaisance (C4ISR)		2800	1735
Small Business Innovative Research/Small Business Technology Transfer Programs		444	
Total		15839	9694

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
6 - Management support	**0605326A - Concepts Experimentation Program**	**33B**

COST (In Thousands)		FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate
33B	SOLDIER-CENTERED ANALYSES FOR THE FUTURE FORCE	1841	1887	1992

A. Mission Description and Budget Item Justification: This project will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Army Transformation. Design analyses, constructive simulations and Soldier-in-the-loop assessments will ensure that manpower requirements, workload and skill demands are considered, avoid information and physical task overloads, and take optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force. The cited work is consistent with Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP). Work in this project is performed by the Army Research Laboratory (ARL).

Accomplishments/Planned Program:	FY 2008	FY 2009	FY 2010
Provide dedicated modeling and analysis cell for early and accurate Manpower and Personnel Integration (MANPRINT) estimates to Army Materiel Command (AMC), AMC Research, Development, and Engineering Command (RDECOM) and its Research, Development, and Engineering Centers (RDECs), TRADOC Centers, Schools and Battle Laboratories, Army Test and Evaluation Command (ATEC) and other service laboratories. In FY08, used quantitative analysis methods to quantify risks in MANPRINT assessment documents for highest-priority systems, based on user and developer community prioritization. In FY09, will apply cross domain MANPRINT risk (i.e. manpower, personnel, training, systems engineering, safety) tradeoff tools to the user, acquisition and test & evaluation (T&E) communities for more cost effective risk mitigation. In FY10, develop approaches to improve integration of Human System Integration (HSI) and T&E risks based on greater use of human performance modeling and simulation.	1121	1140	1228
Provide MANPRINT Manpower, Personnel and Training (MPT) force requirements determination support to TRADOC on selected systems. In FY08, provided analyses of Soldier MPT and Soldier-System performance. In FY09, develop approaches to providing MPT input to tailored and rapid acquisition. In FY10, will increase the efficiency of MPT analyses by increasing use of modeling.	720	743	764
Small Business Innovative Research/Small Business Technology Transfer Program		4	
Total	1841	1887	1992