

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2005

BUDGET ACTIVITY

6 - Management support

PE NUMBER AND TITLE

0605326A - Concepts Experimentation

COST (In Thousands)		FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
Total Program Element (PE) Cost		1985	2419	31653	32472	3826	38962	3929	36948
308	CONCEPTS EXPERIMENTATION	8287	9966	8951	9490	10263	10624	9582	7332
312	ARMY/JOINT EXPERIMENTATION	8514	11552	20101	20255	26907	27297	28567	28811
33B	SOLDIER-CENTERED ANALYSES FOR THE FUTURE FORCE	3049	2672	2601	2727	1036	1041	1060	805

A. Mission Description and Budget Item Justification: This program resources the Army Concept Development and Experimentation Campaign Plan (ACDEP), an adaptive approach along two simultaneous, parallel and supporting experimental paths, the concept development path and the prototype path. The first path develops a concepts-based, coherently joint Future Force over time using live, virtual and constructive experimentation to explore, test, and demonstrate concepts and capabilities. These focus on reducing risk to soldiers in the future through actionable recommendations informing Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) decisions. Prototype path experiments involve operational units, experimental units, and Combat Training Center Operational Forces to inform the future, spiral forward feasible operational needs, and test compelling technology. This program will be executed by TRADOC Futures Center.

This program resources the concept development through experimentation and exercises that are critical to the success of the Unit of Action (UA) Initial Operational Capability (IOC). The UA is the basis of the Future Force modular design and will improve strategic responsiveness of the joint Future Force for full spectrum operations. This is an analytically designed, integrated and synchronized program of small through large scale experimentation using multiple live, virtual and constructive venues to efficiently provide validation and quantifiable data supporting the development of required capabilities across the domains of doctrine, organization, training, materiel, leader development, personnel and facilities (DOTMLPF). The Army will use experimentation as the central focus to refine and mature warfighting concepts, and identify and validate critical decisions related to concept-based required DOTMLPF capabilities (consistent with the Joint Capability Integration and Development System). The Army Chief of Staff designated TRADOC as the executive agent and is the key decision-maker in experiment design and execution.

The resources in this program element supports experimentation functions to include: developmental experiments addressing specific study areas and issues directly supporting concept refinement and development of required capabilities based on Future Force concepts; integrating experiments to ensure the complex family of systems and concepts that comprise the Future Force are fully integrated across proponents, across DOTMLPF domains, and within service/joint contexts; capstone experiments at the end of major Army Transformation Concept Development and Experimentation Plan (AT-CDEP) phases to demonstrate future force capabilities for the joint warfighter; collaborative environments for simulation and experimentation; analysis; program management; Army participation in joint/sister service experimentation and incremental funding for sustaining battle lab experimentation.

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The Spiraling program provides a method for Army to keep the Current Force “current” or 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 PM/PEOs and pulling, or spiraling, them forward for immediate use in the theater. Spiraling 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.

<u>B. Program Change Summary</u>	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2005)	22727	16739	15997
Current Budget (FY 2006/2007 PB)	24190	31653	32472
Total Adjustments	1463	14914	16475
Net of Program/Database Changes			
Congressional Program Reductions			
Congressional Rescissions			
Congressional Increases	1463		
Reprogrammings			
SBIR/STTR Transfer			
Adjustments to Budget Years		14914	16475

Change Summary Explanation: Funding - Increases in FY 2006 & 2007 are in support of spiral development of solutions to fill immediate capability gaps in Operation Iraqi Freedom and Operation Enduring Freedom.

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PROJECT
308

COST (In Thousands)	FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
308 CONCEPTS EXPERIMENTATION	8287	9966	8951	9490	10263	10624	9582	7332

A. Mission Description and Budget Item Justification: This program supports the Future Force. Resources will provide for the development of the Live-Virtual-Constructive linkages and integration to the joint simulation infrastructure which supports the Secretary of Defense mandated use of human-in-the-loop war gaming with both constructive and live force elements in support of FY06-08 Army experimentation efforts (Phase I of the ACDEP) focused on enabling fielding of initial Future Force capability by 2010, establishing the Unit of Action and essential Unit of Employment capabilities. This will be accomplished through a number of focused developmental experiments enabling annual integrating experiments, culminating in an FY08 capstone experiment. Army experimentation will also support Joint Concept Development and Experimentation, including participation in the Standing Joint Force Headquarters (SJFHQ) prototype pathway.

<u>Accomplishments/Planned Program</u>	FY 2004	FY 2005	FY 2006	FY 2007
Unit of Action Battle Command Experiment	740	0	0	0
Networked & DCGS - A ISR Experiment	741	0	0	0
Joint Urban Operations Experiment	500	0	0	0
Networked Freedom of Maneuver Experiment	375	0	0	0
Technology Management and Collaboration Initiative (Congressional add)	5063	0	0	0
Networked Operations Tools and Functions Experiment	124	0	0	0
73rd Hour/Unit of Employment Computer Assisted Map Exercise	744	0	0	0
Omni Fusion Build I Experiment	0	4654	0	0
TRADOC Analysis Center analytical support to experimentation	0	2916	0	0
Technology Management for Collaborative Initiatives (Congressional add)	0	1438	0	0
Handwritten Optical Character Recognition Software (Congressional add)	0	958	0	0
Specific FY 06 and FY 07 requirements to be determined at the FY 06 and FY 07 Experimentation Planning Conferences scheduled for the summer preceding each fiscal year.	0	0	8951	9490
Totals	8287	9966	8951	9490

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BUDGET ACTIVITY 6 - Management support			PE NUMBER AND TITLE 0605326A - Concepts Experimentation				PROJECT 312			
COST (In Thousands)			FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate
312 ARMY/JOINT EXPERIMENTATION			8514	11552	20101	20255	26907	27297	28567	28811
<p>A. Mission Description and Budget Item Justification: This project supports experimentation to develop actionable recommendations in support of key decisions based on analytically rigorous underpinnings to yield the right set of integrated capabilities to enable the Future Force. The Army employs four categories of experiments: Developmental, Integrating, Capstone, and Exploratory. These reflect both different levels of anticipated and unanticipated results and differing levels of scope from single functional area/operational theme, to integrating across multiple functional areas and operational themes. All experiments are executed within a joint context and are conducted using approved scenarios and validated environmental, behavioral, and performance data. This project also supports costs to accomplish Army-unique objectives during Army participation in Joint and Service experiments.</p> <p>In accordance with the Army Concept Development and Experimentation Plan (ACDEP), FY 06-10 experimentation focuses on setting the conditions for achieving Future Force capability this decade. The initial focus is at the tactical level to rapidly develop the Future Combat System (FCS) equipped Unit of Action (UA) as described in the UA Operational and Organization Plan and FCS Family of Systems Operational Requirements Document (CCD). As the experimentation campaign progresses, the focus shifts to the operational and strategic levels to refine the operational Unit of Employment (UE) concept and a broad range of functional concepts affecting the way we execute doctrine, build organizations and conduct training and leader development such as Battle Command, Maneuver Support, Maneuver Sustainment, Fires and Effects, and Aviation. FY 11-15 experimentation will continue UA and FCS development but is focused on establishing the UE and its associated pooled capabilities. This phase also addresses joint integration across the entire force, to include future and current force capabilities.</p> <p>Spiraling was added to this project in the FY 06-11 POM. Spiraling provides a method for the Army to keep the Current Force “current” or 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. RDT&E funds are required to ensure that a solution’s proposed gain in capability is not offset by a disruption caused by integration problems. Program funding enables the holistic demonstration, assessment and deployment of critically needed capabilities to the current force in an integrated environment in the current year. 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 PM/PEOs and pulling, or spiraling, them forward.</p>										

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PROJECT
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<u>Accomplishments/Planned Program</u>	FY 2004	FY 2005	FY 2006	FY 2007
Unit of Action Battle Command Experiment	4954	0	0	0
Networked Fires Experiment	1067	0	0	0
Networked Operations Tools and Functions Experiment	1070	0	0	0
Networked Freedom of Maneuver Experiment	367	0	0	0
Army Airspace Command and Control Experiment	892	0	0	0
Army Concept Development and Experiment Plan Integrating Experiment	164	0	0	0
TRADOC Analysis Center analytical support	0	1034	0	0
World Class blue Force Players	0	3290	0	0
Maneuver Enhancement Unit of Action Experiment	0	307	0	0
Unit of Employment Network Operations Experiment	0	650	0	0
Battle Lab experimentation support	0	401	0	0
Nonlethal Concept and Scalable Effects Experiment	0	283	0	0
Unit of Employment Information Dominance Management Experiment	0	350	0	0
Objective Force Build 2 Events	0	3718	0	0
Unit of Employment Intelligence, Surveillance and Reconnaissance (ISR) Concept Design and Development	0	1217	0	0
Unit of Employment Sustainment/Sustainment Unit of Action Capabilities Experiments	0	151	0	0
Unit of Action Sustainment Experiment	0	151	0	0
Specific FY 06 and FY 07 requirements to be determined by the FY 06 and FY 07 Experimentation Planning Conferences scheduled for the summer preceding each fiscal year.	0	0	5101	5255
Spiraling - Demo/Assess soldier protection indirect fire threat	0	0	3800	0
Spiraling - Demo/Assess radar enhancements in support of Counter Rocket, Artillery and Missile (C-RAM)	0	0	4200	0
Spiraling - Demo/Assess command and control capabilities for Maneuver Control System (MCS) modifications	0	0	3600	0
Spiraling - Demo/Assess Forward Area Air Defense Command and Control (FAADC2) integration with Area Defense System	0	0	3400	0
Spiraling - Demo/Assess Joint Interoperability of emergent Soldier Protection capability	0	0	0	4200
Spiraling - Demo/Assess emergent remote operating weapons station capability	0	0	0	4000
Spiraling - Demo/Assess emergent explosives detection capability	0	0	0	3200
Spiraling - Demo/Assess emergent sensor integration solutions	0	0	0	3600
Totals	8514	11552	20101	20255

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BUDGET ACTIVITY 6 - Management support			PE NUMBER AND TITLE 0605326A - Concepts Experimentation				PROJECT 33B		
COST (In Thousands)			FY 2004 Actual	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate
33B	SOLDIER-CENTERED ANALYSES FOR THE FUTURE FORCE		3049	2672	2601	2727	1036	1041	1060
<p>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).</p>									
Accomplishments/Planned Program						FY 2004	FY 2005	FY 2006	FY 2007
Provide Human Factors Engineering and Manpower and Personnel Integration (MANPRINT) support to Training and Doctrine Command (TRADOC) Centers, Schools and Battle Laboratories. In FY04, performed and transitioned 27 MANPRINT Assessments (MA), 28 Human Factors Engineering Assessments (HFEA), 9 Manpower, Personnel, and Training (MPT) assessments, and reviewed 19 system training plans (STRAP). Prepared Human Factors Engineering Assessment for Future Combat System (FCS) for Milestone B Update and transitioned input for the Systems Evaluation Plan to the test and evaluation community. In FY05, improve and enhance fidelity of models to predict materiel readiness with direct application to support operation and maintenance manpower estimates for the force modernized equipped Unit of Action (UoA). In FY06, continue to conduct and improve MANPRINT assessment processes. In FY07, continue to influence future force requirements using soldier centered analysis of proposed concepts.						1723	1417	1379	1446

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<u>Accomplishments/Planned Program (continued)</u>			FY 2004	FY 2005	FY 2006	FY 2007
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 Centers (RDECs), TRADOC Centers, Schools and Battle Laboratories, Army Test and Evaluation Command (ATEC) and other service laboratories. In FY04, defined Unit of Action (UoA) system-of-systems analytical framework requirement for development of a network of integrated Improved Performance Research Integration Tool (IMPRINT) models to simulate a combined arms mission. Ensured soldier performance considerations in Future Combat System (FCS) analyses, modeling, simulation, and evaluating through the participation of various FCS integrated product teams (IPTs) and working groups. Completed crew size analysis on non-line-of-sight-cannon (NLOS-C) FCS platform and recommended an increase in crew size to three in the FCS operational requirements document. In FY05, identify soldier-focused modeling and analysis capabilities and map those capabilities to the Future Force needs of PEO Soldier. Conduct and transition soldier-system integration (form & fit) analysis to support UoA force and systems design decisions using library of individual soldier clothing and equipment. Identify and transition lessons learned from Operation Iraqi Freedom (OIF) Patriot fratricide incidents to influence ongoing Air and Missile Defense requirements and operations. In FY06, continue to improve and transition MANPRINT tools to the user, acquisition and Test & Evaluation communities. Recommend changes to air and missile defense training, personnel, and unit configuration practices and branch assignment policies. In FY07, verify soldier centered analysis impacts in force modernization systems and transition lessons learned to influence future requirement definitions.			1326	1255	1222	1281
Totals			3049	2672	2601	2727