ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2007

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
2 - Applied Research	**0602785A - Manpower/Personnel/Training Technology**	**790**

COST (In Thousands)	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
790 Personnel Performance & Training Technology	14171	16021	16208	16458	16572	16726	17083	17448

A. Mission Description and Budget Item Justification: The objective of this program element (PE) is to conduct the behavioral and social science applied research that will provide the non-materiel solutions to ensure that Soldiers can adapt and excel and improve the Army's capability to fully leverage advances in networks, systems, and technologies as they evolve. This research provides the scientific basis to recruit, select, assign, promote, educate, train, and retain Soldiers and leaders to comprise a ready and relevant Landpower. This research, where feasible, exploits opportunities to enhance Current Force capabilities. The human science applied research conducted in this program element provides knowledge-products, methods, techniques, and tools that will enable the Army to: select Soldiers who are predicted to perform well in future jobs; assign Soldiers to Military Occupational Specialties (MOS) and jobs that better match their skills and abilities; retain an effective career force through improved strategies and incentives to influence Soldiers to stay in the Army for longer periods of time; accelerate the development of leader critical thinking and interpersonal skills through virtual practice so that junior leaders are more adaptable and prepared for uncertain, rapidly changing missions; develop innovative training strategies for complex battle command skills in network-enabled environments; and design training tools for dismounted squad leadership and team maneuver with ground Soldier systems technologies. Additional research is focused on the training techniques and procedures that will make it easier for trainers and training developers to rapidly respond to changes in mission or operational requirements and provide a more synergistic training and education process (e.g., automated and improved diagnostics, coaching and mentoring, performance measures, and feedback methods). This program leverages efforts and coordinates research with a number of other Laboratories and Research, Development, and Engineering Centers including, the Simulation and Training Technology Center (STTC), Natick Soldier Center, Army Research Laboratory (ARL), and the Communications-Electronics Research, Development, and Engineering Center (CERDEC). 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). This project is managed by the US Army Research Institute for the Behavioral and Social Sciences (ARI); research in this PE is related to and fully coordinated with efforts funded in PE 0601102-74F and PE 0603007-792.

Accomplishments/Planned Program:	FY 2006	FY 2007	FY 2008	FY 2009
Personnel: FY06, developed framework that identifies factors likely to influence officer and enlisted Soldier decisions to stay in the Army, identified practices, policies, and conditions relevant to attrition; integrated findings from disparate research over 10 years to enable more complex, interactive examination of decision making; developed new assessment measures that identify knowledge, skills, and attributes (KSAs) required for effective performance in MOS using a sample of MOS, if effective these techniques enable the Army to better match Soldier KSAs with job requirements. FY07, design more precise interactive model of retention and, using model and multivariate analyses, identify strategies emphasizing non-financial incentives (e.g., more choice in assignments, specialized training opportunities, changing branch/MOS, etc.) that could potentially improve retention; collect data from operational Soldiers in selected MOS using KSA assessment measures and evaluate potential to predict preliminary performance data from supervisors; investigate KSA clusters to determine if clustering improves prediction of performance. FY08, will conduct experiments to assess effectiveness of potential incentive strategies by field testing with Soldiers in operational settings; based on findings from the field tests and extent the strategies actually relate to retention decisions, revise model and establish empirical strength of strategies to impact Soldier and Officer behavior; develop improved job performance measures as criteria for the KSA measures and clusters using subject matter experts and Soldiers in operational units within selected MOS. FY09, will further validate incentive strategies and develop guidelines to implement strategies and track	4393	4675	4938	4616

effects on retention; and collect job performance data and supervisor's performance assessments to empirically test KSA measures/clusters for strength in predicting actual job performance and longer-term Soldier success.				
Training: FY06, identified cognitive behaviors underlying expert performance for a set of battle command activities in network-enabled environments; determined training/learning models most applicable to training digital skills, and reviewed basic and applied research on best methods to train cognitive digital skills; developed plans for assessing new approaches to provide feedback in collective training; analyzed the impact of changes in robotic operator control unit design on training efficiency. FY07, develop exemplar training methods, and procedures for commanders and staffs performing battle command in networked-enabled environments; develop preliminary skill retention curves for establishing refresher training schedules to retain critical digital skills; in laboratory experiments, assess the impact of automated feedback alerts on the After Action Review (AAR) process; and identify the collaboration/communication requirements needed between dismounted Soldiers and robotic operators for effective employment of robotic platforms. FY08, will develop tools and techniques to support rapid training development for network-enabled battle command; will develop and validate procedures designed to enhance battle command and dismounted Soldier digital skills and improve skill retention; will develop methods and procedures to assess the value of a network-enabled alternative to the traditional AAR process; and will develop measures of performance for team collaboration in robotic employment for a sample of high priority robotic applications (e.g., battle damage assessment). FY09, will assess methods, techniques, and tools for training battle command that best support the Army Force Generation (ARFORGEN) process; and determine differences in AAR requirements across simulation domains.	3401	3850	3152	3763
Training: FY06, developed exemplar training support packages and guidelines for Future Force Warrior small unit leader cognitive skills training; provided lessons learned from virtual and augmented reality training approaches that were evaluated for their potential to improve future land warrior capabilities; conducted experiments on using augmented reality to train navigation skills and target location; and determined the aviation collective training tasks, techniques, and procedures that could best be supported by virtual and constructive simulation. FY07, conduct lab experiments of training effectiveness of massively multiplayer persistent simulations (MMPS); identify blended learning approaches and technologies (e.g., mixes of on-site learning, distance learning, web-based instruction, classroom instruction, etc.) that have potential application to Army training; and investigate the cognitive processes that mediate the performance of team and collective aviation tasks, and identify overt behavioral metrics for these processes. FY08, will conduct assessment of training effectiveness in multi-national coalition warfare experiment and develop alternative approaches to designing distributed AAR process; will develop alternative blended training approaches and techniques for selected Soldier skills for experimental comparison; and will develop preliminary models for alternative collective training systems incorporating various mixes of training aids, devices, simulators, and simulations (TADSS). FY09, will leverage basic and applied research on intelligent agents and integrate into MMPS environment to use for command post and tactical scenarios; begin experiments to assess the effectiveness of alternative blended training approaches for teaching selected Soldier skills, and improving retention of those skills; and will evaluate alternative models for effectively training collective aviation tasks in laboratory or simulated exercises.	3684	4005	5015	4782
Leader Development: FY06, developed tools to evaluate prototype online self-assessment/feedback module to increase self awareness and improve attention to learning materials; continued development of leadership growth/adult development model to inform research on accelerating the learning process, speeding maturation, and developing adaptive leaders; identified KSAs that leaders will need to perform in future network-centric joint and combined headquarters ops; and conducted and published comprehensive review of last 25 years of research on team performance including meta-analyses of relevant team performance data. FY07, develop protocols and metrics for assessing effectiveness of leader development vignettes in operational tests; design instruments for assessing leader skills and attributes needed for effective performance in high-stress, multi-team, networked systems; and develop prototype training modules for rapid team building. FY08, will collect and analyze data to assess the impact of leader skills and knowledge on performance in joint, interagency,	2693	3220	3103	3297

and multinational (JIM) environments; develop training tools to enhance leader effectiveness in multi-team systems; develop prototype training methods to enhance capability of leaders to take a multicultural perspective for mission success; and identify potential influence techniques leaders can use to be more effective in fighting Global War on Terrorism (GWOT). FY09, will test and evaluate methods and tools designed to improve leader performance in multi-team systems, provide influence techniques that are most effective in GWOT scenarios, and improve leader capability for rapid team building.				
Small Business Innovative Research/Small Business Technology Transfer Programs		271		
Total	14171	16021	16208	16458

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B. Program Change Summary	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007)	14990	16200	15834	15987
Current BES/President's Budget (FY 2008/2009)	48789	51278	51120	52118
Total Adjustments	33799	35078	35286	36131
Congressional Program Reductions		-61		
Congressional Rescissions				
Congressional Increases				
Reprogrammings	-819	-118		
SBIR/STTR Transfer				
Adjustments to Budget Years			374	471