Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Army											DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 6: *RDT&E Management Support*					R-1 ITEM NOMENCLATURE PE 0605604A: *Survivability/Lethality Analysis*							
COST ($ in Millions)	**All Prior Years**	**FY 2012**	**FY 2013#**	**FY 2014 Base**	**FY 2014 OCO ##**	**FY 2014 Total**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**Cost To Complete**	**Total Cost**
Total Program Element	-	42.088	44.753	43.280	-	43.280	41.736	41.350	41.616	42.004	Continuing	Continuing
675: *Army Survivability Analysis & Evaluation Support*	-	42.088	44.753	43.280	-	43.280	41.736	41.350	41.616	42.004	Continuing	Continuing

FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

This project funds analytical products necessary for inherently-governmental Army Test & Evaluation Command/Army Evaluation Center's (ATEC/AEC) mission. Products result from investigating, analyzing, assessing, and reporting on the survivability of Soldiers, and on the survivability, lethality and vulnerability (SLV) of the highest priority Army systems whether those systems are employed during stability, support, defensive, or offensive missions. Developed through measurement, experiment, test support, and modeling and simulation (M&S), the products funded by this project are used in many ways to make the Army force more survivable. The project provides quantitative lethality and survivability analyses and data for fielded and developmental systems as the Army makes the required choices to decisively transform into a modular Brigade Combat Team (BCT) based organization. Specific survivability analysis products include assessments of systems such as Warfighter Information Network Tactical (WIN-T), Mine Resistant Ambush Protected (MRAP), Stryker, Ground Combat Vehicle (GCV), Army fire support systems, direct fire munitions; Army air defense and missile defense systems; Army aviation systems including Unmanned Aerial Vehicles; network communications and other network enabled battle command systems communication systems; and selected joint services systems particularly relevant to the Army's joint and expeditionary role. Products also include analysis and data concerning individual Soldier items including protective equipment such as helmets and vests. These survivability products are leveraged into rapid-equipping initiatives and other technical support for operational forces involved in the current fight. Continued development of these products also guarantees preservation of the Army's vitally needed technical corporate memory for expert survivability advice.

Survivability analyses funded by this project are conducted across the spectrum of battlefield threats to include guns, missiles, mines and other methods of inflicting physical damage; jammers, countermeasures, and other electronic warfare techniques; information assurance and computer network operations; and directed energy weapons. This survivability information enables developers, users, and decision makers to perform credible survivability tradeoffs for both Soldiers and materiel. These technical survivability details enable properly informed decisions concerning systems and tactics that maximize both the combat power and survivability of Army forces. Survivability data and analysis results funded by this project are efficiently leveraged for many different Army uses, reducing total cost to the Army by eliminating the need for duplicative capabilities funded by individual system developers. Central funding of this mission assures the Army accurate and consistent treatment of survivability across all classes of systems, across all formal system Evaluations, and across the Army's AR 5-5 studies process. Work program is prioritized principally by the ATEC/AEC and is used by them in the Army's formal Evaluation process in such a way that ATEC can comply with its legally mandated responsibility to assess system survivability along with effectiveness and suitability. Program Managers (PM) and the Program Executive Officers (PEO) use the survivability analyses and data funded by this project to make design decisions that are optimized for survivability, to direct specific weapon system development efforts that are needed for survivability enhancement, and to structure product improvement programs. Soldier survivability data and analysis is leveraged to support the survivability portion of the HQDA G1 MANPRINT program. TRADOC combat developers exploit the survivability products funded by this project to initiate and improve

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Army	DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 6: *RDT&E Management Support*	**R-1 ITEM NOMENCLATURE** PE 0605604A: *Survivability/Lethality Analysis*

survivability/lethality requirements, and to develop and refine doctrine and tactics. Also, the quantitative analytical results funded by the project are leveraged as core inputs to formal AR 5-5 studies and other studies as directed by Army leaders. While the Army is at war, analytical results funded by this project are also directly leveraged for survivability support to current operations. Finally, for particularly urgent or controversial survivability issues, data and analysis funded by this project are used directly by senior Army decision makers to assure technically sound program/production decisions.

This project also supports highly technical specialized information assurance and computer network defense survivability analysis of Army battle command/networked systems as well as Army network architectures and technology. Supports ATEC and other electronic warfare vulnerability testers and evaluators by developing and providing highly technical specialized field countermeasure environments that threat forces may employ against Army communications networks, air defense and other systems. In conjunction wit

B. Program Change Summary ($ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	43.414	44.753	43.280	-	43.280
Current President's Budget	42.088	44.753	43.280	-	43.280
Total Adjustments	-1.326	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.326	-			

Exhibit R-2A, RDT&E Project Justification: PB 2014 Army			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 2040: *Research, Development, Test & Evaluation, Army* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605604A: *Survivability/Lethality Analysis*	PROJECT 675: *Army Survivability Analysis & Evaluation Support*	

COST ($ in Millions)	All Prior Years	FY 2012	FY 2013#	FY 2014 Base	FY 2014 OCO ##	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
675: *Army Survivability Analysis & Evaluation Support*	-	42.088	44.753	43.280	-	43.280	41.736	41.350	41.616	42.004	Continuing	Continuing
Quantity of RDT&E Articles												

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survivability/lethality requirements, and to develop and refine doctrine and tactics. Also, the quantitative analytical results funded by the project are leveraged as core inputs to formal AR 5-5 studies and other studies as directed by Army leaders. While the Army is at war, analytical results funded by this project are also directly leveraged for survivability support to current operations. Finally, for particularly urgent or controversial survivability issues, data and analysis funded by this project are used directly by senior Army decision makers to assure technically sound program/production decisions.

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Title: Survivability, Lethality, Vulnerability (SLV) Analyses for Ground, Aviation, Munitions, and Soldier Systems	19.250	20.768	20.542
Articles:	0	0	
Description: Conduct integrated survivability, lethality, vulnerability analyses for developmental aviation, ground, soldier and munition systems including Joint Cargo Aircraft (JCA), MRAP, Stryker, Ground Soldier System, Excalibur, and Intelligent Mine System (IMS). Completed ballistic survivability/vulnerability analysis for MRAP T&E, Guided Multiple Launch Rocket system (GMLRS) Unitary Initial Operational Test and Evaluation (IOT&E) and Excalibur Live Fire Test and Evaluation (LFT&E) System Engineering Test-P1 test events, which included providing pre-shot predictions, performing damage assessments after each live fire test, completing post-shot analyses, behind armor debris (BAD) test/analyses, and crew survivability analysis and providing technical data required by ATEC for the Systems Evaluation Reports. Additionally, results and recommendations from our crosswalk of MRAP LFT&E assessed casualty/selected Theater casualty incidents were briefed to MRAP PM & vendors, ATEC, HQDA and DOT&E resulting in vehicle design improvements for MRAP platforms.			
FY 2012 Accomplishments: Provided survivability, lethality and vulnerability assessments of competing prototypes to inform downselect decision for MS B. Provided findings and recommendations for survivability enhancements to appropriate Army stakeholders. Produced a set of tools/methodologies for predicting personnel incapacitation from lower leg and lower spine injuries caused by an under-body blast event, as well as generate experimental validation data for limited accreditation of these tools for test and evaluation.			
FY 2013 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Conducts survivability/vurnerability assessments of the RPG Protection and Underbody Blast Protection demonstrators provided by the GCV Technology Development contractors. Initiates the Paladin Improvement Management (PIM) vehicle Componennt Ballistic Tests. ***FY 2014 Plans:*** Will conduct vulnerability analysis for future helicopter systems, such as future vertical lift. Will conduct analysis for Kiowa CASUP MS C evaluations to include ballistic survivability assessment, MANPADs threat assessments, and EW, IA and chemical survivability assessments.			
Title: C4ISR System Survivability Assessments	15.100	15.805	15.067
Articles:	0	0	
Description: This effort produces assessments of the survivability of C4ISR systems in Electronic (EW) and Information Warfare (IW) threat environments and conducts Electronic Attack (EA) and Information Assurance (IA) projects that reveal critical vulnerabilities in C4ISR systems. It also defines, demonstrates, and recommends mitigation options to proponents and evaluators of C4ISR. An IW vulnerability database is maintained for the benefit of the community. ***FY 2012 Accomplishments:*** Provided EW and Information Assurance/Computer Network Operations (IA/CNO) modeling and analysis results to Army Evaluation Center (AEC) for their evaluation report. Provided verification and validation data in EW modeling and simulation to support AEC accreditation decision. ***FY 2013 Plans:*** EW and IA/CND modeling and analysis results provide to AEC for their evaluation reports. Continues conducting EW and IA modeling, testing and analysis of system evaluated in NIE events. Supports C4ISR systems survivability EW/IA modelint analysis and test verification and validation of performance, for example, multi-spectral signature measurements. Conducts C41SR system IO/EW/ES assessment. At the completion of the survivability assessment; if warranted, ARL/SLAD, Product Manager and Combat Developer in concert with the intelligence community should consider the initiation of a product improvement program (P31 strategy) to develop and field additional survivability enhanncement measures [Electronic Proteoct/CND] to address future threat capabilities which may place the Army C41SR system at risk to enemy targeting in the evolving EW threat environment during Army RESET. ***FY 2014 Plans:*** Will conduct modeling and simulation on WIN-T Inc 3 in support of AEC's survivability evaluation of JC4ISR radio's Milestone C decision scheduled for FY15. Will continue to conduct priority modeling, testing and analyses of MNVR, Rifleman and Handheld, Manpack and Small Form Fit (HMS) systems.			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Will conduct Electronic Protection (EP) and Information Assurance (IA), survivability analysis Investigations to help identify and mitigate capability gaps in areas such as: C4ISR, battlespace awareness, joint fires, intelligence fusion with secure data sharing and combat identification. Will work with AEC, product developer and TRADOC user communities to provide integrated SV solutions that are necessary to counter increasingly smart and sophisticated evolving EW and IW threats. Will provide analysis of systems and networks during System-of-Systems Network Vulnerability Assessments and Network Integration Evaluations.			
Title: Survivability, Lethality, Vulnerability (SLV) Analyses for Developmental Air and Missile Defense Systems	5.938	6.230	5.905
Articles:	0	0	
Description: Conduct integrated SLV analyses for developmental air and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems. These systems include the Ballistic Missile Defense System (BMDS), Terminal High Altitude Air Defense (THAAD), PATRIOT, Surface-Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM), Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), and Sentinel.			
FY 2012 Accomplishments: Provided survivability input to AEC for THAAD materiel release review board milestone assessment, provided IA/CNO and EW support to Patriot Advanced Capability-3 supporting contractor verification test and developmental test and evaluation (DTE), and provided ongoing EW support to JLENS DTE.			
FY 2013 Plans: Continues FMS AEA upgrade for Patriot. Prepares for PDB-8 testing. Provides electronic countermeasures ground support to JLENS Limited User Test (LUT) testing and provides JLENS computer network operations testing and assessment to ATEC.			
FY 2014 Plans: Will provide Patriot mobile flight simulator (FMS) with simulated adv. electronic attack countermeasure waveforms. Will leverage capability to support air and missile defense systems. Will conduct LFT&E testing and lethality assessment of PATRIOT MSE missile assessing new lethality enhancers. Will provide IA testing on multiple air and missile defense system, e.g. counter artillery rocket & mortar (C-RAM) and future efforts, e.g. integrated air& missile defense (IAMD).			
Title: System-of-systems survivability simulation (S4)	1.800	1.950	1.766
Articles:	0	0	
Description: Provide S4 to support SLV analyses.			
FY 2012 Accomplishments: Supported major program decisions (PEO Integration, ATEC, PEO System of system engineering (SoSE) with SoS analysis.			
FY 2013 Plans:			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Conducts system-of-systems analyses to support major program decisions in support of ATEC formal evaluations. ***FY 2014 Plans:*** Will support Army Test and Evaluation Command electronic warfare analysis of software radio. Will conduct decision making process development in the context of system of systems survivability analysis.			
Accomplishments/Planned Programs Subtotals	42.088	44.753	43.280

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.