Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Army

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

**R-1 ITEM NOMENCLATURE** 

2040: Research, Development, Test & Evaluation, Army

PE 0604780A: Combined Arms Tactical Trainer (CATT) Core

BA 5: Development & Demonstration (SDD)

COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	32.541	26.107	27.670	5.400	33.070	19.262	12.688	11.447	10.693	Continuing	Continuing
571: CLOSE CBT TACT TRAINER	1.164	4.833	4.668	5.400	10.068	4.636	4.625	4.612	4.601	Continuing	Continuing
577: Gaming Technology in Support of Army Training	0.000	0.945	0.937	0.000	0.937	0.934	0.938	0.938	0.895	Continuing	Continuing
582: SYNTHETIC ENVIR CORE	28.858	17.851	20.073	0.000	20.073	13.692	7.125	5.897	5.197	Continuing	Continuing
585: AVIATION COMBINED ARMS TACTICAL TRAINER	2.519	2.478	1.992	0.000	1.992	0.000	0.000	0.000	0.000	Continuing	Continuing

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

The Combined Arms Tactical Trainers (CATT) represents a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. CATT enables units, from crew to the battalion task force level, to conduct a wide variety of combat tasks on a realistic, interactive, synthetic battlefield. CATT's combination of manned simulators and staff officer workstations enables units to train as a combined arms team in a cost effective manner. The initial CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline architecture and After Action Review (AAR) for CATT expansions, Pre-Planned Product Improvements (P3I) and system enhancements. The Reconfigurable Vehicle Simulator (RVS) variants supports CCTT fixed sites to train combat convoy operations. Synthetic Environment (SE) Core provides for the expansion of the Synthetic Environment baseline to include enhanced interoperability and the products and infrastructure to support current and future combat operations and Mission Rehearsal required by the Contemporary Operating Environment (COE). The first synthetic environments to be expanded are the Aviation Combined Arms Tactical Trainer (AVCATT) and the CCTT for both the Active and Reserve components. Gaming Technology provides an application to train and rehearse convoy-operations, platoon level mounted infantry tactics, dismounted operations, Rules-of-Engagement training, cross-cultural communications training, IED defeat training, route clearance, ground-air coordination, UAV integration, and other small unit and individual training and mission rehearsal requirements. Platoon members can train in a common environment on geotypical or geospecific terrain. It is also possible to link Gaming technology to actual C4I systems and other CATT simulation systems to increase the utility and realism of the training. By practicing skills in CATT, units are able to make more effective use of scarce resources and costly live fire and maneuver exercises as well as train tasks deemed too hazardous to conduct in a live training environment. Fielded in both fixed site and mobile versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. By being able to use a wide array of training terrain databases and modify the behavior of the computer generated opposing forces, CATT offers an unlimited array of training options to support the Army's many regional contingency missions. The combination of tough field and live fire training, and realistic simulation training in CATT, is the catalyst to prepare Soldiers and their Leaders for the uncertainties they face in current combat operations in Iraq and Afghanistan, and larger Overseas Contingency Operations (OCO).FY11 Project 571 core funding for CCTT enables the development of additional vehicle variants for the Reconfigurable Vehicle Simulator (RVS) in support of Infantry Brigade Combat Teams and Stryker Brigade Combat Teams, the development of Dismounted Soldier Systems in support of Infantry Brigade Combat Teams, Stryker Brigade Combat Teams, Airborne,

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Army

#### APPROPRIATION/BUDGET ACTIVITY

**R-1 ITEM NOMENCLATURE** 

2040: Research, Development, Test & Evaluation, Army

PE 0604780A: Combined Arms Tactical Trainer (CATT) Core

BA 5: Development & Demonstration (SDD)

Ranger and Special Forces Units and Heavy Brigade Combat Teams. It will also address the obsolescence of components.FY11 Project 571 OCO funding for CCTT will enable development activities to increase the capability of the Dismounted Soldier (DS) system (an Individual Virtual Training system). This increased capability will provide Soldiers in the theater of operation with the ability to conduct combat mission rehearsal prior to conducting a mission. The requested funding will ensure the DS system will be able to handle the extreme environmental realities and provide the necessary day/night operation capabilities required for combat missions. Specific improvements will be the ability to use all of the day and night optics the Soldier would employ during their missions; increased Soldier ability to identify changes which occur in the combat environment, enabling faster reaction time; and provide more up-to-date, combat situations/scenarios.FY11 Project 577 core funding for Games for Training will integrate SE Core products and new commercial and government technology into the current gaming system. FY11 Project 582 core funding for SE Core will provide for common terrain databases to be generated by the Central Terrain Database Center (CTDC). The CTDC will continue development and refinement of the Standard Terrain Database Generation Capability (STDGC). FY11 funds will continue to enhance OneSAF in the SE Core Architecture, CCTT, AVCATT and other virtual simulators baselines. Maintaining OneSAF for virtual simulations enables interoperability with the Live, Virtual, Constructive Training Environment (LVC TE) and reduces cost as individual virtual simulators will no longer develop and maintain separate SAFs. The SE Core Product Line of Common Virtual Components will continue with upgrades, integration and refinement, and the continued development of common visual models. FY11 Project 585 core funding for AVCATT will develop refinements to the AVCATT system to include SE Core and Non-Rated Crew Member Manned Modu

## **B. Program Change Summary (\$ in Millions)**

	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011 Base</b>	<b>FY 2011 OCO</b>	FY 2011 Total
Previous President's Budget	30.566	26.243	28.299	0.000	28.299
Current President's Budget	32.541	26.107	27.670	5.400	33.070
Total Adjustments	1.975	-0.136	-0.629	5.400	4.771
<ul> <li>Congressional General Reductions</li> </ul>		-0.136			
<ul> <li>Congressional Directed Reductions</li> </ul>		0.000			
<ul> <li>Congressional Rescissions</li> </ul>	0.000	0.000			
<ul> <li>Congressional Adds</li> </ul>		0.000			
<ul> <li>Congressional Directed Transfers</li> </ul>		0.000			
<ul> <li>Reprogrammings</li> </ul>	2.812	0.000			
<ul> <li>SBIR/STTR Transfer</li> </ul>	-0.837	0.000			
<ul> <li>Adjustments to Budget Years</li> </ul>	0.000	0.000	-0.629	5.400	4.771

#### **Change Summary Explanation**

None required.

Exhibit R-2A, RDT&E Project Justif		<b>DATE:</b> February 2010									
APPROPRIATION/BUDGET ACTI 2040: Research, Development, Test & I				ATURE Arms Tactica	T E CBT TACT TRAINER						
BA 5: Development & Demonstration (SDD)					2	I			1	I	
COST (\$ in Millions)  FY 2009 Actual  FY 2010 Base Estimate				FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
571: CLOSE CBT TACT TRAINER	1.164	4.833	4.668	5.400	10.068	4.636	4.625	4.612	4.601	Continuing	Continuing
Ouantity of RDT&E Articles											

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

This program provides for Engineering and Manufacturing Development (EMD), Pre-Planned Product Improvements (P3I), and Reconfigurable Vehicle Simulator (RVS) variants for the Close Combat Tactical Trainer (CCTT), which will enhance readiness for both Active and Reserve component forces to support the execution of current and future combat operations including Overseas Contingency Operations (OCO). The program develops a networked system of interactive computer driven simulators, emulators, and semi-automated forces that replicate combat vehicles and weapon systems, combat support systems, combat service support systems, and command and control systems to create a fully integrated, real-time collective task training environment. This trainer will allow Soldiers to practice Tactics, Techniques and Procedures (TTP) that, if performed on real equipment, would be too hazardous, time-consuming and expensive. These trainers enhance realism and allow Soldiers and Units to learn tactical combat lessons on maneuver, command and control, convoy operations, and improved teamwork for increased survivability. The P3I enhances CCTT's capabilities as a tactical trainer and maintains concurrency with fielded tactical equipment and force structure. These improvements will provide interoperability with the Aviation Combined Arms Tactical Trainer (AVCATT), Army Battle Command System (ABCS), including Force XXI Battle Command Brigade and Below (FBCB2), and other simulation systems needed to execute training for current and future combat operations. FY11 core funding of \$4.668 million for CCTT enables the development of additional vehicle variants for the Reconfigurable Vehicle Simulator (RVS) in support of Infantry Brigade Combat Teams and Stryker Brigade Combat Teams, the development of Dismounted Soldier Systems in support of Infantry Brigade Combat Teams, Stryker Brigade Combat Teams, Airborne, Ranger and Special Forces Units and Heavy Brigade Combat Teams. It will also address the obsolescence of components. FY11 OCO funding of \$5.400 million will enable development activities to increase the capability of the Dismounted Soldier (DS) system (an Individual Virtual Training system). This increased capability will provide Soldiers in the theater of operation with the ability to conduct combat mission rehearsal prior to conducting a mission. The requested funding will ensure the DS system will be able to handle the extreme environmental realities and provide the necessary day/night operation capabilities required for combat missions. Specific improvements will be the ability to use all of the day and night optics the Soldier would employ during their missions; increased Soldier ability to identify changes which occur in the combat environment, enabling faster reaction time; and provide more up-to-date, combat situations/scenarios.

#### B. Accomplishments/Planned Program (\$ in Millions)

Program #1 0.149 0.228 0.236 0.000 0.236	 	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
	Program #1		0.228			

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army	<b>DATE:</b> February 2010						
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT					
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	571: CLOSE CBT TACT TRAINER					
BA 5: Development & Demonstration (SDD)	(CATT) Core						
B. Accomplishments/Planned Program (\$ in Millions)							
			FY 2011	FY 2011	FY 2011		
	FY 2009	FY 2010	Base	осо	Total		
FY09-FY11: Supports government program management, engineering, continues operational evaluation support.	technical, and contracting support, and						
FY 2009 Accomplishments:							
FY 2009							
FY 2010 Plans:							
FY 2010 I tans. FY 2010							
FY 2011 Base Plans:							
FY 2011 Base							
FY 2011 OCO Plans:							
FY 2011 OCO							
Program #2	1.015	1.600	2.888	0.000	2.888		
FY09-FY11: Development of the Up-Armored HMMWV variant of the	e Reconfigurable Vehicle Simulator.						
FY 2009 Accomplishments:							
FY 2009							
FY 2010 Plans:							
FY 2010 Titals. FY 2010							
FY 2011 Base Plans:							
FY 2011 Base							
FY 2011 OCO Plans:							
FY 2011 OCO							

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army	xhibit R-2A, RDT&E Project Justification: PB 2011 Army							
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tactical (CATT) Core	! Trainer	PROJECT 571: CLOSE CBT TACT TRAINER					
B. Accomplishments/Planned Program (\$ in Millions)								
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total		
Program #3		0.000	2.870	1.544	0.000	1.544		
FY10-FY11: Development of the CCTT Dismounted Soldier System.								
FY 2009 Accomplishments: FY 2009								
FY 2010 Plans: FY 2010								
FY 2011 Base Plans: FY 2011 Base								
FY 2011 OCO Plans: FY 2011 OCO								
Program #4		0.000	0.000	0.000	5.400	5.400		
FY11 OCO: Development of the CCTT Dismounted Soldier System								
FY 2009 Accomplishments: FY 2009								
FY 2010 Plans: FY 2010								
FY 2011 Base Plans: FY 2011 Base								
FY 2011 OCO Plans: FY 2011 OCO								

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army		<b>DATE:</b> February 2010	
APPROPRIATION/BUDGET ACTIVITY	PROJECT		
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	571: <i>CLOSE</i>	C CBT TACT TRAINER
BA 5: Development & Demonstration (SDD)	(CATT) Core		

### **B.** Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program #5	0.000	0.135	0.000	0.000	0.000
FY10: Small Business Innovative Research/Small Business Technology Transfer Programs					
FY 2009 Accomplishments: FY 2009					
FY 2010 Plans: FY 2010					
FY 2011 Base Plans: FY 2011 Base					
FY 2011 OCO Plans: FY 2011 OCO					
Accomplishments/Planned Programs Subtotals	1.164	4.833	4.668	5.400	10.068

# C. Other Program Funding Summary (\$ in Millions)

			<b>FY 2011</b>	<b>FY 2011</b>	<b>FY 2011</b>					Cost To	
<u>Line Item</u>	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base</b>	<u>oco</u>	<u>Total</u>	FY 2012	<b>FY 2013</b>	<b>FY 2014</b>	FY 2015	<b>Complete</b>	<b>Total Cost</b>
• Ord. #1: OPA3, Appropriation	56.890	64.949	64.912	8.200	73.112	74.925	75.082	75.157	74.782	Continuing	Continuing
NA0170 SIMNET/CCTT											

### **D.** Acquisition Strategy

FY2011 will continue development of RVS vehicle variants, Dismounted Soldier System and address obsolescence issues through Small Business 8A Set Asides and competitive awards.

### **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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

2040: Research, Development, Test & Evaluation, Army

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0604780A: Combined Arms Tactical Trainer

(CATT) Core

PROJECT

571: CLOSE CBT TACT TRAINER

## **Product Development (\$ in Millions)**

				FY	2010	FY 2011 FY 2011 Base OCO		FY 2011 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development of Dismounted Soldier System Component	C/CPFF	TBS Location could not be determined.	1.424	2.870		1.544		5.400		6.944	Continuing	Continuing	2.950
Development of the Up- Armored HMMWV Vehicle Variant for RVS	C/CPFF	Lockheed Martin Corporation Orlando, FL	0.000	1.600		2.888		0.000		2.888	Continuing	Continuing	1.458
		Subtotal	1.424	4.470		4.432		5.400		9.832			4.408

#### **Remarks**

## **Management Services (\$ in Millions)**

_													
				FY 2010 FY 201 Base		-			FY 2011 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Office Support	C/Various	PEO STRI Orlando, FL	16.286	0.228		0.236		0.000		0.236	Continuing	Continuing	17.583
SBIR/STTR	С	Nothing entered for Activity and Location. Location could not be determined.	0.000	0.135		0.000		0.000		0.000	Continuing	Continuing	0
	•	Subtotal	16.286	0.363		0.236		0.000		0.236			17.583

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army	<b>DATE:</b> February 2010		
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	571: <i>CLOSE</i>	CBT TACT TRAINER
BA 5: Development & Demonstration (SDD)	(CATT) Core		

	Total Prior Years Cost	FY 2	2010	FY 2 Ba	FY 2011 OCO	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	17.710	4.833		4.668	5.400	10.068			21.991

Exhibit R-2A, RDT&E Project Justif	ication: PB 2	011 Army							<b>DATE:</b> February 2010			
APPROPRIATION/BUDGET ACTI 2040: Research, Development, Test & I BA 5: Development & Demonstration (		R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tactical Trainer (CATT) Core  PROJECT 577: Gaming Training					g Technology in Support of Army					
COST (\$ in Millions)	FY 201				FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 FY 2015 Cost To			Total Cost	
577: Gaming Technology in Support of Army Training	0.000	0.945	0.937	0.000	0.937	0.934	0.938	0.938	0.895	Continuing	Continuing	
Quantity of RDT&E Articles												

### A. Mission Description and Budget Item Justification

The Games for Training Program will provide a commercial-off-the-shelf (COTS) product line of personal computer based gaming applications to train Soldiers in decision-making, team and individual tasks at different skill levels, using multiple mission scenarios. The program will leverage the commercial game industry to provide state of the art training solutions. The program will provide Army-wide licenses from the commercial market or from Research and Development agencies and the hardware required to operate the systems. The individual products will permit Soldiers and units to conduct training in a real-time, semi-immersive environment that will leverage Synthetic Environment Core capabilities. FY11 core funding of .937 million will integrate SE Core products and new commercial and government technology into the current gaming systems.

### **B.** Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program #1	0.000	0.790	0.788	0.000	0.788
FY10-FY11: Funding will provide modifications to the system to integrate and provide interoperability with battle command systems and other simulators and simulations in support of home station training and Overseas Contingency Operations (OCO).  FY 2009 Accomplishments:					
FY 2009					
FY 2010 Plans: FY 2010					
FY 2011 Base Plans: FY 2011 Base					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army				DATE: Febr	uary 2010			
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tactic (CATT) Core	cal Trainer	PROJECT 577: Gaming Training	7: Gaming Technology in Support of Army				
B. Accomplishments/Planned Program (\$ in Millions)	'							
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total		
FY 2011 OCO Plans: FY 2011 OCO								
Program #2		0.000	0.133	0.149	0.000	0.149		
FY10-FY11: Funding will provide Government program manage support for Gaming.	ement, engineering, technical contract and test							
FY 2009 Accomplishments: FY 2009								
FY 2010 Plans: FY 2010								
FY 2011 Base Plans: FY 2011 Base								
FY 2011 OCO Plans: FY 2011 OCO								
Program #3		0.000	0.022	0.000	0.000	0.000		
FY10: Small Business Innovative Reserach (SBIR)/Small Busine	ess Technology Transfer Programs (STTR)							
FY 2009 Accomplishments: FY 2009								
FY 2010 Plans: FY 2010								

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army		<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	577: Gaming Technology in Support of Army
BA 5: Development & Demonstration (SDD)	(CATT) Core	Training

### **B.** Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY 2011 Base					
FY 2011 OCO Plans: FY 2011 OCO					
Accomplishments/Planned Programs Subtotals	0.000	0.945	0.937	0.000	0.937

## C. Other Program Funding Summary (\$ in Millions)

			<b>FY 2011</b>	<b>FY 2011</b>	<b>FY 2011</b>					Cost To	
<u>Line Item</u>	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base</b>	<u>OCO</u>	<b>Total</b>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>Complete</b>	Total Cost
• Ord. #1: OPA 3, Appropriation	0.000	7.845	4.964	0.000	4.964	2.906	4.629	5.096	2.394	Continuing	Continuing
NA0176 Camina Technology in											

NA0176 Gaming Technology in Support of Training

## **D.** Acquisition Strategy

Competitive contract against approved Capabilities Production Document (CPD), 29 Oct 08.

### **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.

DATE: February 2010

Exhibit K-2A, KD I &E I Toject Just	OPRIATION/BUDGET ACTIVITY Research, Development, Test & Evaluation, Army Development & Demonstration (SDD)								DATE. I COI	uary 2010	
2040: Research, Development, Test &			NOMENCLA A: Combined e	_	ıl Trainer	PROJECT 582: SYNTHETIC ENVIR CORE					
COST (\$ in Millions)	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost		
582: SYNTHETIC ENVIR CORE	28.858	17.851	20.073	0.000	20.073	13.692	7.125	5.897	5.197	Continuing	Continuing
Quantity of RDT&E Articles											

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

Exhibit R-2A RDT&E Project Justification: PR 2011 Army

This project supports the Synthetic Environment Core (SE Core) Program. SE Core is a key U.S. Army initiative specifically designed to enhance the training capability we provide our Warfighters. SE Core's mission is to ensure the Army's virtual training systems and simulators are fully integrated and interoperable. The result will be a "Fair Fight" capability; no simulator will have an inherent advantage over another, allowing for air and ground coordination and integrated training missions that accurately replicate combat operations being experienced in the Contemporary Operational Environment (COE). SE Core provides the capability that is sufficient for current and future combat operations, Mission Rehearsal, and COE training. SE Core will reduce redundancy and increase realism. SE Core is building the Army's Common Virtual Environment (CVE) that provides the linkage between simulators and the common environment for interoperability. Additionally, SE Core will link to the Integrated Training Environment (ITE) for an integrated capability to support ARFORGEN and the Combined Arms Training Strategy. SE Core is a key element in the Army's Training Transformation Plan linking the embedded systems, multi-mode Live, Virtual, Constructive (LVC) training capability with current systems. SE Core will enable the Army to execute combined arms and joint training, mission planning and rehearsals at home station and deployed locations critical to training for COE operations. SE Core consists of a series of interoperable software components that will be integrated into the Army's CVE and will facilitate interoperability in a LVC Training Environment (TE). The components are One Semi-Automated Forces (OneSAF) integration; a Standard Terrain Database Generation Capability (STDGC); a Master Terrain Database; an extensive Library of Common Visual Models in open format; Dynamic Terrain; Atmospheric Effects; Chemical, Biological, Radiological, Nuclear and High Explosive (CBRNE) effects; common After Action Review (AAR); a Long Haul Networking capability; Command, Control, Communications, Computers, Intelligence Surveillance and Reconnaissance (C4ISR) interfaces; Training Support Packages and Exercise Management Tools. The STDGC uses automated tools, processes and standard source data to create a Master Database (MDB). The MDB provides open format data that can be translated into correlated runtime terrain databases to support the LVC TE and for mission planning/rehearsal/execution in support of Overseas Contingency Operations (OCO). SE Core's Common Virtual Components (CVCs) reduce redundancy, increase realism and facilitate an integrated LVC TE.FY11 core funding of \$20.073 million for SE Core will provide for common terrain databases to be generated by the Central Terrain Database Center (CTDC). The CTDC will continue development and refinement of the STDGC. FY2011 funds will continue to enhance OneSAF in the SE Core Architecture, CCTT, AVCATT and other virtual simulators baselines. Maintaining OneSAF for virtual simulations enables interoperability with the LVC TE and reduces cost as individual virtual simulators will no longer develop and maintain separate SAFs. The SE Core Product Line of Common Virtual Components will continue with upgrades, integration and refinement, and the continued development of common visual models.

#### B. Accomplishments/Planned Program (\$ in Millions)

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army				DATE: Febr	uary 2010		
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tactica (CATT) Core	l Trainer	PROJECT 582: SYNTHETIC ENVIR CORE				
B. Accomplishments/Planned Program (\$ in Millions)							
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
Program #1		3.080	2.660	3.204	0.000	3.204	
FY09-FY11: Provides program management, engineering, technical, SE Core.	contract, and test support for development of						
FY 2009 Accomplishments: FY 2009							
FY 2010 Plans: FY 2010							
FY 2011 Base Plans: FY 2011 Base							
FY 2011 OCO Plans: FY 2011 OCO							
Program #2		25.778	14.691	16.869	0.000	16.869	
FY09-FY11: SE Core will provide common terrain databases from t expand production capabilities. Continued refinement of the STDGG advanced automated processing tools. Planned enhancements to One SE Core Architecture. SE Core will continue work to meet the six K Increment 1 Operational Requirements Document: OneSAF Integrational Dynamic Terrain, Atmospheric Effects, Net Ready, and C4ISR. Concontinue.	C will be made with the incorporation of eSAF will continue to be integrated into the ey Performance Parameters defined in the ion, Standard Terrain Process Capability,						
FY 2009 Accomplishments: FY 2009							

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army				DATE: Febr	ruary 2010	
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tactical '(CATT) Core	PROJECT 582: SYNTHETIC ENVIR CORE				
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: FY 2010						
FY 2011 Base Plans: FY 2011 Base						
FY 2011 OCO Plans: FY 2011 OCO						
Program #3		0.000	0.500	0.000	0.000	0.00
FY10: Small Business Innovative Research/Small Business Tech	hnology Transfer Programs					
FY 2009 Accomplishments: FY 2009						
FY 2010 Plans: FY 2010						
FY 2011 Base Plans: FY 2011 Base						
FY 2011 OCO Plans: FY 2011 OCO						
	Accomplishments/Planned Programs Subtotals	28.858	17.851	20.073	0.000	20.07

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army			<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	582: <i>SYNTH</i>	ETIC ENVIR CORE
BA 5: Development & Demonstration (SDD)	(CATT) Core		

### C. Other Program Funding Summary (\$ in Millions)

				<b>FY 2011</b>	<b>FY 2011</b>	<b>FY 2011</b>					Cost To	
	<b>Line Item</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base</b>	<u>OCO</u>	<u>Total</u>	<b>FY 2012</b>	<b>FY 2013</b>	<b>FY 2014</b>	FY 2015	<b>Complete</b>	Total Cost
• Ord. #1:	OPA3, Appropriation	23.038	12.754	26.120	0.000	26.120	9.952	7.735	7.865	7.992	Continuing	Continuing
NA0173 A	Aviation Combined Arms											
Tactical T	Trainer											
• Ord. #2:	OPA3, Appropriation	56.890	64.949	64.912	8.200	73.112	74.925	75.082	75.157	74.782	Continuing	Continuing
NA0170 (	Close Combat Tactical											
Trainer (	CCTT)											
• Ord. #3:	RDTE, Appropriation	11.383	11.576	11.522	0.000	11.522	11.730	11.893	12.494	12.460	Continuing	Continuing
654760 C	One Semi-Automated Forces											
(OneSAF	)											

### **D.** Acquisition Strategy

An extension to the Architecture & Integration (A&I) contract was awarded to Science Applications International Corp (SAIC) in 2Q09. A competitive, CPFF type contract for the development of SE Core Database Virtual Environment Development (DVED) project was awarded in FY06 to CAE with yearly options until FY11. The PM is planning an Acquisition Strategy which will combine the future A&I and DVED contracts, potentially reducing the number of Prime Vendors to one.

#### 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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

2040: Research, Development, Test & Evaluation, Army

BA 5: Development & Demonstration (SDD)

R-1 ITEM NOMENCLATURE

PE 0604780A: Combined Arms Tactical Trainer

(CATT) Core

PROJECT

582: SYNTHETIC ENVIR CORE

### **Product Development (\$ in Millions)**

				FY	2010		2011 ase	FY 2	2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Architecture and Integration	C/CPFF	Science Applications International Corporation Orlando, FL	33.356	4.942		0.000		0.000		0.000	Continuing	Continuing	0
Architecture and Integration - 2	C/CPFF	TBS Location could not be determined.	0.000	0.000		6.946		0.000		6.946	Continuing	Continuing	0
Database Virtual Environment Development	C/CPFF	CAE USA, Tampa, FL	24.134	9.249		9.923		0.000		9.923	Continuing	Continuing	0
		Subtotal	57.490	14.191		16.869		0.000		16.869			0.000

#### Remarks

#### Test and Evaluation (\$ in Millions)

1 cst and D variation (	ψ 111 1411111011	.5)											
				FY	2010	FY :	2011 ase	FY:	2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support	С	Test Community Location could not be determined.	0.125	0.000		0.000		0.000		0.000	Continuing	Continuing	0
		Subtotal	0.125	0.000		0.000		0.000		0.000			0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army

**DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

PROJECT

2040: Research, Development, Test & Evaluation, Army

PE 0604780A: Combined Arms Tactical Trainer

582: SYNTHETIC ENVIR CORE

BA 5: Development & Demonstration (SDD)

(CATT) Core

#### **Test and Evaluation (\$ in Millions)**

,				F	Y 2010		2011 ase		Y 2011 OCO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract

#### Remarks

Not Applicable

### **Management Services (\$ in Millions)**

				FY :	2010	FY :	2011 ase		2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Office Support	C/Various	PEO STRI Orlando,FL	7.631	2.610		2.640		0.000		2.640	Continuing	Continuing	0
Management Services	С	Various Location could not be determined.	2.042	0.550		0.564		0.000		0.564	Continuing	Continuing	0
SBIR/STTR	С	Nothing entered for Activity and Location. Location could not be determined.	0.000	0.500		0.000		0.000		0.000	Continuing	Continuing	0
		Subtotal	9.673	3.660		3.204		0.000		3.204			0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army			<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	582: <i>SYNTH</i>	ETIC ENVIR CORE
BA 5: Development & Demonstration (SDD)	(CATT) Core		

	Total Prior Years Cost	FY 2010	FY:	FY 2	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	67.288	17.851	20.073	0.000	20.073			0.000

Exhibit R-2A, RDT&E Project Justif	ication: PB 2	011 Army								<b>DATE:</b> February 2010		
APPROPRIATION/BUDGET ACTI 2040: Research, Development, Test & B BA 5: Development & Demonstration (	Evaluation, Ar	Luation, Army PE 0604780A: Combined Arms Tactical Trainer (CATT) Core 585: AVIATION COMBINED ARMS TRAINER				ED ARMS TA	ACTICAL					
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost	
585: AVIATION COMBINED ARMS TACTICAL TRAINER	2.519	2.478	1.992	0.000	1.992	0.000	0.000	0.000	0.000	Continuing	Continuing	
Quantity of RDT&E Articles												

### A. Mission Description and Budget Item Justification

This project supports the Aviation Combined Arms Tactical Trainer (AVCATT) which is the Army's Aviation Collective training system for Active, Reserve and Army National Guard components to provide home station training and mission rehearsal and training in support of Overseas Contingency Operations (OCO). AVCATT completed Initial Operational Test & Evaluation (IOT&E) on 1 August 2003 and received a Full Rate Production Decision on 19 December 2003. A single suite of equipment consists of two (2) mobile trailers housing six (6) reconfigurable networked simulators that support the AH-64A/D, UH-60A/L, CH-47D, and OH-58D aircraft. Supporting roleplayer, Semi-Automated Forces (SAF), and after action review (AAR) workstations are also provided as part of each suite. AVCATT is a fully mobile system capable of using shore and generator power and is transportable worldwide. The AVCATT system permits aviation units to conduct collective task training on a real-time, virtual battlefield in a combined arms scenario by leveraging Synthetic Environment Core (SE Core) capabilities. Other required elements that are present on the modern, high intensity battlefield, such as the Combat Support (CS) and Combat Service Support (CSS) elements, are an integral part of the simulation database. AVCATT is designed to provide realistic, high intensity collective and combined arms training to aviation units as well as the full spectrum of operations in support of current and future contingency operations. AVCATT supports the Aviation Combined Arms Training Strategy, the Army Campaign Plan and OCO. AVCATT also supports the Aviation Functional Area Assessment (FAA), providing collective, combined arms training for aviation units. FY11 core funding of \$1.992 million will develop refinements to the AVCATT system to include SE Core and Non-Rated Crew Member Manned Module (NCM3) integration and interoperability with other combined arms simulators.

### B. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Program #1	0.937	2.242	1.822	0.000	1.822
FY09-11: Continue refinements to the system to include: interoperability enhancements through implementation of SE Core common products such as OneSAF, Environmental Runtime Control (ERC), Common Virtual Components (CVC), and common terrain databases. In addition, provide improved interoperability and					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army				DATE: Febr	uary 2010	
APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tactica (CATT) Core	al Trainer	PROJECT 585: AVIATION TRAINER	ON COMBIN	ED ARMS TA	ACTICAL
B. Accomplishments/Planned Program (\$ in Millions)						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
interaction between live and virtual systems by adopting real world, digital NCM3 First Article into the AVCATT program baseline.	al messaging formats. Integration of					
FY 2009 Accomplishments: FY 2009						
FY 2010 Plans: FY 2010						
FY 2011 Base Plans: FY 2011 Base						
FY 2011 OCO Plans: FY 2011 OCO						
Program #2		0.385	0.167	0.170	0.000	0.170
FY09-11: Provides Government program management, engineering, tech AVCATT refinements.	nnical, contract, and test support for					
FY 2009 Accomplishments: FY 2009						
FY 2010 Plans: FY 2010						
FY 2011 Base Plans: FY 2011 Base						

**DATE:** February 2010

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APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 5: Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0604780A: Combined Arms Tact (CATT) Core	ical Trainer	PROJECT 585: AVIATION COMBINED ARMS TACTICAL TRAINER				
B. Accomplishments/Planned Program (\$ in Millions)	,						
		FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
FY 2011 OCO Plans: FY 2011 OCO							
Program #3		0.000	0.069	0.000	0.000	0.00	
FY10: Small Business Innovative Research (SBIR)/Small Busin	ess Technology Transfer Programs (STTR)						
FY 2009 Accomplishments: FY 2009							
FY 2010 Plans: FY 2010							
FY 2011 Base Plans: FY 2011 Base							
FY 2011 OCO Plans: FY 2011 OCO							
Program #4		1.197	0.000	0.000	0.000	0.00	
FY09: Congressional Add for initial Light Utility Helicopter (LU	UH) Simulator development						
FY 2009 Accomplishments: FY 2009							
FY 2010 Plans: FY 2010							

# UNCLASSIFIED

**Exhibit R-2A**, **RDT&E Project Justification:** PB 2011 Army

Exhibit R-2A, RDT&E Project Justification: PB 2011 Army			<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	585: <i>AVIATI</i>	ON COMBINED ARMS TACTICAL
BA 5: Development & Demonstration (SDD)	(CATT) Core	TRAINER	

#### **B.** Accomplishments/Planned Program (\$ in Millions)

FY.	2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY 2011 Base					
FY 2011 OCO Plans: FY 2011 OCO					
Accomplishments/Planned Programs Subtotals	2.519	2.478	1.992	0.000	1.992

### C. Other Program Funding Summary (\$ in Millions)

			<b>FY 2011</b>	<b>FY 2011</b>	<b>FY 2011</b>					Cost To	
<u>Line Item</u>	<b>FY 2009</b>	<b>FY 2010</b>	<b>Base</b>	<u>OCO</u>	<u>Total</u>	<b>FY 2012</b>	<b>FY 2013</b>	FY 2014	<b>FY 2015</b>	<b>Complete</b>	<b>Total Cost</b>
• Ord. #1: OPA3, Appropriation	23.038	12.754	26.120	0.000	26.120	9.952	7.735	7.865	7.992	Continuing	Continuing

NA0173 Aviation Combined Arms

Tactical Trainer

### **D.** Acquisition Strategy

Engineering and Manufacturing Development (EMD) competitive contract against a performance specification.

#### **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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army

**DATE:** February 2010

### APPROPRIATION/BUDGET ACTIVITY

2040: Research, Development, Test & Evaluation, Army

BA 5: Development & Demonstration (SDD)

### R-1 ITEM NOMENCLATURE

PE 0604780A: Combined Arms Tactical Trainer

(CATT) Core

## **PROJECT**

585: AVIATION COMBINED ARMS TACTICAL

TRAINER

## **Product Development (\$ in Millions)**

				FY	FY 2010		2011 ase	FY :	2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCATT	C/CPAF	L3 Communications Corporation Arlington, Texas	38.986	2.242		1.822		0.000		1.822	Continuing	Continuing	0
		Subtotal	38.986	2.242		1.822		0.000		1.822			0.000

#### Remarks

## **Management Services (\$ in Millions)**

				FY	2010		2011 ase	FY:	2011 CO	FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Office Support	С	PEO STRI Orlando, Florida	0.891	0.167		0.170		0.000		0.170	Continuing	Continuing	0
SBIR/STTR	С	Nothing entered for Activity and Location. Location could not be determined.	0.000	0.069		0.000		0.000		0.000	Continuing	Continuing	0
		Subtotal	0.891	0.236		0.170		0.000		0.170			0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Army			<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT	
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	585: <i>AVIATI</i>	ON COMBINED ARMS TACTICAL
BA 5: Development & Demonstration (SDD)	(CATT) Core	TRAINER	

	Total Prior Years Cost	FY 2010	FY:	FY:	FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	39.877	2.478	1.992	0.000	1.992			0.000

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Army		<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	585: AVIATION COMBINED ARMS TACTICAL
BA 5: Development & Demonstration (SDD)	(CATT) Core	TRAINER

	]	F <b>Y</b>	200	9	I	7Y	201	0	I	Y 2	201	1	1	F <b>Y</b> 2	201	2	]	FY 2	013	3	ŀ	Y 2	2014	1	F	Y 2	2015	;
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Light Utility Helicopter Simulator Development		#	#	#	#	#	#	#	#	#	#																	
NCM3 Integration								#	#	#	#																	

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Army		<b>DATE:</b> February 2010
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
2040: Research, Development, Test & Evaluation, Army	PE 0604780A: Combined Arms Tactical Trainer	585: AVIATION COMBINED ARMS TACTICAL
BA 5: Development & Demonstration (SDD)	(CATT) Core	TRAINER

# Schedule Details

	Sta	art	Eı	nd
Event	Quarter	Year	Quarter	Year
Light Utility Helicopter Simulator Development	2	2009	3	2011
NCM3 Integration	4	2010	3	2011