

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2003

## BUDGET ACTIVITY

### 5 - System Development and Demonstration

## PE NUMBER AND TITLE

**0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)**

COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	11799	8247	3998	5596	5585	10041	11964	12423	Continuing	Continuing
571 CLOSE CBT TACT TRAINER	4510	4845	3998	5596	5585	5397	0	0	0	36550
582 SYNTHETIC ENVIR CORE	7289	3402	0	0	0	4644	11964	12423	Continuing	Continuing

**A. Mission Description and Budget Item Justification:** The Combined Arms Tactical Trainer (CATT) is a family of combined arms simulation systems designed to support the Army's simulation-based Combined Arms Training Strategy. The initial CATT system is the Close Combat Tactical Trainer (CCTT), which provides the underlying baseline (architecture, terrain databases, After Action Review [AAR], Semi-Automated Forces [SAF], and models/algorithms) for future CATT expansions, pre-planned product improvements and system enhancements. Synthetic Environment Core provides for the expansion of the Synthetic Environment baseline to include enhanced Aviation, Engineer, Fire Support, and Air Defense capabilities needed to support integration of hardware/simulators funded by System Program Managers. The first synthetic environment to be expanded is the Aviation Combined Arms Tactical Trainer - Aviation Reconfigurable Manned Simulator (AVCATT-A) for both active and reserve component. 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. CATT reinforces the successes and corrects the shortcomings of the Simulator Network (SIMNET) and Aviation Network (AIRNET) demonstration programs executed by the Defense Advanced Research Projects Agency (DARPA). 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 the field. Fielded in both fixed site and mobile/transportable versions, CATT enables both Active and Reserve component units to prepare for real world contingency missions. By being able to process a wide array of terrain databases and modify the behavior of the computer generated opposing forces, CATT offers a virtually 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 will face in an unpredictable world.

This system supports the Objective and Legacy-to-Objective transition paths of the Transformation Campaign Plan (TCP).

FY04/05 funding complete enhancements to the reconfigurable High Mobility Multipurpose Wheeled Vehicle (HMMWV), the field artillery digital connectivity, provide nonsystem weapons concurrency upgrades and continues close air support improvements. These efforts further support Legacy to Objective Force transition paths and improve readiness by providing more realistic collective training that will prepare the soldiers for the U.S. Army missions.

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(CATT)**

<b><u>B. Program Change Summary</u></b>	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>
Previous President's Budget (FY 2003)	13531	7579	4775	6413
Current Budget (FY 2004/2005 PB)	11799	8247	3998	5596
Total Adjustments	-1732	668	-777	-817
Congressional program reductions		-95		
Congressional rescissions		-48		
Congressional increases		1050		
Reprogrammings	-1356			
SBIR/STTR Transfer	-376	-239		
Adjustments to Budget Years			-777	-817

FY02 includes reprogramming to project D241 to support Corps Battle Simulation (CBS) Effort at Jet Propulsion Laboratory (\$766K) and reprogramming to project D362 to support WARSIM efforts for (\$590K). FY04/05 funding was realigned to higher Army priority.

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BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>				PE NUMBER AND TITLE <b>0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)</b>				PROJECT <b>571</b>		
COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
571 CLOSE CBT TACT TRAINER	4510	4845	3998	5596	5585	5397	0	0	0	36550
<p><b><u>A. Mission Description and Budget Item Justification:</u></b> This program provides for System Development and Demonstration (SDD) and Pre-Planned Product Improvements (P3I) for the Close Combat Tactical Trainer (CCTT), which will enhance readiness for both active and reserve component forces. 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, repetitively, tactics, techniques and procedures 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, and improved teamwork for increased survivability. The pre-planned product improvements provide CCTT an opportunity to enhance its capabilities as a tactical trainer and maintain concurrency with the structural changes that today's battle force is experiencing. These improvements will provide the interoperability with AVCATT-A, Force XXI Battle Command Brigade and Below (FBCB2), Army Tactical Command and Control System (ATCCS) and other simulation systems.</p> <p>The FY04/05 funding for Close Combat Tactical Trainer will provide the U.S. Army with enhancements to field artillery digital connectivity, non system weapons concurrency upgrades, reconfigurable HMMWV, and continue Close Air Support improvements. These improvements allow CCTT the opportunity to enhance capabilities as a tactical trainer and maintain concurrency with the structural changes that today's battle force is experiencing.</p> <p>This system supports the Legacy-to-Objective transition path of the Transformation Campaign Plan (TCP).</p>										

<b>ARMY RDT&amp;E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)</b>								<b>February 2003</b>	
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<u><b>Accomplishments/Planned Program</b></u>							<u><b>FY 2002</b></u>	<u><b>FY 2003</b></u>	<u><b>FY 2004</b></u>	<u><b>FY 2005</b></u>
Developed product improvements for Dismounted Infantry (DI) module, After Action Review (AAR), Bradley Fire Support Team (BFIST), Army Tactical Command and Control System (ATCCS), and other prioritized items. Completed development for conversion to Linux operating system; produced Synthetic Environment Data Representation and Interchange Specification (SEDRIS) transmittal for CCTT databases. FY03 funding continues development of the Enhanced Dismounted Infantry Mannned Module (E-DIMM) and interoperability of ATCCS and begins close air support improvements.							3749	4331	0	0
Provide government program management, engineering, technical, contract and continuous operational evaluation support.							761	514	511	515
Complete enhancements to the Field Artillery Digital connectivity, nonsystem weapons concurrency upgrades, reconfigurable HMMWV, and continue Close Air Support improvements.							0	0	3487	5081
<b>Totals</b>							4510	4845	3998	5596

  

<u><b>B. Other Program Funding Summary</b></u>	<u><b>FY 2002</b></u>	<u><b>FY 2003</b></u>	<u><b>FY 2004</b></u>	<u><b>FY 2005</b></u>	<u><b>FY 2006</b></u>	<u><b>FY 2007</b></u>	<u><b>FY 2008</b></u>	<u><b>FY 2009</b></u>	<u><b>To Compl</b></u>	<u><b>Total Cost</b></u>
OPA3, Appropriation NA0170 SIMNET/CCTT	36527	51053	71692	61189	63816	18802	30892	44030	Continuing	Continuing
Operation and Maintenance, Appro. 122015 (CCTT Portion)	26143	28885	30804	33549	39496	40050	40535	42449	Continuing	Continuing

  

**C. Acquisition Strategy:**Competitive cost plus award fee contract for SDD phase.

Competitive procurement against performance specifications as part of basic contract.

ECP's were Sole Source, Cost Plus Fixed Fee

FY04-05 procurement awards will be either Firm Fixed Price or Cost Plus Fixed Fee and executed thru PEO STRI Omnibus Contract (STOC) based on competitive selection.

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)</b>					PROJECT <b>571</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . CCTT SDD	C/CPAF/T&M/FFP	Lockheed/Martin Orlando, FL	206891	0		0		0		0	206891	206891
b . DIMM, AAR, ATCCS	C/CPFF	Lockheed/Martin Orlando, FL	29204	2918	1-2Q	0		0		0	32122	32057
c . Database Development	BAA/CPFF	SAIC, Orlando, FL	4415	0		0		0		0	4415	4415
d . SEDRIS DATABASES	C/CPFF	SAIC, Orlando, FL	500	0		0		0		0	500	500
e . CCTT Pre Planned Product Improvements (P3I)	C/TBS	TBS	0	1413	2Q	3487	1Q	5081	1Q	9382	19363	22259
Subtotal:			241010	4331		3487		5081		9382	263291	266122

ARMY RDT&E COST ANALYSIS(R-3)									February 2003				
BUDGET ACTIVITY 5 - System Development and Demonstration					PE NUMBER AND TITLE 0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)					PROJECT 571			
II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
a . Engineering and Technical Support	MIPRs/T&M	Various activities	32062	0		0		0		0	32062	0	
Subtotal:			32062	0		0		0		0	32062	0	
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract	
Subtotal:			0	0		0		0		0	0	0	
Remarks: Not Applicable													

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)</b>					PROJECT <b>571</b>		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Project Office Support	MIPR	PEO STRI/NAVAIR, Orlando, FL	13425	514	1-3Q	511	1-3Q	515	1-3Q	1600	16565	0
Subtotal:			13425	514		511		515		1600	16565	0
Project Total Cost:			286497	4845		3998		5596		10982	311918	266122

Schedule Profile Detail (R-4a Exhibit)							February 2003	
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>				PE NUMBER AND TITLE <b>0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)</b>			PROJECT <b>571</b>	
<u>Schedule Detail</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
P3I Software/Hardware Insertions Delivery	4Q	4Q	4Q	4Q	4Q	4Q		
BFIST Delivery	2Q							
LINUX Delivery	3Q							
DI Product Improvement Prototype Delivery	3Q							
AAR Product Improvement Prototype Delivery	2Q							
SEDRIS Databases Delivery		2Q						
ATCCS Integration		3Q						
Enhanced DI Production Ready Delivery		3Q						
AAR Production Ready Delivery		3Q						
Fiscal Year 2002 Milestones Are Complete.								



ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								February 2003		
BUDGET ACTIVITY 5 - System Development and Demonstration				PE NUMBER AND TITLE 0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)				PROJECT 582		
COST (In Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
582      SYNTHETIC ENVIR CORE	7289	3402	0	0	0	4644	11964	12423	Continuing	Continuing
<p><b><u>A. Mission Description and Budget Item Justification:</u></b> Synthetic Environment Core (SE Core) enables the Army's common virtual environment (CVE) that links system and nonsystem virtual training simulations into an integrated and interoperable training system with fair fight capability for Legacy, Interim, and Objective Forces; enables linkage of the CVE to the live and constructive environments for an integrated Synthetic Training Environment (STE) to support Army transformation and Combined Arms Training Strategy (CATS). These are System Development and Demonstration (SSD) enhancements to the Synthetic Environment baseline for virtual training in a Combined Arms Collective environment. The SSD will transform the current heavy force environment to support the transformation to light and medium force for virtual training. The program will provide terrain databases, aviation behaviors, Air Defense capabilities, environmental effects (e.g., wind, fog) that enable the Army, specifically the aviation community, to conduct collective training and aviation combined arms training in the virtual environment. SE Core will provide the Semi-Automated Forces (SAF) behaviors via OneSAF to represent the evolving structure, tactics, and procedures of the Army's digitized battlefield. SE Core will provide the additional aviation models to support aviation collective training, and will provide for extended environments to simulate the aviation weapon systems and communication particular to the aviation community. The program will provide for scenario development to support aviation combined arms and collective training and After Action Review (AAR) of an exercise.</p> <p>Supports Aviation Functional Area Assessment (FAA), providing collective, combined arms training. This system supports the Objective transition path of the Transformation Campaign Plan (TCP).</p>										
<b><u>Accomplishments/Planned Program</u></b>						<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>	<b>FY 2005</b>	
Continued development of aviation terrain database, interoperability between aviation and ground simulations, and mission planning and controls for the Aviation Combined Arms Tactical Trainer-Aviation (AVCATT-A) system. Functional capabilities of the system were tested during Builds 3 and 4 and will be completed during System Combined Test (SCT). Work continues on the SAF, Battlemaster Control Console, AAR and visual model upgrades for the Comanche development and Longbow reconfigurable configuration. All contractual requirements are obligated.						5513	0	0	0	
Provide government program management, engineering, technical, contract, and test support for SE Core refinements.						263	53	0	0	
Maintain support services and government agency support to program office.						1513	889	0	0	

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<u>Accomplishments/Planned Program (continued)</u>		FY 2002	FY 2003	FY 2004	FY 2005
Initiate Engineering Change Proposals (ECPs) to include visual, SAF, interoperability and manned modules. Correction of deficiencies identified in the Deficiency Report (DRs) prior to testing. Continue the aviation refinements of SE Core architecture.		0	2460	0	0
Totals		7289	3402	0	0
<p><b><u>B. Other Program Funding Summary:</u></b> Not applicable for this item.</p> <p><b><u>C. Acquisition Strategy:</u></b>System Development and Demonstration (SDD) competitive contract against performance specification.</p>					

ARMY RDT&E COST ANALYSIS(R-3)									February 2003			
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>					PE NUMBER AND TITLE <b>0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)</b>					PROJECT <b>582</b>		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . SE Core	C/CPAF/FPI F/FFP	L-3Com (Raytheon Systems Co.) Arlington, TX	21913	2460	2-3Q	0		0		0	24373	0
b . SE Core	SS/FFP	Kaiser Electro-Optics, Inc.	53	0		0		0		0	53	0
Subtotal:			21966	2460		0		0		0	24426	0
Remarks: Raytheon Systems Co. has sold this part of their company to L-3Com.												
II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Engineering Services & Technical Support	C/FFP/T&M	Madison Research Orlando, FL	504	53	2Q	0		0		0	557	0
b . Engineering Services & Technical Support	C/FFP/T&M	AST, Inc., Orlando, FL	124	0		0		0		0	124	0
c . Program Support	FFP	Strategic Performance Institute, Laguna Hills, CA	11	0		0		0		0	11	0
Subtotal:			639	53		0		0		0	692	0

<b>ARMY RDT&amp;E COST ANALYSIS(R-3)</b>									<b>February 2003</b>			
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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . IOT&E	MIPR	Operational Test Command, Ft. Hood, TX	443	0		0		0		0	443	0
b . Software Testing	MIPR	DCMDW, Carson, CA	12	0		0		0		0	12	0
Subtotal:			455	0		0		0		0	455	0
Remarks: Not Applicable												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Project Office Support	MIPR	PEO STRI/NAVAIR Orlando TSD	1852	889	1Q	0		0		Continue	2741	0
Subtotal:			1852	889		0		0		Continue	2741	0
Project Total Cost:			24912	3402		0		0		Continue	28314	0

<b>Schedule Profile Detail (R-4a Exhibit)</b>						<b>February 2003</b>		
BUDGET ACTIVITY <b>5 - System Development and Demonstration</b>				PE NUMBER AND TITLE <b>0604780A - COMBINED ARMS TACTICAL TRAINER (CATT)</b>			PROJECT <b>582</b>	
<u><b>Schedule Detail</b></u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
Software Build 3(A & B) Test	1Q							
Software Build 3(C) Test	2Q							
Software Build 4 Test		1Q						
System Combined Test (SCT)		2Q						
Mission Planning		4Q						
SAF Interoperability (other Aviation Sims.)		4Q						
Visual and Manned Modules			1Q					
Fiscal Year 2002 Milestones Are Complete.								