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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	20.514	9.241	3.568	-	3.568	2.753	0.000	0.000	0.000	Continuing	Continuing
<i>571: Close Cbt Tact Trainer</i>	-	0.664	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.664
<i>577: Gaming Technology In Support Of Army Training</i>	-	2.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.000
<i>582: Synthetic Envir Core</i>	-	9.109	9.241	3.568	-	3.568	2.753	0.000	0.000	0.000	Continuing	Continuing
<i>585: Aviation Combined Arms Tactical Trainer</i>	-	8.741	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.741

A. Mission Description and Budget Item Justification

The Combined Arms Tactical Trainers (CATT) represent a family of combined arms simulation systems designed to support the Army's simulation-based, Combined Arms Training Strategy. The CATT program portfolio directly supports the Army's Training Strategy and progressive training model by providing realistic training events and comprehensive After Action Reviews (AAR). 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 primary CATT system is the Close Combat Tactical Trainer (CCTT) which provides the underlying baseline architecture and AAR for CATT expansions, Pre-Planned Product Improvements (P3I) and system enhancements. The Reconfigurable Vehicle Simulator (RVS) supports combat convoy operations and Improvised Explosive Devices (IED) tasks. 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. The first synthetic environments expanded were in 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, Unmanned Aerial Vehicle (UAV) integration, and other small unit and individual training and mission rehearsal requirements. Soldiers can train in a common environment on geotypical or geospecific virtual terrain. It is also possible to link Gaming technology to actual communication, command, control, computer, and intelligence (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 effectively prepare for costly live fire and maneuver exercises, as well as training 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 combat missions. The combination of tough field and live fire training, and realistic simulation training in CATT, is the formula to prepare Soldiers and their Leaders for the uncertainties they face in combat operations.

FY 2021 base funding of \$3.568 million for SE Core will continue the development of the Standard Terrain Database Generation Capability (STDGC) to ensure that the process remains Army Geospatial Center (AGC) certified, in addition to, ensuring that the terrain data remains concurrent with supported training systems in fulfilling its synthetic terrain requirements.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>
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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	21.936	9.241	8.837	-	8.837
Current President's Budget	20.514	9.241	3.568	-	3.568
Total Adjustments	-1.422	0.000	-5.269	-	-5.269
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.422	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-5.269	-	-5.269

Change Summary Explanation

Decrease in FY 2021 budget was result of supporting of modernization efforts, funding from SE Core (Project 582) was decreased in order to increase funding for Synthetic Training Environment (STE) in PE 0604121A, Project FD6.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
571: <i>Close Cbt Tact Trainer</i>	-	0.664	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.664
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The research and development effort for Project 571 - Close Combat Tactical Trainer, has completed and the program will not request funding in FY 2021.

A. Mission Description and Budget Item Justification

The Close Combat Tactical Trainer (CCTT) immersively and comprehensively trains Armor, Cavalry, Infantry, Mechanized Infantry, and Armored Reconnaissance units from squad through Battalion/Squadron level, to include their staffs. The primary training audience operates from full-crew simulators, reconfigurable command posts, and live battalion command posts to accomplish their combined arms training tasks. CCTT is a ground based, collective training device comprised of the CCTT and the Reconfigurable Vehicle Tactical Trainer (RVTT). CCTT is comprised of full fidelity, manned simulators for the M1 Abrams main battle tank, M2 Bradley Fighting Vehicles (BFV) variants, and Cavalry Fighting Vehicles (CFV). RVTT is a CCTT Reconfigurable Vehicle Simulator (RVS) comprised of full fidelity, manned simulators for the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and Heavy Expanded Mobility Tactical Truck (HEMTT).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Government Program Management for the Close Combat Tactical Trainer (CCTT) program.	0.169	-	-
Description: Government Program Management for the CCTT program.			
Title: Engineering and Manufacturing Development (EMD) phase contract activity for CCTT, and Interoperability between CCTT.	0.495	-	-
Description: Continue EMD phase contract activities for CCTT.			
Accomplishments/Planned Programs Subtotals	0.664	-	-

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

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• NA0170: <i>Close Combat Tactical Trainer</i>	33.080	-	0.000	-	0.000	-	-	-	-	0.000	33.080

Remarks

The RDT&E efforts are essential to provide enhancements for the hardware and software of the program to meet warfighter mission priorities and validated requirements. These enhancements, after proper testing, will be procured and fielded with the program's procurement funds.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>

D. Acquisition Strategy

All CCTT development utilizes small business competitively awarded contract vehicles and other Army programs for support of research and development.

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>	

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
P3I in Support of Gaming Technology and Virtualization for Man																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 571 / <i>Close Cbt Tact Trainer</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P3I in Support of Gaming Technology and Virtualization for Maneuver Training	2	2015	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>				Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
577: <i>Gaming Technology In Support Of Army Training</i>	-	2.000	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The research and development effort for Project 577 - Gaming Technology In Support Of Army Training, has completed and the program will not request funding in FY 2021.

A. Mission Description and Budget Item Justification

The Games for Training (GFT) Program prepares Soldiers and Leaders for executing Unified Land Operations by delivering robust training and mission rehearsal capabilities. The GFT program satisfies the Active, National Guard, and Army Reserves' educational requirements in the Operational, Institutional, and Self-Development Training Domains with a low-overhead, flexible, persistent training capability on geo-specific and geo-typical terrain that is relevant with all military platforms and weapon systems. This gaming capability allows units and commanders to train individual and collective tasks at the company and below level with minimal amount of resourcing required (land, ammunition, transportation, etc.) in support of Multi-Domain Operations (MDO) 2028. Through the use of GFT systems, commanders are able to refine and rehearse unit Tactics, Techniques, and Procedures (TTPs) and Standard Operating Procedures (SOPs) prior to executing live, large-scale training events. GFT trains higher echelon units and staffs by facilitating Tactical Exercises Without Troops (TEWT).

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Games for Training (GFT) program.	2.000	-	-
Description: Continue EMD phase contract activities for the GFT program.			
Accomplishments/Planned Programs Subtotals	2.000	-	-

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

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• NA0176: <i>Gaming Technology In Support of Army Training</i>	25.161	15.463	1.950	-	1.950	-	-	-	-	0.000	42.574

Remarks

OPA funding provides concurrency of the Virtual Battlespace 3 (VBS3) software that provides the Army enterprise use rights. Additionally, OPA funding conducts the procurement and fielding of the Stryker Virtual Collective Trainers (SVCT), new gaming hardware suites, and gaming system refreshes to meet Army Risk Management

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Framework (RMF) requirements. The GFT program will also provide other commercial off the-shelf (COTS) and Government off the-shelf (GOTS) software applications used to train Active, Reserve, and Army National Guard soldiers in a PC based, shared environment.											

D. Acquisition Strategy

The acquisition strategy supports Army-wide gaming software for a commercial game based training system with government data rights, Virtual Battlespace 3 (VBS3), and associated Games for Training system cyber compliant hardware. The GFT RMF compliant hardware system consists of a common desktop or laptop computer, headset, and peripherals; this hardware is configured as gaming suites and is fielded to 88 various Army locations. In support of its fielding efforts, the GFT program acquires fielding support to provide logistical provisioning for the de-confliction and coordination with receiving locations as well as oversight for meeting network and cyber requirements. Additionally, program acquires technical support to provide system monitoring of the GFT hardware and software configuration to ensure compliance with Army's RMF requirements.

In FY 2018, the GFT Program was directed to complete divestment by the end of FY 2023, due to the requirement for training at the company echelon and below using gaming technologies being provided by the Synthetic Training Environment (STE) starting in FY 2021. In order to meet this desired end state, the program conducted the following contractual efforts in FY 2019: (1) Awarded a hardware procurement contract in 2nd quarter of FY 2019 through the ARMY Computer Hardware, Enterprise Software and Solution (CHESS) program for the planned GFT Classroom Suites and Technical Refreshes scheduled in FY 2019 and FY 2020. (2) Awarded an IT Services Contract in 2nd quarter of FY 2019 to provide network technical support, and to facilitate the program's cybersecurity strategy for its fielded systems through FY 2023. (3) Issued a Task Order award in 3rd quarter of FY 2019 to acquire fielding and logistics support for planned GFT Classroom Fieldings slated in FY 2019 and FY 2020. The aforementioned contractual efforts will support the program achieving Full Operational Capability (FOC) in FY 2020 (all 115 BOIP Cyber Compliant Classroom Suites will be installed). After FOC, the program will commence sustainment of all fielded GFT Systems through FY 2022, followed by a Divestment Period beginning in FY 2023 and completing by the end of the fiscal year.

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
GFT Integration with LVC																												
GFT Data Center Migration Investigation																												
GFT Models Development & Integration																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 577 / <i>Gaming Technology In Support Of Army Training</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GFT Program Management	1	2010	4	2018
GFT Integration with LVC	1	2010	4	2019
GFT Market Research	1	2017	4	2018
GFT Data Center Migration Investigation	3	2019	4	2019
GFT Models Development & Integration	3	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
582: <i>Synthetic Envir Core</i>	-	9.109	9.241	3.568	-	3.568	2.753	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Synthetic Environment Core (SE Core) Program. The SE Core Program is a foundational element and the only provider of correlated terrain for the Army's Live, Virtual, Constructive Integrated Training Environment (LVC ITE) that links Army training systems and simulators into an integrated and interoperable environment. SE Core's mission is to ensure that Army systems and simulators support U.S. Army Readiness by providing visual models (buildings and vehicles), terrain (over which the simulator moves), and entity behaviors (models performing realistic and appropriate actions such as movement and weapon effects) that are relevant and realistic in support of Multi-Domain Operations (MDO) 2028. As the exclusive provider of correlated terrain, SE Core ensures that all Army simulators/operators receive terrain that allows for a "Fair Fight" capability; that is, no one will have an inherent advantage over another because training did not occur on a "level playing field". Fair Fight allows air and ground forces to hold coordinated and integrated training events that accurately replicate combat operations for a train-as-we-fight capability.

A major component of the program is the SE Core-developed Standard Terrain Database Generation Capability (STDGC), the process used to build the terrain and models that the simulators and simulations employ. The Army Geospatial Center (AGC) gave SE Core its highest rating, the "Gold Standard", based on the quality of the STDGC process and the geospatial data generated by it. The program has been a certified, AGC co-producer of geospatial data since 2014. In addition to the correlated terrain databases and common visual models, SE Core components include Virtual One Semi-Automated Forces (Virtual OneSAF) (the computer generated force behaviors for virtual systems); the virtual systems architecture; and mission command development.

FY 2021 base funding of \$3.568 million for SE Core will continue the development of the STDGC to ensure that the process remains AGC certified, in addition to, ensuring that the terrain data remains concurrent with supported training systems in fulfilling its synthetic terrain requirements.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Synthetic Environment Core (SE Core) program.	8.580	8.618	3.209
Description: Continue EMD phase contract activities for the SE Core program.			
FY 2020 Plans: Continue to fulfill requirements of Increment 3. Will continue efforts to automate the terrain generation capability to meet the demand for synthetic terrain for constructive simulations. In addition funds are required to ensure the SE Core development environment remains compliant with Risk Management Framework mandates.			
FY 2021 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Continues to fulfill requirements of Increment 3. Efforts will refine the terrain generation capability (STDGC) to ensure it remains concurrent in meeting the demand for synthetic terrain for constructive simulations. In addition, funds are required to ensure the SE Core development environment remains compliant with Risk Management Framework mandates. FY 2020 to FY 2021 Increase/Decrease Statement: Decrease from FY 2020 to FY 2021 is a result of reducing the developmental and integration efforts associated with establishing additional tools and process within the terrain generation capability.				
Title: Government Program Management for the Synthetic Environment Core (SE Core) program. Description: Government Program Management for the SE Core program. FY 2020 Plans: Will provide funding for program management travel supporting site surveys, in addition to funding the Subject Matter Experts providing technical input into the development of the SE Core terrain generation capability. FY 2021 Plans: Will provide funding for the Subject Matter Experts providing technical input into the development of the SE Core terrain generation capability. FY 2020 to FY 2021 Increase/Decrease Statement: Decrease from FY 2020 to FY 2021 is result of no longer conducting program management travel supporting site surveys.		0.529	0.204	0.359
Title: FY 2020 SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC ?638 FY 2020 Plans: Funding transferred in accordance with Title 15 USC ?638 FY 2020 to FY 2021 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638		-	0.419	-
Accomplishments/Planned Programs Subtotals		9.109	9.241	3.568
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>

D. Acquisition Strategy

The SE Core program is post Milestone B and will remain in the Engineering and Manufacturing Development phase for the remainder of its lifecycle. SE Core is a "software only" program that continuously develops terrain, virtual models and other software products for integration into existing training systems. It does not field products to the end user, therefore the program will not require a Milestone C decision or go into the Production phase. The SE Core program is developing the software tools and processes to develop the Army's common virtual environment to link simulation devices [to include: Close Combat Tactical Trainer (CCTT), Aviation Close Combat tactical Trainer (AVCATT) , Games for Training (GFT), Live, Virtual, Constructive Integrating Architecture (LVC-IA), Homestation Instrumentation Training System (HITS), Joint Land Component Constructive Training Capability (JLCCTC), Fires Simulation (FIRESIM), One Semi-Automated Forces (OneSAF)] into an interoperable environment and maintaining the synthetic terrain, models, and virtual OneSAF for the Army's Integrated Training Environment (ITE) concept.

The government awarded Increment 2 as a single award, cost plus fixed fee (CPFF), indefinite delivery indefinite quantity (IDIQ) contract to Leidos in August 2011 with a period of performance start date of December 2011. Leidos was formerly known as Science Applications International Corporation (SAIC). This contract has a one-year base with four one-year options. The government exercised the first option in December 2012, the second option in December 2013, the third option in December 2014 and the fourth option in December 2015. The government awarded a final delivery order in December 2016 that extended the period of performance of the Increment 2 contract into December 2017. The contract was extended an additional six months to June 2018 while the Increment 3 contract was competed.

In April 2018, in keeping with the original SE Core acquisition strategy of continuous development, the government awarded the Increment 3 contract as a single award, CPFF, IDIQ with a one year base and four one-year options and a target end date of FY 2023.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
2040 / 5				PE 0604780A / Combined Arms Tactical Trainer (CATT) Core					582 / Synthetic Envir Core						
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	Various	Various : Various	3.622	-		-		-		-		-	0.000	3.622	3.622
Government Program Management Support	Various	PEO STRI : Orlando, FL	25.993	0.529	Oct 2018	0.204	Oct 2019	0.359	Feb 2021	-		0.359	Continuing	Continuing	Continuing
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.419		-		-		-	0.000	0.419	-
Subtotal			29.615	0.529		0.623		0.359		-		0.359	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Technology Development - Architecture and Integration	C/CPFF	SAIC : Orlando, FL	6.946	-		-		-		-		-	0.000	6.946	6.946
Technology Development -Architecture and Integration	C/CPFF	SAIC : Orlando, FL	50.785	-		-		-		-		-	0.000	50.785	50.785
Technology Development -Database Virtual Environment Development	C/CPFF	CAE, USA : Orlando, FL	56.179	-		-		-		-		-	0.000	56.179	56.179
Technology Development-Common Virtual Environment & Management	C/Various	Leidos : Orlando, FL	80.284	-		-		-		-		-	0.000	80.284	80.284
Technology Development-Common Virtual Environment & Management INC III	C/Various	Leidos, Inc. : Orlando, FL	6.885	3.640	Oct 2018	-		-		-		-	0.000	10.525	Continuing
Technology Development-Common Virtual Environment & Management INC III	Option/ Various	Leidos : Orlando, FL	-	4.940	Mar 2019	8.618	Nov 2019	3.209	Nov 2020	-		3.209	Continuing	Continuing	Continuing
Subtotal			201.079	8.580		8.618		3.209		-		3.209	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
 FY 2020 award in Nov 2019 of \$8.827 million funds remaining option year 1 period and awards option year 2 period. FY 2021 award of \$3.209 million in Nov 2020 fully funds option year 2 period and awards option year 3 period.

Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technology Development - Test Support	Various	Test Community : Various	0.125	-		-		-		-		-	0.000	0.125	0.125
Subtotal			0.125	-		-		-		-		-	0.000	0.125	N/A

			Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			230.819	9.109		9.241		3.568		-		3.568	Continuing	Continuing	N/A

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 582 / <i>Synthetic Envir Core</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 2 (Development and Integration)	4	2013	3	2018
Increment 3 (Development and Integration)	3	2018	3	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>					Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>		
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
585: <i>Aviation Combined Arms Tactical Trainer</i>	-	8.741	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	8.741
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The research and development effort for Project 571 - Aviation Combined Arms Tactical Trainer, has completed and the program will not request funding in FY 2021.

A. Mission Description and Budget Item Justification

The Aviation Combined Arms Tactical Trainer (AVCATT) is Army Aviation's only Collective Training Program of Record for Active, Reserve, and Army National Guard Aviation Units. AVCATT enables unit collective and combined arms air-ground training for AH-64, UH-60, CH-47, and UH-72 aircrews within the Live, Virtual and Constructive (LVC) Integrated Training Environment (ITE). The AVCATT also supports the training of Non-Rated crew members in crew coordination, flight, aerial gunnery, hoist, and slingload related tasks via the Non-Rated Crew Member Manned Module (NCM3); which can be linked to AVCATT's UH-60, CH-47, and UH-72 cockpit configurations to support a unit's specific Mission Training Requirements.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2019	FY 2020	FY 2021
Title: Government Program Management for the Aviation Combined Arms Tactical Trainer (AVCATT) program.	0.105	-	-
Description: Government Program Management for the AVCATT program.			
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Aviation Combined Arms Tactical Trainer (AVCATT) program.	8.636	-	-
Description: Continue EMD phase contract activities for the AVCATT program.			
Accomplishments/Planned Programs Subtotals	8.741	-	-

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

Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• NA0173: <i>Aviation Combined Arms Tactical Trainer</i>	32.700	4.840	0.000	-	0.000	-	-	-	-	0.000	37.540

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / Combined Arms Tactical Trainer (CATT) Core	Project (Number/Name) 585 / Aviation Combined Arms Tactical Trainer

D. Acquisition Strategy

The government awarded a single award, cost plus fixed fee (CPFF), indefinite delivery indefinite quantity (IDIQ) contract to Applied Visual Technologies, a minority owned, small disadvantaged business, in December 2012. The period of performance of the base contract is through December 2017. Additional tasks are exercised through delivery orders which each have multiple options for development. The most recently awarded RDTE effort was on the fourth delivery order, awarded in September 2014, which included options for gunnery enhancements, integrated data modem development, training environment virtualization, aviation mission planning software development, maintenance tool kit development, manned unmanned teaming, and AH-64E concurrency development.

The government awarded a single award, CPFF, IDIQ services contract to Cole Engineering Services, Inc, a small business, in September 2015. The period of performance of the base contract is through September 2020. The third task order, awarded in June 2016, included hardware modernization development and Windows 10 research and testing.

AVCATT utilizes small business competitively awarded contract vehicles when able. Currently small businesses are conducting development for dynamic terrain enhancements, NCM3 development, and training effectiveness analysis.

The AVCATT program is post Milestone C. Although the system is in the production phase, continuous research, development, testing, and engineering is required in order to maintain concurrency with the real world aircraft and systems that the AVCATT simulates in the virtual training environment. The AVCATT program has fielded the full base order of issue of 23 suites but continues to release incremental hardware and software upgrades at approximate semiannual intervals. RDTE efforts will not continue in FY 2020, as system begins its transition into sustainment.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604780A / Combined Arms Tactical Trainer (CATT) Core				585 / Aviation Combined Arms Tactical Trainer							
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCATT Program Management Support	Various	PEO STRI : Orlando, FL	3.648	0.105	Oct 2018	-		-		-		-	0.000	3.753	3.753
Subtotal			3.648	0.105		-		-		-		-	0.000	3.753	N/A
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCATT Interoperability	C/CPFF	Cole Engineering Services, INC : Orlando, FL	2.826	1.042	Jul 2019	-		-		-		-	0.000	3.868	3.868
AVCATT Image Generators	C/CPFF	Cole Engineering Services, INC : Orlando, FL	2.427	7.594	May 2019	-		-		-		-	0.000	10.021	10.021
AVCATT Virtualization - Manned Module	C/CPFF	Cole Engineering Services, INC : Orlando, FL	2.228	-		-		-		-		-	0.000	2.228	2.228
Subtotal			7.481	8.636		-		-		-		-	0.000	16.117	N/A
Project Cost Totals			11.129	8.741		0.000		-		-		-	0.000	19.870	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>	

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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
AVCATT/NCM3 EMD	████████████████				████████████████																							
AVCATT Interoperability	████████████																											
AVCATT Image Generator	████████████████																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604780A / <i>Combined Arms Tactical Trainer (CATT) Core</i>	Project (Number/Name) 585 / <i>Aviation Combined Arms Tactical Trainer</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AVCATT/NCM3 EMD	2	2017	2	2020
AVCATT Interoperability	2	2018	4	2019
AVCATT Image Generator	2	2018	2	2020