Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army											Date: May 2021	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0604121A *I Synthetic Training Environment Refinement & Prototyping*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	-	99.357	112.093	194.195	-	194.195	-	-	-	-	-	-
CR2: *STE Information Systems (TSS, TMT)*	-	-	-	104.903	-	104.903	-	-	-	-	-	-
CR3: *STE Live*	-	-	-	20.000	-	20.000	-	-	-	-	-	-
CR4: *STE One World Terrain (OWT)*	-	-	-	27.788	-	27.788	-	-	-	-	-	-
CR5: *STE Reconfigurable Virtual Trainer (RVCT)*	-	-	-	25.216	-	25.216	-	-	-	-	-	-
CR6: *STE Squad Immersive Virtual Trainer (SiVT)*	-	-	-	5.000	-	5.000	-	-	-	-	-	-
CR7: *STE Soldier Virtual Trainer (SVT)*	-	-	-	11.288	-	11.288	-	-	-	-	-	-
FD6: *Synthetic Training Environment Refine & Prototype*	-	27.975	105.354	-	-	-	-	-	-	-	-	-
SV1: *Soldier/Squad Virtual Trainer*	-	71.382	6.739	-	-	-	-	-	-	-	-	-

Note

In FY 2022, all requirements from Project FD6 - Synthetic Training Environment Refine & Prototype were realigned to Projects CR2 (STE Information Systems [TSS, TMT]), CR3 (STE Live), CR4 (STE One World Terrain [OWT]), CR5 (STE Reconfigurable Virtual Trainer [RVCT]), and CR7 (STE Soldier Virtual Trainer [SVT]).

In FY 2022, all requirements from Project SV1 - Soldier/Squad Virtual Trainer were realigned to Projects CR4 (STE One World Terrain [OWT]) and CR6 (STE Squad Immersive Virtual Trainer [SiVT]).

A. Mission Description and Budget Item Justification

The Synthetic Training Environment (STE) is the next generation holistic collective training capability that will enable leaders, Soldiers, and units to train where they will fight, with the partners they will fight with, and in complex operational environments to include dense urban, woodland, jungle, dessert, and sub-terrain, before the first fight begins. STE will revolutionize Army training by providing the repetition necessary at the Point of Need for improved proficiency prior to live training or operations-improving Soldier lethality and survivability. The STE program is pre-acquisition and has 5 OTAs awarded in support of prototyping capabilities to an Initial Operating Capability (IOC) of FY 2023, and will implement an incremental fielding approach leveraging the Software Acquisition pathway. The STE will be available where training occurs (home station, combat training centers, armories, institutions, ship-board, deployed).

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army	Date: May 2021
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604121A *I Synthetic Training Environment Refinement & Prototyping*

The STE is comprised of four main signature efforts: 1) STE-Information System (STE-IS); 2) Reconfigurable Virtual Collective Trainers (RVCT), both air and ground; 3) Soldier Virtual Trainer (SVT); and 4) STE LIVE. STE-IS is comprised of Synthetic Training Environment training capability consisting of One World Terrain (OWT), Training Simulation Software (TSS), and Training Management Tools (TMT). The RVCT Air and Ground (RVCT A/G) will allow units to collectively train, using proponent developed Combined Arms Training Strategies (CATS), on a simulated, fully interactive, real-time battlefield. S/SVT is broken into Squad Immersive Virtual Trainer (SiVT) and Soldier Virtual Trainer (SVT). Squad immersive Virtual Trainer (SiVT) is the immersive training capability delivered as part of the Integrated Visual Augmentation System (IVAS) for the close combat Squads that enables IVAS to be a fight, rehearse, and training platform. SVT, will provide training to Soldiers Army wide by providing a Weapons Skills Development (WSD), Joint Fires Trainer (JFT) and Use of Force (UoF). STE LIVE focuses on the development of twelve engagement types and five instrumentation enablers. The twelve engagement types are direct fire, counter-defilade fire, indirect fire, dropped objects, placed objects, thrown objects, guided weapons, autonomous weapons, cyber, directed energy, radiant energy, and plume; the five instrumentation enablers are calculations, networks, sensors, terrains, and transmitters. A future STE line of effort includes Next Generation Constructive.

FY 2022 Projects CR2 through CR7 Base RDTE dollars in the amount of $194.195 million funds significant development efforts in the STE-Information System (STE-IS), One World Terrain (OWT), Reconfigurable Virtual Collective Trainer (RVCT), Squad Immersive Virtual Trainer (SiVT), Soldier Virtual Trainer (SVT), and STE-LIVE. NOTE - Projects CR2, CR3, CR4, CR6 and CR7 are not new starts; efforts were previously captured under projects FD6 and SV1.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	103.621	129.547	10.658	-	10.658
Current President's Budget	99.357	112.093	194.195	-	194.195
Total Adjustments	-4.264	-17.454	183.537	-	183.537
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-28.126			
• Congressional Rescissions	-	-			
• Congressional Adds	-	15.400			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.264	-4.728			
• Adjustments to Budget Years	-	-	183.537	-	183.537

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: FD6: *Synthetic Training Environment Refine & Prototype*		
Congressional Add: *Congressional Add for STE-LIVE - (Army requested transfer from WTCV line 5)*	-	10.400
Congressional Add Subtotals for Project: FD6	-	10.400
Congressional Add Totals for all Projects	-	10.400

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army	Date: May 2021
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604121A *I Synthetic Training Environment Refinement & Prototyping*

Change Summary Explanation

FY 2022: Increase to PB of $183.537 million will fund significant development efforts for the STE-Information System (STE-IS), Reconfigurable Virtual Collective Trainer (RVCT), Squad immersive Virtual Trainer (SiVT), Soldier Virtual Trainer (SVT), and STE-LIVE.

This increase, in accordance with the Program Objective Memorandum Guidance for Fiscal Years 2023-2027, will be used to accelerate Synthetic Training Environment to increase small unit lethality. The increase in FY2022 supports the incorporating the revised A-CDD requirements for STE-IS and OWT to develop echelon software, support Aviation integration, initiate tactical terrain prototype development, in addition to, implementing DEVSECOPS and system integrating functions. Additionally, increase will finalize the technical development and demonstration of prototypes designs to facilitate production decisions for RVCT and follow-on production effort for SiVT. Lastly, FY2022 increase will support the acceleration of the STE-LIVE prototyping efforts and commence the prototyping efforts for SVT.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR2 / *STE Information Systems (TSS, TMT)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CR2: *STE Information Systems (TSS, TMT)*	-	-	-	104.903	-	104.903	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project is not a new start, efforts was previously captured under PE 604121A, Project FD6.

A. Mission Description and Budget Item Justification

The Training Simulation Software/Training Management Tools (TSS/TMT) will provide 2 of the 3 core function for the Synthetic Training Environment - Information Systems (STE-IS).TSS/TMT will provide a single, unified training & management environment where units from Soldier/Squad to Army Service Component Command (ASCC) train in the most appropriate live, virtual, constructive, or gaming environment or in all four at once.

The Training Simulation Software (TSS), the core STE simulation engine, provides the physical and behavior models necessary to replicate the operational environment to enable collective training from Soldier/Squad through ASCC. The TSS provides entity, aggregate, and common services, as well as adjudicates STE-IS interactions at the entity level (e.g., Computer-Generated Forces (CGF), and synthetic equipment). The Training Management Tool (TMT) is the capability that enables units to quickly plan collective training events, prepare training events; execute and monitor events, and assess event results and readiness. TMT provides an easy to use interface, combined with an Intelligent Tutor to reduce help-desk support, time, and manpower required for a training event. TMT will provide training management (data) services and authoritative data sources to enable training on demand to users regardless of geographic location.

In FY 2021, TSS/TMT adopted the execution of the Software Acquisition Pathway, tailored for software intensive systems. TSS/TMT plans to facilitate rapid and iterative delivery of the of its capabilities through Minimal Viable Products (MVP) and Minimum Viable Capability releases (MVCR) to support Squad (Sq) to Brigade (Bde) level training through 4QFY2023.

FY 2022 Base RDTE dollars in the amount of $104.903 million for TSS/TMT will continue with the development of Minimal Viable Product (MVP) and delivery of Minimal Viable Capability Releases (MVCR) for the STE-IS to achieve a Squad to Company level training capability. Base funding will also continue the implementation of the DEVSECOPS process and software production pipeline to support STE-IS capability releases by echelons. Also, base funding will continue the development and integration of Avionics Software Emulation (AvSE) with TSS/TMT software baseline to support the RVCT Air capability.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for STE-IS	-	-	104.903
FY 2022 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR2 / *STE Information Systems (TSS, TMT)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Funding supports the STE-IS TSS/TMT continued prototype development of the Minimal Viable Products (MVPs), testing and release of capability releases to achieve Squad through Company training capability. Continued prototype development and testing will focus in the following areas: -- Architecture: continue with the development of a scalable/flexible Modular Open System Approach (MOSA) architecture to deliver collective training capability at the Point of Need (PoN). Continue development of open/common interface to support technology insertion and interoperability with STE lines of effort (i.e. - OWT, RVCT-Air, RVCT-Ground, RVCT-Soldier and SVT). -- TMT: continue with the development of the user interfaces that would enable Commanders and Leaders at the Squad through Company echelons to design exercises/scenarios -- TSS: continue with the development of the STE core simulation/game engine to provide a synthetic environment which enable collective training from Squad through Company across the Fires, Movement and Maneuver, and Mission Command warfighting functions. -- Integration: Continue the integration of TSS, TMT, OWT, RVCT-Air, RVCT-Ground, RVCT-Soldier, Avionics Software Emulation (AvSE) and Mission Command Information Systems (MCIS) to deliver and integrated, training capable STE-IS system to support Squad through Company collective training tasks. -- Test/Evaluation: Conduct evaluation of the TSS/TMT MVPs through technical assessments, Soldier Touch Points, Early User Test and test planning events to provide STE-IS capability by echelons. -- Continue the implementation of the DEVSECOPS process and software production pipeline to support STE-IS capability releases by echelons. -- Continue the development and integration of AvSE with TSS/TMT software baseline to ensure that the RVCT-Air capability is concurrent with Aviation platform systems. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase in funding is due to new project line being established in FY22.			
Accomplishments/Planned Programs Subtotals	-	-	104.903

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The TSS/TMT will be deployed as a software intensive program leveraging accelerated acquisition authorities such as the Software Acquisition Pathway. To ensure speed and agility to deliver and modernize STE, a modular open systems architecture (MOSA) will also be used to enable the Army to exploit rapid advancements in

cutting-edge commercial technologies. Other acquisition elements such as testing, contracting, and technology transition will consider any and all means available to innovate and incorporate complementary support to add momentum in this approach.

The TSS/TMT requirements are codified in the STE-IS abbreviated Capabilities Development Document (A-CDD) version 2, approved 2 June 2020. TSS/TMT was one of five (5) OTAs awarded in FY 2019 in support of the STE prototype initiatives which include: TSS/TMT, OWT, RVCT, Live (market research only), and SVT Weapons Optimization (market research only). Prime(s) and Sub-vendors will execute the STE agreement(s) through an Agile development process with established success criteria and their DevSecOps processes. Vendors will continually include the Government and all stakeholders (Internal and external) in the Agile development process. This process will ensure all parties have transparency and early input into the modular design effort in order to support success of the product(s) being developed for the STE.

The initial TSS/TMT OTA, awarded in FY2019, commenced the prototype development and evaluation of minimal viable products (MVP) through technical assessments Soldier Touch Points, and test planning events. Additionally, the initial agreement allowed the Government to fully understand and decompose the requirements, establish/describe interfaces between TSS/TMT and RVCT, Avionics Software Emulation (AvSE) and OWT capabilities, and exposed the Government to the readiness of additional technologies that will enable the delivery of an integrated STE. These lesson learned, along with the incorporating the revised A-CDD updates forms the basis of the new TSS/TMT follow-on OTA planned for award in 3QFY21. The TSS/TMT follow-on OTA will continue prototype development and evaluation of minimal viable products (MVP) through technical assessments, Soldier Touch Points, Early User Test and test planning events to provide a Squad (Sq) to Company (Co) training capability, in addition to, providing Minimum Viable Capability Releases (MVCR) in support of RVCT (A/G/S) capability.

STE Increment 1 is programmed for 4Q FY 2023 and is defined as the first fielding and acceptance of the STE-IS capability at installations identified IAW the distribution plan. Increment 1 fielded STE systems will include the following attributes: verification, validation and accreditation process complete; STE-IS capabilities in support of RVCT A/G/S and Squad Immersive Virtual Trainer (SiVT) IOC in FY 2022 and ultimately the Soldier Virtual Trainer (SVT) IOC in FY 2024; meeting Information Assurance and Risk Management Framework requirements. New Equipment Training (NET) will include the capability to support the RVCT, and the ability to provide initial sustainment via interim contractor support (ICS). Soldiers will interface with the STE-IS through the Training Management Tools, the Reconfigurable Virtual Collective Trainer (RVCT) and SiVT via the Integrated Visual Augmentation System (IVAS).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR2 / *STE Information Systems (TSS, TMT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSS/TMT Prototype Development	C/TBD	TBD : TBD	-	-		-		89.605	Oct 2021	-		89.605	Continuing	Continuing	Continuing
AvSE Development/ Integeration	Various	PEO STRI : Orlando FL	-	-		-		12.460	Jan 2022	-		12.460	Continuing	Continuing	Continuing
		Subtotal	-	-		-		102.065		-		102.065	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MVCR	Various	Multiple : Orlando, FL	-	-		-		2.067	Oct 2021	-		2.067	Continuing	Continuing	Continuing
TSS/TMT Test Support	Various	ATEC : Orlando, FL	-	-		-		0.771	Oct 2021	-		0.771	Continuing	Continuing	Continuing
		Subtotal	-	-		-		2.838		-		2.838	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		104.903		-		104.903	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR2 / *STE Information Systems (TSS, TMT)*

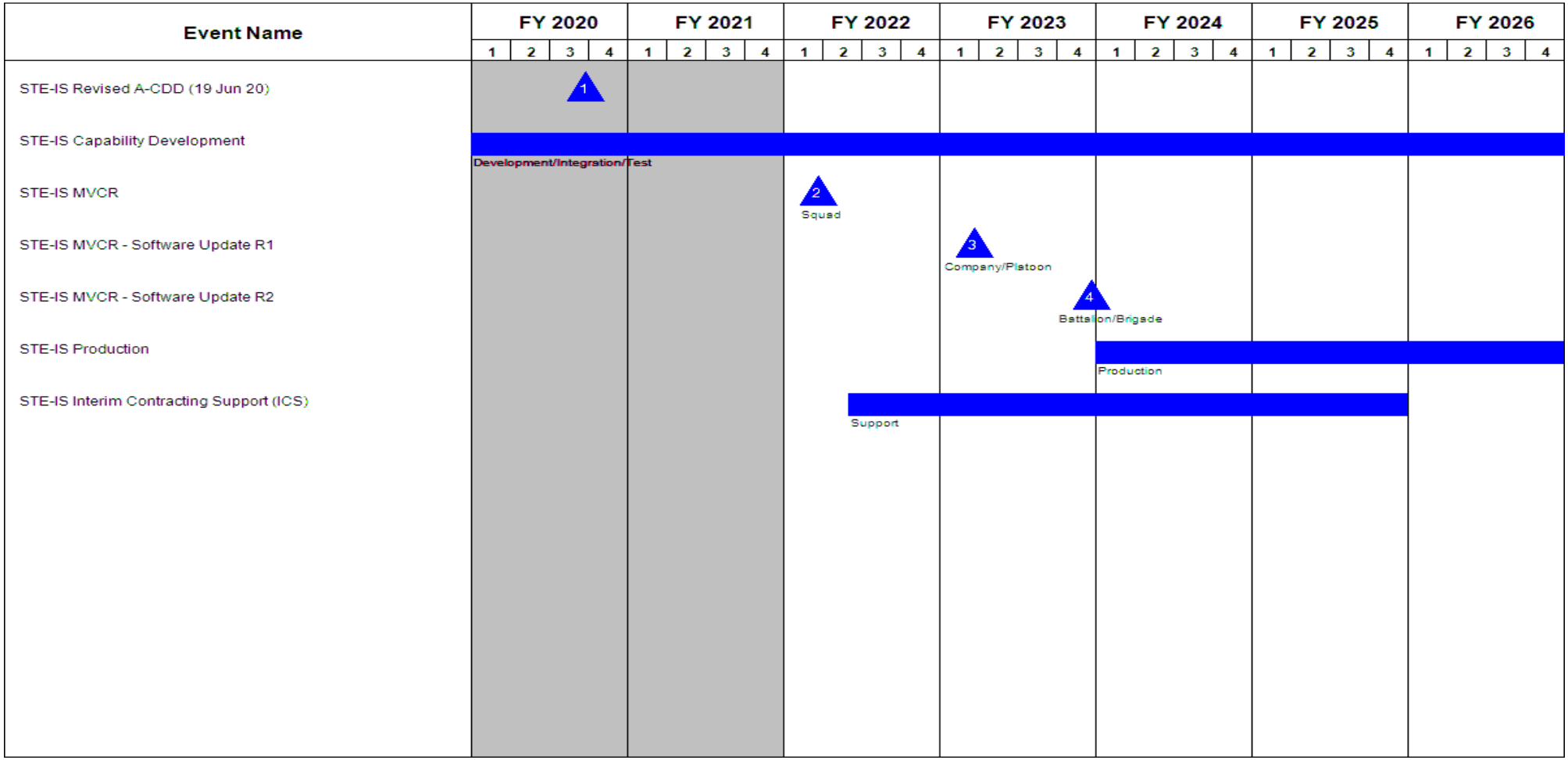

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR2 / *STE Information Systems (TSS, TMT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
STE-IS Revised A-CDD (19 Jun 20)	3	2020	3	2020
STE-IS Capability Development	3	2019	4	2027
STE-IS MVCR	1	2022	1	2022
STE-IS MVCR - Software Update R1	1	2023	1	2023
STE-IS MVCR - Software Update R2	4	2023	4	2023
STE-IS Production	1	2024	4	2026
STE-IS Interim Contracting Support (ICS)	2	2022	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR3 / *STE Live*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CR3: *STE Live*	-	-	-	20.000	-	20.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Element was previously funded from PE 604121A, Project FD6.

A. Mission Description and Budget Item Justification

The Synthetic Training Environment (STE) Live program develops live training systems in concert with the Cross Functional Team STE initiatives. The STE Live program converges live training with the STE, providing units the necessary training components to accelerate and sustain combined arms maneuver proficiency in support of multi-domain operations. The STE Live program focuses on the development of next generation live training architecture that leverages leading edge technologies and standards to enable the realistic exercise of unit combat weapons up to brigade level in Multi Domain Operation Environment. The challenge today is that the Army cannot train as it fights since 40% of BCT platforms weapons effects are currently not simulated by today's live training system (MILES). STE Live next generation systems will replicate the following new engagement types, improve sensory feedback, increase realism of direct fire engagement, increase realism of battle damage assessments, improve after action reviews and improve instrumentation at the Combat Training Centers and Home Stations:
Indirect Fire, Counter-Defilade (M320, MK-19), Place Object (Mines), Thrown Objects (Grenades), Dropped Objects (Bombs), Guided Weapon (Missiles), Autonomous Weapon (Missiles, Smart Munitions), Direct Energy (laser), Radiant Energy (Sonic, Microwave), CBRNE Plumes and Cyber.

FY 2022 Base RDTE dollars in the amount of $20.000 million furthers development of STE Live prototype(s) into simulation training systems to replicate the training aid weapon systems for multiple engagement scenarios (direct, indirect, & counter-defilade). These systems will replace up to six systems reaching End of Useful life and enhance Soldier capability and training value. FY 2022 funds will continue to revolutionize Soldier Simulation and Training systems to include a Synthetic Training Environment for 12 engagement types are Direct Fire, Counter-Defilade Fire, Indirect Fire, Dropped Objects, Placed Objects, Thrown Objects, Guided Weapons, Autonomous Weapons, Cyber, Directed Energy, Radiant Energy, and Plume. The 5 instrumentation enablers are Calculations, Networks, Sensors, Terrains, and Transmitters.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for STE Live	-	-	20.000
Description: Direct engineering development, support and test of the STE Live program through awarded OTA vehicles. ***FY 2022 Plans:*** FY 2022 Base RDTE dollars in the amount of $20.000 million furthers development of STE Live prototype(s) into simulation training systems to replicate the training aid weapon systems for multiple engagement scenarios (direct, indirect, & counter-defilade). These systems will replace up to six systems reaching End of Useful life and enhance Soldier capability and training			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR3 / *STE Live*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
value. FY 2022 funds will continue to revolutionize Soldier Simulation and Training systems to include a Synthetic Training Environment for 12 engagement types are Direct Fire, Counter-Defilade Fire, Indirect Fire, Dropped Objects, Placed Objects, Thrown Objects, Guided Weapons, Autonomous Weapons, Cyber, Directed Energy, Radiant Energy, and Plume. The 5 instrumentation enablers are Calculations, Networks, Sensors, Terrains, and Transmitters. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** FY 2021 was resourced through a Congressional Add in Project FD6. FY 2022 is the first year of programmed base funding.			
Accomplishments/Planned Programs Subtotals	-	-	20.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

To accelerate the live training modernization program, a STE-Live Force on Force Modular Open System Approach compliant architecture will be developed starting with direct fire, indirect fire and counter-defilade force on force engagement systems plus the five instrumentation enablers. STE-Live will leverage cutting edge technologies in areas of integrated internet of things, intelligent sensors, augmented reality and haptics to realize these capabilities. STE Live will be acquired using rapid prototyping path with objective to achieve production ready solutions within 2 to 3 years after award. STE Live OTA on track for 3QFY2021 to support IOC in 4QFY2024 and production of FOC quantities in FY 2025.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR3 / *STE Live*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
STE Live	C/TBD	TBD : Orlando, FL	-	-		-		20.000	Mar 2022	-		20.000	Continuing	Continuing	Continuing
		Subtotal	-	-		-		20.000		-		20.000	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		20.000		-		20.000	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR3 / *STE Live*

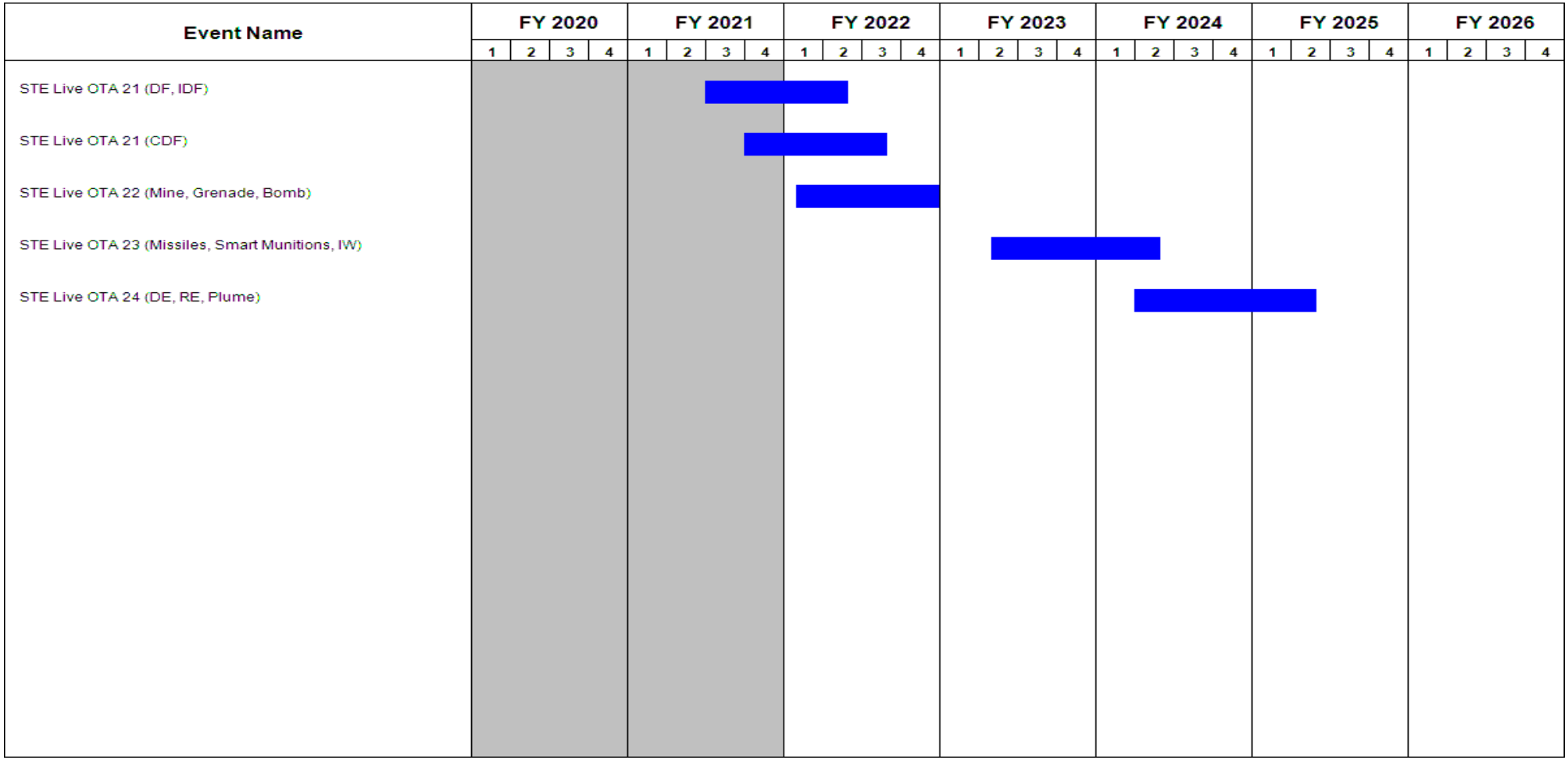

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR3 / *STE Live*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
STE Live OTA 21 (DF, IDF)	3	2021	2	2022
STE Live OTA 21 (CDF)	4	2021	3	2022
STE Live OTA 22 (Mine, Grenade, Bomb)	1	2022	4	2022
STE Live OTA 23 (Missiles, Smart Munitions, IW)	2	2023	2	2024
STE Live OTA 24 (DE, RE, Plume)	2	2024	2	2025

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR4 / *STE One World Terrain (OWT)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CR4: *STE One World Terrain (OWT)*	-	-	-	27.788	-	27.788	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This project is not a new start, efforts was previously captured under PE 604121A, Project FD6.

A. Mission Description and Budget Item Justification

One World Terrain (OWT) is one of three core functions of the Synthetic Training Environment-Information Systems (STE-IS). OWT provides a 3D global terrain capability and associated information services that support virtual replication of the physical Earth and complexities of the operational environment in support Multi-Domain Operations and training at the point-of-need. OWT will enable leaders, Soldiers, and units to train in complex operational environments, such as dense urban, woodland, jungle, desert, and subterranean areas before the first fight begins.

Capabilities developed by OWT automatically process raw terrain data into a well-formed format that is editable and consumable by standard commercial tools and technologies. It provides the tools to incorporate approved geospatial information updates and local terrain surveys into the OWT foundational repository and will be used by STE and tactical applications.

In FY 2021, OWT adopted the Software Acquisition Pathway employed by the STE-IS program that is tailored for software intensive systems. OWT plans to facilitate rapid and iterative delivery of its capabilities through support to STE-IS Minimal Viable Products (MVP) and Minimum Viable Capability releases (MVCR) that support Squad (Sq) through Brigade (Bde) level training until 4QFY2023.

FY 2022 Base RDTE dollars in the amount of $27.788 million for OWT will continue prototyping automated processes for producing 3D terrain data that replicates the physical Earth and its complexities for use in STE and tactical applications. Base funding will support efforts to fully integrate OWT 3D terrain data into the TSS/TMT portion of the STE-IS. Base funding will also be used to develop Mission Command formats and Cybersecurity Testing.

The OWT requirements are codified in the STE-IS abbreviated Capabilities Development Document (A-CDD) version 2, approved 2 June 2020.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for OWT	-	-	27.788
FY 2022 Plans: Funding supports continued development and evaluation of OWT prototype processes to create the prototype terrain. OWT base funding will continue development of additional feature extraction algorithms, automated test tools, and efforts to fully integrate			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR4 / *STE One World Terrain (OWT)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
OWT 3D terrain data into the TSS/TMT portion of the STE-IS. Base funding will complete development of capabilities started in FY21, and begin development of prototype tactical terrain and additional revised A-CDD requirements such as automated building interiors and integration of Soldier-collected 3D hi-res terrain captures. Lastly, funding will support delivery of products for the STE-IS minimal viable capability release (MVCR), technical assessments, additional cybersecurity tests, and test planning for events leading up to the MVCR. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase in funding is due to new project line being established in FY22.			
Accomplishments/Planned Programs Subtotals	-	-	27.788

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The OWT requirements are codified in the STE-IS abbreviated Capabilities Development Document (A-CDD) version 2, approved 2 June 2020. OWT was one of five (5) OTAs awarded in FY 2019 in support of the STE prototype initiatives which include: STE-IS (TSS/TMT, OWT), RVCT, Live (market research only), and SVT Weapons Optimization (market research only). Prime(s) and Sub-vendors will execute the STE agreement(s) through an Agile development process with established success criteria and their DevSecOps processes. Vendors will continually include the Government and all stakeholders (Internal and external) in the Agile development process. This process will ensure all parties have transparency and early input into the modular design effort in order to support success of the product(s) being developed for the STE.

OWT will be deployed in concert with the STE-IS as a software intensive program leveraging accelerated acquisition authorities such as the Software Acquisition Pathway. To ensure speed and agility to deliver and modernize STE, a modular open systems architecture (MOSA) will also be used to enable the Army to exploit rapid advancements in cutting-edge commercial technologies. Other acquisition elements such as testing, contracting, and technology transition will consider any and all means available to innovate and incorporate complementary support to add momentum in this approach.

STE Increment 1 IOC is programmed for 4QFY2022 and is defined as the first fielding and acceptance of the STE-IS capability at installations identified in the A-CDD. OWT will be delivered integrated with the IOC fielded STE systems and will meet Information Assurance and Risk Management Framework requirements and will provide initial sustainment via interim contractor support (ICS). Soldiers will interface with OWT through the STE-IS Training Management Tools, which in turn will interface with the Reconfigurable Virtual Collective Trainer (RVCT) and SiVT via the Integrated Visual Augmentation System (IVAS). Confidence events and evaluations were built into the OTAs to determine the readiness and availability of technology in support of FY 2022 IOC.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR4 / *STE One World Terrain (OWT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
OWT Capability Development	Option/ FFP	Maxar Technologies (formerly VRICON) : Westminster, CO	-	-		-		27.788	Dec 2021	-		27.788	Continuing	Continuing	Continuing
		Subtotal	-	-		-		27.788		-		27.788	Continuing	Continuing	N/A

Remarks

OWT Capability Development: OWT awarded its prototype OTA on June 2019. FY22 Base RDTE funding will support the follow-on option period on the OWT OTA.
Note: VRICON was acquired by Maxar Technologies on 1 July 2020.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		27.788		-		27.788	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR4 / *STE One World Terrain (OWT)*

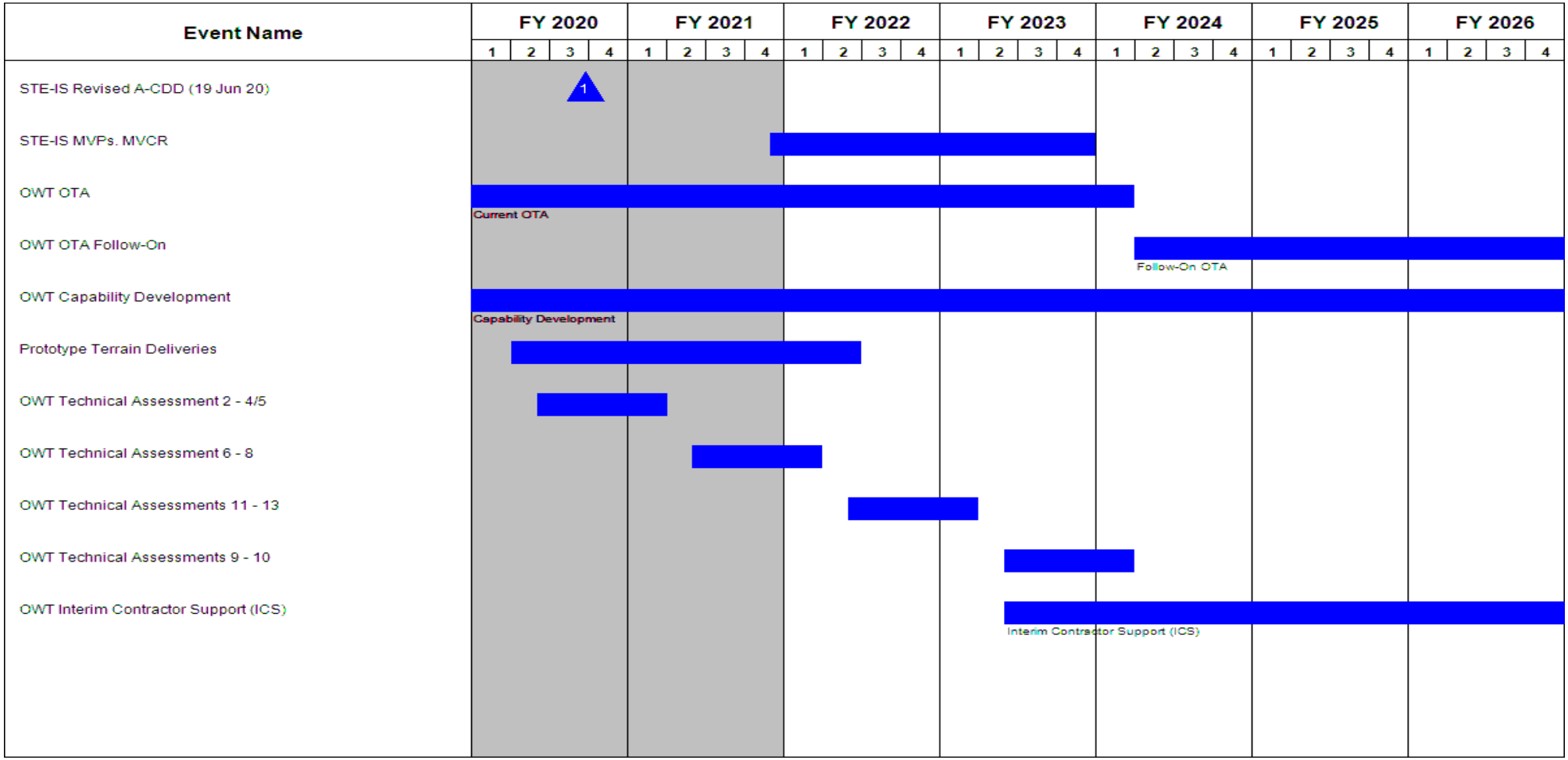

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR4 / *STE One World Terrain (OWT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
STE-IS Revised A-CDD (19 Jun 20)	3	2020	3	2020
STE-IS MVPs. MVCR	4	2021	4	2023
OWT OTA	3	2019	1	2024
OWT OTA Follow-On	2	2024	1	2029
OWT Capability Development	3	2019	1	2029
Prototype Terrain Deliveries	2	2020	2	2022
OWT Technical Assessment 2 - 4/5	2	2020	1	2021
OWT Technical Assessment 6 - 8	2	2021	1	2022
OWT Technical Assessments 11 - 13	2	2022	1	2023
OWT Technical Assessments 9 - 10	2	2023	1	2024
OWT Interim Contractor Support (ICS)	2	2023	1	2029

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR5 / *STE Reconfigurable Virtual Trainer (RVCT)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CR5: *STE Reconfigurable Virtual Trainer (RVCT)*	-	-	-	25.216	-	25.216	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Element was previously funded from PE 604121A, Project FD6.

A. Mission Description and Budget Item Justification

The STE-IS and RVCT requirements, which are codified in abbreviated Capabilities Development Documents (A-CDD) version 2 approved 2 June 2020, directly support the Army Collective Training Environment - Initial Capabilities Document (ACTE-ICD) as the Army's cornerstone for replicating the Operational Environment (OE) during training events enabling the Army to train as it fights. Separate, but interoperable, RVCT systems are required for both air and ground collective training. The Air RVCT will represent the U.S. Army, Army National Guard, and Army Reserves fleet of rotary wing aircraft, and specified U.S. Marine Corps (USMC) aircraft. The Ground RVCT will represent ground/amphibious track and wheeled vehicles from the U.S. Army, Army National Guard, Special Operations Units and the USMC.

The Reconfigurable Virtual Collective Trainer (RVCT) is the Army's next generation Virtual Training System for conducting collective maneuver training, collective gunnery training, mission rehearsal, and pre-deployment training; that will prepare units for multi-domain operations (MDO). The RVCT includes aviation platforms (RVCT-A), ground platforms (RVCT-G), and dismounted infantry (RVCT-S) devices. The RVCT is transportable to the point of need allowing units to train anywhere in the world. The RVCT will be enabled using the Synthetic Training Environment-Information Systems (STE-IS) software, which provides a fully interactive, real time simulated battlefield. The RVCT hardware is modular in design and will accommodate the integration of new technologies and future weapon systems, will interoperate with current Constructive and Live Training Environments via the Live, Virtual, Constructive Integrating Architecture (LVC-IA); and will support interoperability with the future Next Generation Constructive (NGC) and Live Training Environments, and other STE and operational capabilities.

FY2022 Base RDTE dollars in the amount of $25.216 million for RVCT is to finalize the technical development and demonstration of prototype designs to conduct a prototype Limited User Test (LUT) at Ft. Hood, TX that will inform a 4QFY2022 Milestone C and Low Rate Initial Production (LRIP) decision.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for RVCT	-	-	25.216
Description: Direct engineering development, support and test of the Reconfigurable Virtual Collective Trainer (RVCT) program through awarded OTA vehicles.			
FY 2022 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR5 / *STE Reconfigurable Virtual Trainer (RVCT)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
FY 2022 Base RDTE dollars in the amount of $25.216 million for RVCT is to finalize the technical development and demonstration of prototype designs to establish First Unit Equipped (FUE) at Ft. Hood, followed by a LUT and Milestone C. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of funding from FY 2021 (funded in project FD6) to FY 2022 is due to finalizing the technical development and demonstration of prototype designs to execute a Limited User Test (LUT) at Ft. Hood that will inform a 4QFY2022 Milestone C and Low Rate Initial Production (LRIP) decision.			
Accomplishments/Planned Programs Subtotals	-	-	25.216

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The United States Army has identified requirements for a training capability that provides a Synthetic Training Environment (STE), which includes immersive air and ground Reconfigurable Virtual Collective Trainers (RVCT), and a semi-immersive training capability for dismounted soldiers (RVCT-Soldier). The RVCT contributes significantly to the mitigation of four critical capability gaps identified in the Army's Capabilities Needs Analysis (CNA). As part of the STE Systems of Systems (SoS), the RVCT effort will deliver adaptable, low-overhead, hardware agnostic, training simulators that enable collective combined arms training in a realistic training environment that is a high-fidelity representation of current and future complex operational environments.

Separate, but interoperable, RVCT devices are required for both air and ground collective training. The RVCT Air (RVCT-A) will represent the U.S. Army, Army National Guard, and Army Reserves fleet of rotary wing aircraft. The RVCT Ground (RVCT-G) will represent ground track and wheeled vehicles from the U.S. Army, Army National Guard, and Special Operations Units. The RVCT will also include a semi-immersive training capability for dismounted soldier, the RVCT Soldier (RVCT-S).

This simplified acquisition management plan targets a Milestone C (MS C) decision and a low rate initial production (LRIP) decision for RVCT NLT 4th quarter Fiscal Year 2022 (4QFY 2022); followed by a 2nd quarter Fiscal Year 2023 Initial Operational Capability (IOC) and Full Rate Production decision. The 4QFY 2022 MS C decision date is driven by several contributing factors: the aging legacy Training Aids Devices Simulators, and Simulations (TADSS), the widening of their respective concurrency gaps; and advanced technology developments in the field of Modeling & Simulation (M&S) that now allow the US Army to realize a level of training realism that is not possible with the current generation of legacy TADSS.

RVCT is projected to be an Acquisition Category II program that will implement the Major Capability Acquisition (MCA) pathway governed by DoDi 5000.85, "Major Capabilities Acquisition", dtd 6 August 2020. As an ACAT II program the Milestone Decision Authority (MDA) will rest with the Program Executive Officer for Simulation, Training and Instrumentation (PEO STRI).

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR5 / *STE Reconfigurable Virtual Trainer (RVCT)*

The Phase 1 RVCT First Article (FA) prototyping phase is an iterative discovery and development process that entails close collaboration between Soldier stakeholders, customers, industry, and the development engineering community. The RVCT FA prototyping phase provides users with multiple feedback points, using pre-planned Synthetic Training Environment-Information System (STE-IS) Minimum Viable Product (MVP) software capability drops to facilitate Soldier Centric Design principles. Throughout the FA prototyping phase the RVCT PMO will prioritize requirements as a trade-off for delivery, affordability, and risk reduction.

The RVCT Phase 2 will produce prototype RVCT A/G systems, for delivery to Ft Hood, TX; including New Equipment Training (NET), establishment of an initial RVCT Product Support capability and infrastructure, and initiation of Interim Contractor logistics (ICS).

A 4QFY 2022 Limited User Test (LUT) of the RVCT prototypes will be conducted at Ft Hood, TX. The LUT will determine whether the RVCT systems are operationally effective, suitable, survivable, and safe for intended use to support a 4QFY 2022 RVCT Milestone C (MS-C) and LRIP decision. The RVCT LUT will be conducted on production representative RVCT hardware running the STE-IS Minimum Viable Capability Release (MVCR) Company level software capability.

At the conclusion of the RVCT LUT the Government anticipates a RVCT MS-C Acquisition Decision Memorandum (ADM) approving a follow-on production effort. The follow-on production effort will include a 4QFY 2022 LRIP to establish the initial RVCT production base. A combined STE-IS & RVCT IOT&E will be conducted 3QFY 2023. The IOT&E will inform a 4QFY 2023 RVCT IOC and Full Rate Production decision.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR5 / *STE Reconfigurable Virtual Trainer (RVCT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Reconfigurable Virtual Collective Trainers	C/FP	Cole Engineering Services, Inc : Orlando, FL	-	-		-		25.216	Jun 2019	-		25.216	Continuing	Continuing	Continuing
		Subtotal	-	-		-		25.216		-		25.216	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		25.216		-		25.216	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR5 / *STE Reconfigurable Virtual Trainer (RVCT)*

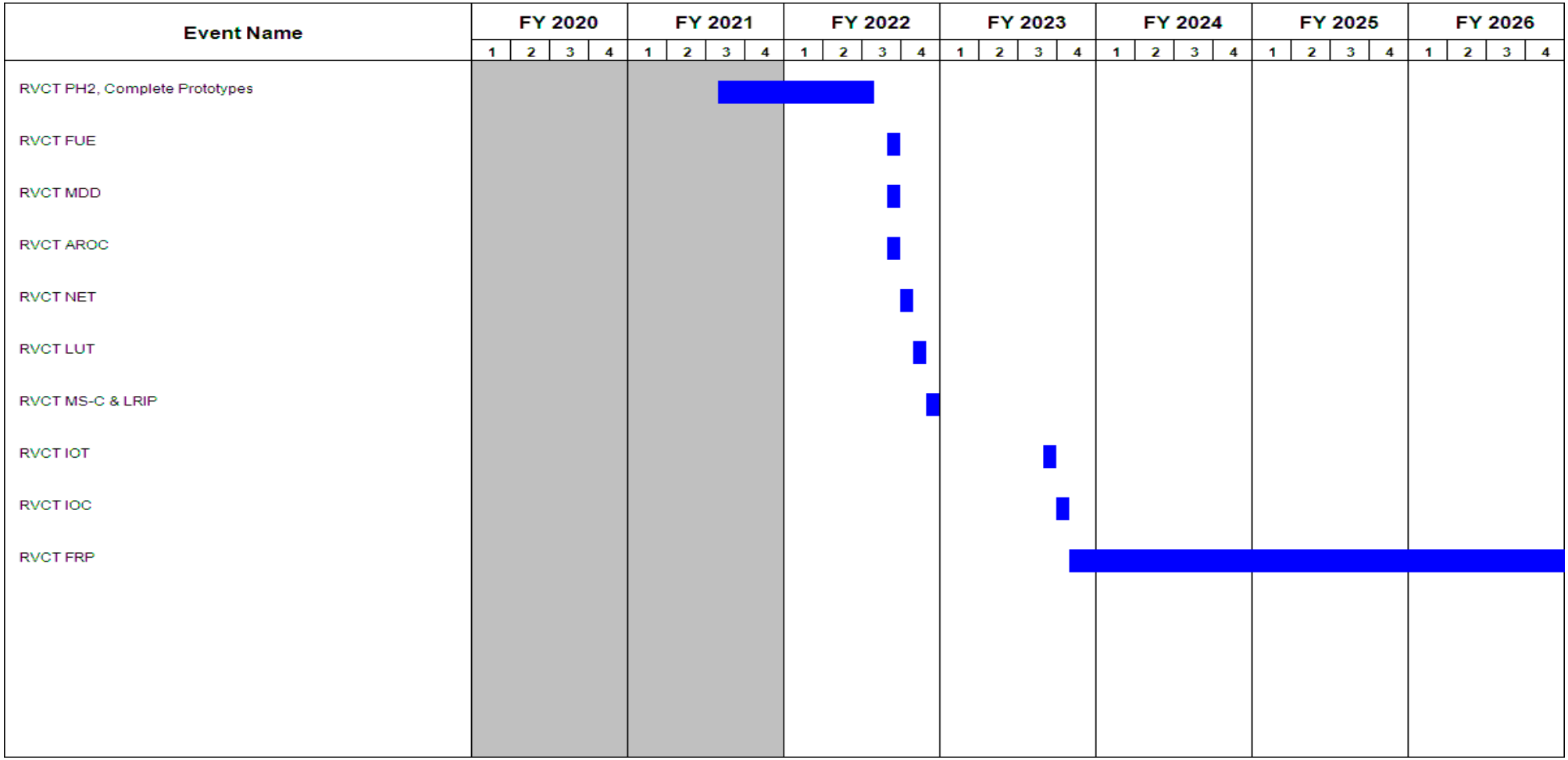

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR5 / *STE Reconfigurable Virtual Trainer (RVCT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
RVCT PH2, Complete Prototypes	3	2021	3	2022
RVCT FUE	3	2022	3	2022
RVCT MDD	3	2022	3	2022
RVCT AROC	3	2022	3	2022
RVCT NET	4	2022	4	2022
RVCT LUT	4	2022	4	2022
RVCT MS-C & LRIP	4	2022	4	2022
RVCT IOT	3	2023	3	2023
RVCT IOC	4	2023	4	2023
RVCT FRP	4	2023	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR6 / *STE Squad Immersive Virtual Trainer (SiVT)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CR6: *STE Squad Immersive Virtual Trainer (SiVT)*	-	-	-	5.000	-	5.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Project is not a new start. Funding for SiVT efforts is captured under PE 0604121A, Project SV1.

A. Mission Description and Budget Item Justification

Squad Immersive Virtual Trainer (SiVT) is the immersive training capability delivered as part of the Integrated Visual Augmentation System (IVAS) for the close combat Squads that enables IVAS to be a fight, rehearse, and training platform. SiVT provides a single platform for Soldiers/Marines to Fight, Rehearse, and Train with day and night providing increased lethality, mobility, and situational awareness necessary to achieve overmatch against our current and future adversaries. SiVT provide the Close Combat Force a mechanism to modernize in a comprehensive, deliberate pathway; A readiness tool for Squad Lethality and Human Performance assessment; Transformative ability to access and exploit data across domains and levels of command and a Synthetic Training Environment (STE) tool enabling on-demand squad training.

FY 2022 Base RDTE dollars in the amount of $5.000 million will finalize the prototype development and demonstration of production representative articles to support First Unit Issue (FUI).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for SiVT	-	-	5.000
FY 2022 Plans: Funding will finalize the prototype development and demonstration of production representative articles to support First Unit Issue (FUI).			
FY 2021 to FY 2022 Increase/Decrease Statement: Increase in funding is due to new project line being established in FY 2022.			
Accomplishments/Planned Programs Subtotals	-	-	5.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• NA2020: *Synthetic Training Environment (STE)*	14.449	13.063	-	-	-	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR6 / *STE Squad Immersive Virtual Trainer (SiVT)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• NA2211: *STE SIVT (IVAS TRAINER)*	-	-	69.266	-	69.266	-	-	-	-	-	-

Remarks

Base Procurement dollars for Squad immersive Virtual Trainer (SiVT) will conduct the procurement of hardware associated with the SiVT Kits, in addition to, providing New Equipment Training, Post Deployment Software Support, and associated fielding support.

D. Acquisition Strategy

Integrated Visual Augmentation System (IVAS) prototype OTA was awarded November 2018 to provide Soldiers the Fight, Rehearse, and Train capability to the close combat Soldiers. Squad Immersive Virtual Trainer (SiVT) provides the training capability for home station training. The SiVT capabilities developed during the prototype effort was assessed through Soldier Touch Points and feedback in support of the follow on production efforts. Currently, the Synthetic Training Environment, Cross Functional Team (STE CFT) and the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) are working closely with Soldier Lethality CFT and PEO Soldier to leverage their production OTA contract for an anticipated 3rd QTR FY 2021 award in order to meet First Unit Issued in 1st Quarter FY 2022 and an incremental approach to First Unit Equipped (FUE) in FY 2023. The Production and Fielding OTA will be a five-year effort fielding to all active and reserve components close combat units.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR6 / *STE Squad Immersive Virtual Trainer (SiVT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SiVT Prototype Development	Option/ FP	Microsoft Corporation : Redmond, WA	-	-		-		5.000	Dec 2021	-		5.000	0.000	5.000	-
		Subtotal	-	-		-		5.000		-		5.000	0.000	5.000	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		5.000		-		5.000	0.000	5.000	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR6 / *STE Squad Immersive Virtual Trainer (SiVT)*

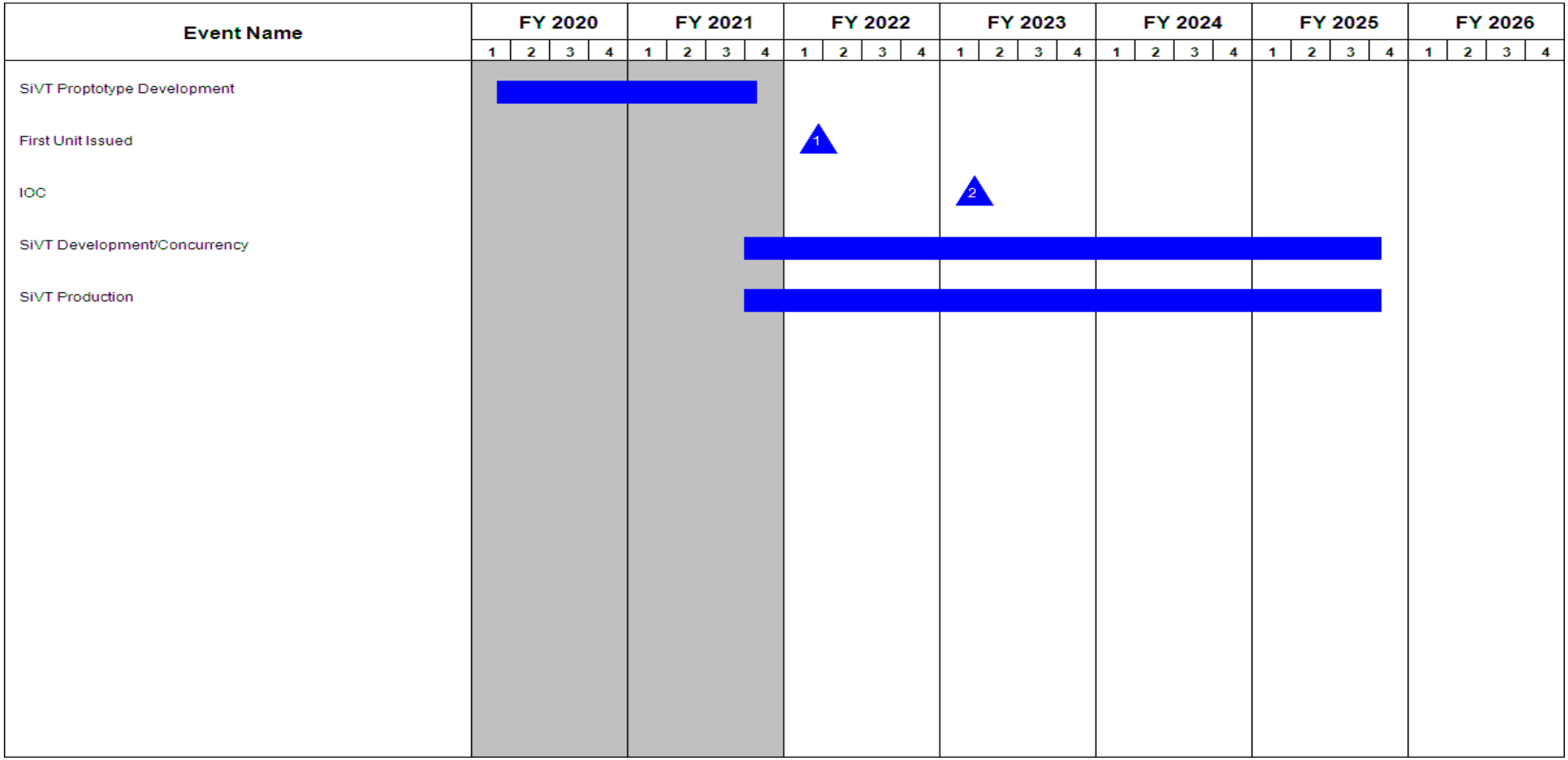

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR6 / *STE Squad Immersive Virtual Trainer (SiVT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SiVT Proptotype Development	1	2019	4	2021
First Unit Issued	1	2022	1	2022
IOC	1	2023	1	2023
SiVT Development/Concurrency	4	2021	4	2025
SiVT Production	4	2021	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR7 / *STE Soldier Virtual Trainer (SVT)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
CR7: *STE Soldier Virtual Trainer (SVT)*	-	-	-	11.288	-	11.288	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This is a new start in FY 2022.

A. Mission Description and Budget Item Justification

The Soldier Virtual Trainer (SVT) is enabled by the Synthetic Training Environment (STE) and is a virtual immersive trainer that combines and integrates several individual Soldier training capabilities: Weapon Skills Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF). (1) WSD provides immersive capability to meet individual/crew weapons training in support of Army integrated weapon training strategies. (2) JFT provides certification and qualification of Joint Fires Observers (JFO). This includes the training of types II and III close air support according to the JFO Memorandums of Agreement. (3) UoF training enables Soldiers to replicate current Non-Lethal (NL) devices, munitions that demand the user to determine the appropriate level of force, select the correct device, and comply with doctrine, legal policy, and guidance for NL device employment.

FY 2022 Base RDTE dollars in the amount of $11.288 million for SVT will be used for the technical development and demonstration of prototype designs for the Weapons Skills Development (WSD), Joint Fires Training (JFT) and Use of Force (UoF) capabilities. These prototype designs will inform; requirements, technology readiness level maturity, and level of effort to integrate with the common synthetic environment. SVT's acquisition strategy implementation and award will reduce impact of replacing currently fielded sustained Program of Records (Engagement Skills Trainer II (EST II) and Call for Fire Trainer III (CFFT III)). EST and CFFT PoRs are currently in sustainment awaiting to be replaced by SVT.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for SVT	-	-	11.288
Description: Direct engineering development, support and test of the Soldier Virtual Trainer (SVT) program through awarded OTA vehicles.			
FY 2022 Plans: FY 2022 Base RDTE dollars in the amount of $11.288 million will be used for the technical development and demonstration of prototype designs for the Weapons Skills Development (WSD), Joint Fires Training (JFT) and Use of Force (UoF) capabilities. The prototype solution will assess industry and academia's technical readiness.			
FY 2021 to FY 2022 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR7 / *STE Soldier Virtual Trainer (SVT)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
This is a new start in FY2022.			
Accomplishments/Planned Programs Subtotals	-	-	11.288

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The SVT uses the Synthetic Training Environment (STE) modular open systems architecture via virtual interface and hardware standards. SVT optimizes training delivery through the employment of a combination of Operational Environment (OE) mixed reality visualization and Natural User Interface (NUI) technologies to maximize efficiencies for the integration of system capabilities. The SVT system design combines and integrates several individual Soldier and squad training capabilities, Weapon Skill Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF), into a single capability that can be conducted simultaneously or individually and enable physical movement/exertion related to the execution of a Soldier individual and squad collective training tasks. The system is required to be person transportable and deployable worldwide. It delivers training at the Point of Need (PoN) supporting Army-wide formations such as artillery, Military Police, and units for weapons skills development.

Status: Acquisition planning in progress for an OTA award in 2QFY22. User Assessments (UA) to be conducted during the development phase. SVT will utilize Soldier feedback within the UAs to ensure Warfighter feedback is incorporated and facilitate acceptance.

A Soldier/Squad Virtual Trainer OTA was awarded in FY 2019 in support of STE prototype initiatives and SVT: S/SVT Weapons Optimization (market research only). Confidence events and evaluations were built into the OTA in determining the readiness and availability of technology in support of FY 2024 IOC.

Future phases currently under market research will provide Soldier Virtual Trainer (SVT) capabilities.

The SVT OTA's Prime(s) and Sub-vendors will execute the STE agreement(s) through an Agile development process with established success criteria and their DevSecOps processes and develop prototype to prove out the three SVT capabilities: WSD, UoF, and JFT. SVT Vendors will continually include the Government and all stakeholders (Internal and external) in the SVT Hardware prototype development and the STE-IS Agile development integration process. This process will ensure all parties have transparency and early input into the modular design effort in order to support success of the product(s) being developed for the SVT and interacting with the STE-IS. Other acquisition elements such as testing, contracting, and technology transition will consider any and all means available to innovate and incorporate complementary support to add momentum in this approach.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) CR7 / *STE Soldier Virtual Trainer (SVT)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Soldier Virtual Trainer (SVT)	C/FFP	TBD : Orlando, FL	-	-		-		11.288	Mar 2022	-		11.288	Continuing	Continuing	Continuing
		Subtotal	-	-		-		11.288		-		11.288	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		0.000		11.288		-		11.288	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR7 / *STE Soldier Virtual Trainer (SVT)*

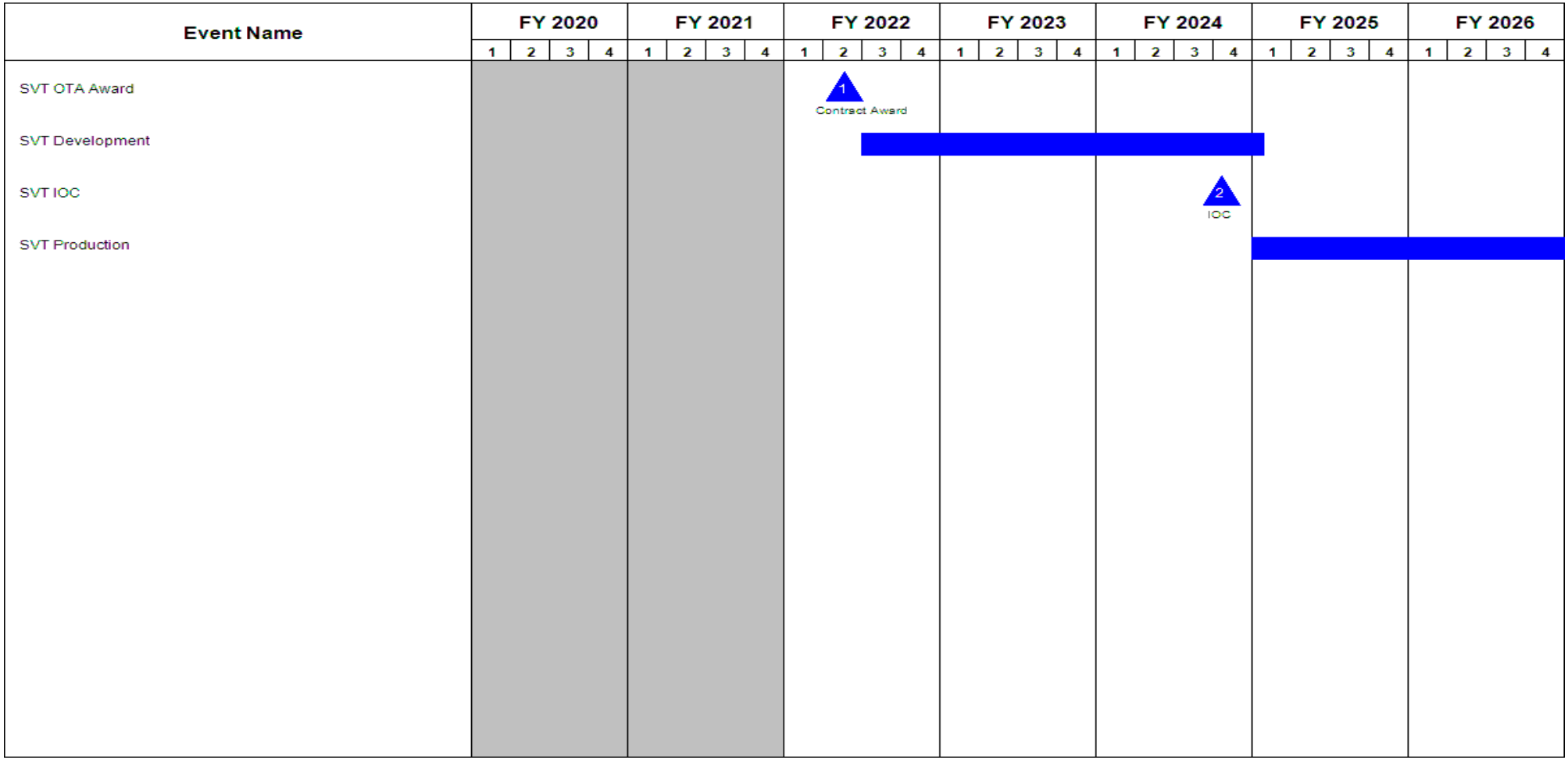

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** CR7 / *STE Soldier Virtual Trainer (SVT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SVT OTA Award	2	2022	2	2022
SVT Development	3	2022	1	2025
SVT IOC	4	2024	4	2024
SVT Production	1	2025	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) FD6 / *Synthetic Training Environment Refine & Prototype*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
FD6: *Synthetic Training Environment Refine & Prototype*	-	27.975	105.354	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2022, all requirements from PE 0604121A, Project FD6 - Synthetic Training Environment Refine & Prototype were realigned to Projects CR2 (STE Information Systems [TSS, TMT]), CR3 (STE Live), CR4 (STE One World Terrain [OWT]), CR5 (STE Reconfigurable Virtual Trainer [RVCT]), and CR7 (STE Soldier Virtual Trainer [SVT]).

A. Mission Description and Budget Item Justification

The STE will be a single, yet comprehensive interconnected training system that provides a Synthetic Training Environment, in which air and ground units from crew/section through Army Service Component Command (ASCC) conduct realistic multi-echelon / multi-domain combined arms maneuver, air ground integration, and mission command training. All of these components are interconnected and based off of a standard, modular and open system architecture model.

The STE-Information System (STE-IS) consists of three core functions: Training Management Tool (TMT), Training Simulation Software (TSS), and One World Terrain (OWT). The Training Management Tool (TMT) is the capability that enables units to quickly plan collective training events, prepare training events; execute and monitor events, and assess event results and readiness. The Training Simulation Software (TSS), the core STE simulation engine, provides the physical and behavior models necessary to replicate the operational environment to enable collective training from Soldier/Squad through ASCC. The STE-IS is a dynamic, digital representation of the Operational Environment (OE) and the military capabilities in the scenario. The TSS provides entity, aggregate, and common services, as well as adjudicates STE-IS interactions at the entity level (e.g., Computer-Generated Forces (CGF), and synthetic equipment). One World Terrain (OWT) is a 3-Dimensional global terrain capability and associated information services that supports the virtual replication of the physical Earth and complexities of the Operational Environment in support of training in the STE. In FY21, the STE-IS adopted the execution of the Software Acquisition Pathway, tailored for software intensive systems. The STE-IS plans to facilitate rapid and iterative delivery of the TSS/TMT and OWT capabilities through Minimal Viable Products (MVP) and Minimum Viable Capability releases (MVCR) to support Squad (Sq) to Brigade (Bde) level training through 4QFY2023.

The STE-IS and RVCT requirements, which are codified in abbreviated Capabilities Development Documents (A-CDD) version 2 approved 2 June 2020, directly support the Army Collective Training Environment - Initial Capabilities Document (ACTE-ICD) as the Army's cornerstone for replicating the Operational Environment (OE) during training events enabling the Army to train as it fights. Separate, but interoperable, RVCT systems are required for both air and ground collective training. The Air RVCT will represent the U.S. Army, Army National Guard, and Army Reserves fleet of rotary wing aircraft, and specified U.S. Marine Corps (USMC) aircraft. The Ground RVCT will represent ground/amphibious track and wheeled vehicles from the U.S. Army, Army National Guard, Special Operations Units and the USMC.

The Reconfigurable Virtual Collective Trainer (RVCT) is the Army's next generation Virtual Training System for conducting collective maneuver training, collective gunnery training, mission rehearsal, and pre-deployment training; that will prepare units for multi-domain operations (MDO). The RVCT includes aviation platforms

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*

(RVCT-A), ground platforms (RVCT-G), and dismounted infantry (RVCT-S) devices. The RVCT is transportable to the point of need allowing units to train anywhere in the world. The RVCT will be enabled using the Synthetic Training Environment-Information Systems (STE-IS) software, which provides a fully interactive, real time simulated battlefield. The RVCT hardware is modular in design and will accommodate the integration of new technologies and future weapon systems, and will interoperate with the current Constructive and Live Training Environments.

The Soldier Virtual Trainer (SVT) is enabled by the Synthetic Training Environment (STE) and is a virtual immersive trainer that combines and integrates several individual Soldier training capabilities: Weapon Skills Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF). (1) WSD provides immersive capability to meet individual/crew weapons training in support of Army integrated weapon training strategies. (2) JFT provides certification and qualification of Joint Fires Observers (JFO). This includes the training of types II and III close air support according to the JFO Memorandums of Agreement. (3) UoF training enables Soldiers to replicate current Non-Lethal (NL) devices, munitions that demand the user to determine the appropriate level of force, select the correct device, and comply with doctrine, legal policy, and guidance for NL device employment. Weapon Skills Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF), into a single capability that can be used simultaneously or individually.

The Synthetic Training Environment (STE) Live program develops live training systems in concert with the Cross Functional Team STE initiatives. The STE Live program converges live training with the STE, providing units the necessary training components to accelerate and sustain combined arms maneuver proficiency in support of multi-domain operations. The STE Live program focuses on the development of the 12 engagement types and 5 instrumentation enablers ("12+5"). The 12 engagement types are Direct Fire, Counter-Defilade Fire, Indirect Fire, Dropped Objects, Placed Objects, Thrown Objects, Guided Weapons, Autonomous Weapons, Cyber, Directed Energy, Radiant Energy, and Plume. The 5 instrumentation enablers are Calculations, Networks, Sensors, Terrains, and Transmitters.

In FY 2022, all requirements from Project FD6 - Synthetic Training Environment Refine & Prototype were realigned to Projects CR2 (STE Information Systems [TSS, TMT]), CR3 (STE Live), CR4 (STE One World Terrain [OWT]), CR5 (STE Reconfigurable Virtual Trainer [RVCT]), and CR7 (STE Soldier Virtual Trainer [SVT]).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation for STE-IS	-	62.120	-
Description: Direct engineering development, support and test of the TSS/TMT and OWT capability through awarded OTA vehicles. ***FY 2021 Plans:*** Funding supports the STE-IS continued development and evaluation of the TSS/TMT minimal viable products (MVP) through technical assessments, Soldier Touch Points, Early User Test and test planning events to provide Squad (Sq) training capability. Base funding will also implement the DEVSECOPS process and software production pipeline to support STE-IS capability releases by echelons. Additionally, base funding will commence the development and integration of Avionics Software Emulation (AvSE) with TSS/TMT software baseline to ensure that the RVCT Air capability is concurrent with Aviation platform systems. Lastly, STE-IS base funding will focus on developing additional feature extraction algorithms for the OWT 3D Global Terrain			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
capability, developing automated test tools, and supporting efforts to fully integrate OWT 3D terrain data into the TSS/TMT portion of the STE-IS. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of funding from FY 2021 to FY 2022 is due to moving effort to PE 0604121A, Project CR2 (STE Information Systems [TSS, TMT] and Project CR4 (STE One World Terrain [OWT]).			
Title: Engineering, Support, Test & Evaluation for RVCT ***Description:*** Direct engineering development, support and test of the Reconfigurable Virtual Collective Trainer (RVCT) program through awarded OTA vehicles. ***FY 2021 Plans:*** FY 2021 Base RDTE dollars in the amount of $32.834 million is focused on the continued design and development of prototype RVCT platforms and devices. These prototype will inform requirements, technology readiness level maturity, and level of effort to integrate with the STE-IS common synthetic environment. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease of funding from FY 2021 to FY 2022 is due to moving effort to PE 0604121A, Project CR5 (STE RVCT).	27.909	32.834	-
Title: Program Management ***Description:*** Program management, engineering and technical oversight, contract support, and travel for the development of the program.	0.066	-	-
Accomplishments/Planned Programs Subtotals	27.975	94.954	-

	FY 2020	FY 2021
Congressional Add: Congressional Add for STE-LIVE - (Army requested transfer from WTCV line 5)	-	10.400
FY 2021 Plans: FY 2021 Base RDTE dollars in the amount of $10.400 million heavily focuses on the development and prototype solutions of the STE Live Force of Force Direct/Indirect/Counter-defilade capabilities. Funds support the continued development and assessment of technical capabilities through technical assessments and user assessments, and test planning events. FY 2021 will complete the development prototype activities on the training solutions through Other Transactions agreement. The funds will be used to develop mature and more capable direct fire prototype solution to replace some of the systems reaching end of		

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*

	FY 2020	FY 2021
life and accelerate the maturation of key technologies needed to introduce indirect fire and counter defilade force on force engagement enablers into the live training environment.		
Congressional Adds Subtotals	-	10.400

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• NA2000: *Synthetic Training Environment (STE)*	14.449	13.063	122.104	-	122.104	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

STE will be developed and acquired as an incrementally deployed software intensive program leveraging accelerated acquisition authorities when appropriate. To ensure speed and agility to deliver and modernize STE, a modular open systems architecture (MOSA) will be developed enabling the Army to exploit rapid advancements in cutting-edge commercial visualization and immersion technologies. STE will employ a combined approach to enable agile development of the STE-IS with parallel incremental development of the RVCT A/G, SiVT and SVT. This model facilitates leveraging commercial and Government technology development that are necessary for future Live and Constructive centered increments. Other acquisition elements such as testing, contracting, and technology transition will consider any and all means available to innovate and incorporate complementary support to add momentum in this approach.

STE Increment 1 IOC is programmed for 4Q FY 2022. IOC is defined as the first fielding and acceptance of the STE-IS capability at installations identified IAW the distribution plan. IOC fielded STE systems will include the following attributes: verification, validation and accreditation process complete; STE-IS capabilities in support of RVCT A/G and Squad Immersive Virtual Trainer (SiVT) IOC in FY 2022 and ultimately the Soldier Virtual Trainer (SVT) IOC in FY 2024; meeting Information Assurance and Risk Management Framework requirements. New Equipment Training (NET) will include the capability to support the RVCT, and the ability to provide initial sustainment via interim contractor support (ICS). Soldiers will interface with the STE-IS through the Training Management Tools, the Reconfigurable Virtual Collective Trainer (RVCT) and SiVT via the Integrated Visual Augmentation System (IVAS).

Future phases currently under market research will provide Soldier Virtual Trainer (SVT) capabilities and integrate Live training components as well as Next Generation Constructive (NGC).

Five (5) OTAs were awarded in FY 2019 in support of STE prototype initiatives: STE-IS (TSS/TMT, OWT), RVCT, Live (market research only), and SVT Weapons Optimization (market research only). Confidence events and evaluations were built into the OTAs to determine the readiness and availability of technology in support of FY 2022 IOC. Prime(s) and Sub-vendors will execute the STE agreement(s) through an Agile development process with established success criteria and their

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*

DevSecOps processes. Vendors will continually include the Government and all stakeholders (Internal and external) in the Agile development process. This process will ensure all parties have transparency and early input into the modular design effort in order to support success of the product(s) being developed for the STE.

The initial TSS/TMT OTA allowed the Government to fully understand and decompose the requirements, establish/describe interfaces between TSS/TMT and RVCT, Avionics Software Emulation (AvSE) and OWT capabilities, and exposed the Government to the readiness of additional technologies that will enable the delivery of an integrated STE. These lesson learned, along with the incorporating the revised A-CDD updates forms the basis of the new TSS/TMT follow-on competition planned for award in 3QFY21.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management Services	Various	Various : Orlando, FL	6.996	0.066		-		-		-		-	0.000	7.062	12.454
		Subtotal	6.996	0.066		-		-		-		-	0.000	7.062	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development STE-IS/ TSS/TMT	C/FP	MAK Technologies : Cambridge, MA	35.750	-		5.618	Oct 2020	-		-		-	0.000	41.368	41.368
Product Development STE-IS/ TSS/TMT Follow-on	C/TBD	ACC-Orlando : Orlando, FL	-	-		13.300	May 2021	-		-		-	Continuing	Continuing	Continuing
STE-IS AvSE Development/Integration	Various	PEO STRI : Orlando, FL	-	-		7.361	Mar 2021	-		-		-	Continuing	Continuing	Continuing
Product Development STE-IS/One World Terrain	C/FP	Maxar Technologies (formerly VRICON) : Westminster, CO	25.582	-		35.841	Dec 2020	-		-		-	Continuing	Continuing	Continuing
Product Development Reconfigurable Virtual Collective Trainers	C/FP	Cole Engineering Services Inc : Orlando, FL	25.629	27.909	Dec 2019	32.834	Feb 2021	-		-		-	Continuing	Continuing	Continuing
Product Development STE-LIVE	C/TBD	TBD : Orlando, FL	0.100	-		-		-		-		-	Continuing	Continuing	Continuing
Congressional Add - STE-LIVE	C/TBD	TBD : Orlando, FL	-	-		10.400	Jun 2021	-		-		-	0.000	10.400	10.400
Product Development Soldier/Squad Virtual Trainer (IVAS)	C/FP	Microsoft : Redmond, WA	39.228	-		-		-		-		-	0.000	39.228	34.792
Small Business Innovation/ Tech Insertion	Various	Various : Orlando, FL	3.270	-		-		-		-		-	0.000	3.270	3.270
		Subtotal	129.559	27.909		105.354		-		-		-	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) FD6 / *Synthetic Training Environment Refine & Prototype*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

1. Product Development STE-IS/ TSS/TMT: The initial TSS/TMT OTA allowed the Government to fully understand and decompose the requirements, establish/describe interfaces between TSS/TMT and RVCT, Avionics Software Emulation (AvSE) and OWT capabilities, and exposed the Government to the readiness of additional technologies that will enable the delivery of an integrated STE. These lesson learned, along with the incorporating the revised A-CDD updates forms the basis of the new TSS/TMT follow-on competition planned for award in 3QFY21.
2.Product Development STE-IS/One World Terrain: VRICON was acquired by Maxar Technologies on 1 July 2020.

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	136.555	27.975		105.354		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*

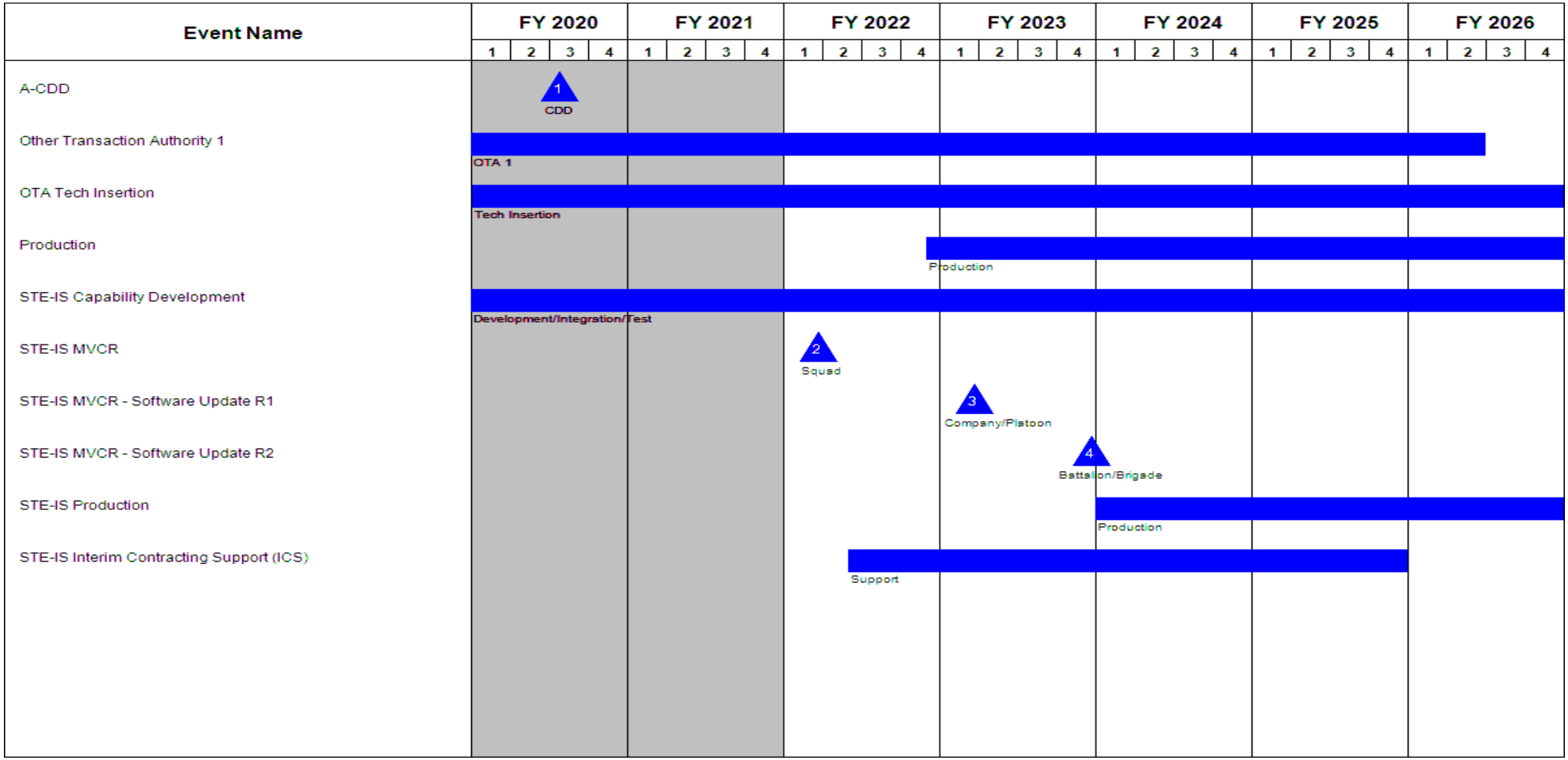

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** FD6 / *Synthetic Training Environment Refine & Prototype*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
A-CDD	3	2020	3	2020
FOC	4	2027	4	2027
Other Transaction Authority 1	3	2019	2	2026
OTA Tech Insertion	1	2020	4	2026
Production	4	2022	4	2027
STE-IS Capability Development	3	2019	4	2027
STE-IS MVCR	1	2022	1	2022
STE-IS MVCR - Software Update R1	1	2023	1	2023
STE-IS MVCR - Software Update R2	4	2023	4	2023
STE-IS Production	1	2024	4	2026
STE-IS Interim Contracting Support (ICS)	2	2022	4	2025

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army										Date: May 2021		
Appropriation/Budget Activity 2040 / 4					R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*				Project (Number/Name) SV1 / *Soldier/Squad Virtual Trainer*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
SV1: *Soldier/Squad Virtual Trainer*	-	71.382	6.739	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2022, all requirements from Project SV1 - Soldier/Squad Virtual Trainer were realigned to Projects CR4 (STE One World Terrain [OWT]) and CR6 (STE Squad Immersive Virtual Trainer [SiVT]).

A. Mission Description and Budget Item Justification

The United States Army identified a near term requirement for a Soldier and Squad Virtual Trainer (S/SVT) to address the small unit collective training gaps, and to merge the Engagement Skills Trainer (EST) II, Call for Fire Trainer (CFFT) III, and the current non program of record Use-of-Force trainer into a single program starting in FY 2021. The S/SVT is the next generation trainer that enables Soldiers/Marines to conduct squad, weapons, and joint fires training, as well as rehearse lethal and non-lethal use-of-force interactions prior to live events to measure the unit's Mission Essential Task List proficiency, which will then provide a unit's Standards for Training Proficiency.

S/SVT is comprised of Squad Immersive Trainer (SiVT); also commonly referred to as both the IVAS and the Soldier Virtual Trainer (SVT) capabilities. The first increment of the S/SVT, which is the Squad immersive Virtual Trainer (SiVT) capability, integrates into the Heads Up Display (HUD) 3.0 as part of the Integrated Visual Augmentation System (IVAS). Increments 2 and 3 of S/SVT combines individual Soldier and squad training into a single capability and includes STE Squad Capability (SSC), Weapon Skill Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF), which integrate the NEXTGEN Marksmanship and the NEXTGEN Call For Fire Artillery Virtual Training capability into the STE baseline.
The second phase; the SVT system design combines and integrates several individual Soldier and squad training capabilities, Weapon Skills Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF).

SVT is dependent and interconnected through the STE-IS software baseline . The STE-IS core cross-cutting capabilities will deliver software, application(s) and services that optimize cloud-enabled capability simulation processing to Reconfigurable Virtual Collective Trainer (RVCT), Solider Virtual Trainer (SVT), and the future Next Generation Constructive (NGC) capability to include Force-on-Force (FoF) and Force-on-Target (FoT) Live training instrumentation .

FY 2021 funding of $6.739 million reinitiates the market research and prototype solutions for the SVT solution assessing industry and academia's technical readiness and availability around Weapons Skills Development, Joint Fires and Use of Force.

In FY 2022, all requirements from Project SV1 - Soldier/Squad Virtual Trainer were realigned to Projects CR4 (STE One World Terrain [OWT]) and CR6 (STE Squad Immersive Virtual Trainer [SiVT]).

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** SV1 / *Soldier/Squad Virtual Trainer*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Engineering, Support, Test & Evaluation	71.382	6.739	-
Description: Market Research and Prototype Assessment of Soldier Virtual Trainer capabilities. ***FY 2021 Plans:*** FY 2021 funding of $6.739 million reinitiates the market research and prototype solutions for the SVT solution assessing industry and academia?s technical readiness and availability around Weapons Sill Development, Joint Fires and Use of Force. Resources will support a new OTA prototype award to include technical assessments and soldier user assessments of technical availability within industry helping to refine the overarching requirement for the SVT solution. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** In FY 2022, all requirements from Project SV1 ? Soldier/Squad Virtual Trainer were shifted to Project FD6 to consolidate all STE requirements into one project.			
Accomplishments/Planned Programs Subtotals	71.382	6.739	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• NA2000: *Synthetic Training Environment (STE)*	14.449	13.063	122.104	-	122.104	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The S/SVT uses the Synthetic Training Environment (STE) modular open systems architecture via virtual interface and hardware standards. S/SVT optimizes training delivery through the employment of a combination of Operational Environment (OE) mixed reality visualization and Natural User Interface (NUI) technologies to maximize efficiencies for the integration of system capabilities. The S/SVT system design combines and integrates several individual Soldier and squad training capabilities, Weapon Skill Development (WSD), Joint Fires Training (JFT), and Use of Force (UoF), into a single capability that can be conducted simultaneously or individually and enable physical movement/exertion related to the execution of Soldier/Marine individual and squad collective training tasks. The system is required to be man transportable and deployable worldwide. It delivers training at the Point of Need (PoN) supporting Army-wide formations such as artillery, Military Police, and units for weapons skills development.

Two (2) OTAs awarded in FY 2019 in support of S/SVT prototype initiatives: SiVT (IVAS) Holistic Joint with Soldier Lethality, and SVT Weapons Optimization (market research only). Confidence events and evaluation criteria were built into the OTAs to determine technical availability and readiness in support of 4Q 2021 IOC. Prime(s) and Sub-vendors will execute the agreement(s) through an Agile development process with established success criteria and their DevOps processes. Vendors will

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** SV1 / *Soldier/Squad Virtual Trainer*

continually include the Government and all stakeholders (Internal and external) in the Agile development process. This process will ensure all parties have transparency and early input into the design effort and success of the product(s) being developed for the STE.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	Project (Number/Name) SV1 / *Soldier/Squad Virtual Trainer*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/FFP	Aberdeen Proving Grounds : MD	-	71.382		6.739	May 2021	-		-		-	0.000	78.121	78.121
		Subtotal	-	71.382		6.739		-		-		-	0.000	78.121	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	71.382		6.739		-		-		-	0.000	78.121	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** SV1 / *Soldier/Squad Virtual Trainer*

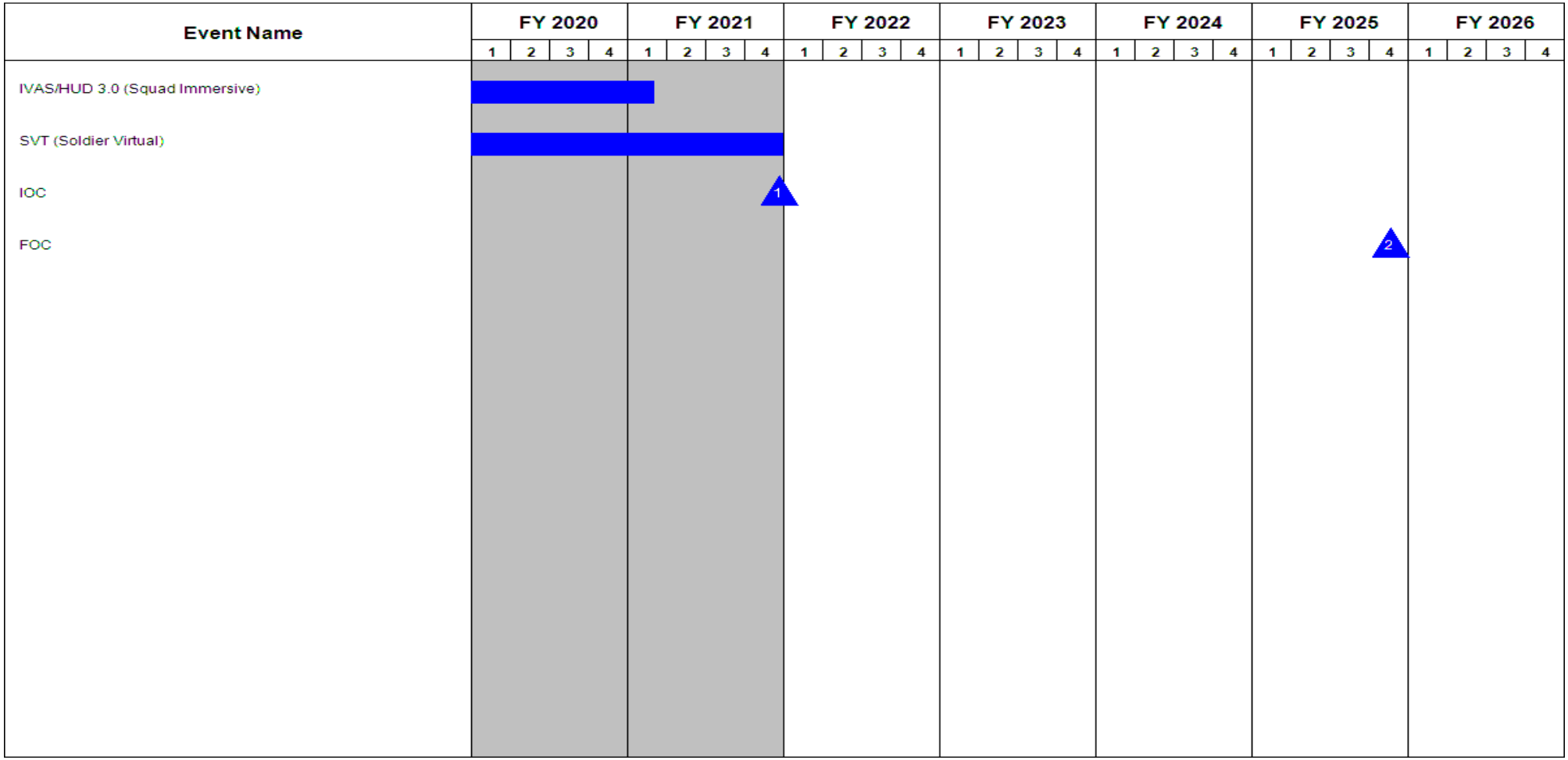

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604121A / *Synthetic Training Environment Refinement & Prototyping*	**Project (Number/Name)** SV1 / *Soldier/Squad Virtual Trainer*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
IVAS/HUD 3.0 (Squad Immersive)	2	2018	1	2021
SVT (Soldier Virtual)	2	2019	4	2021
IOC	4	2021	4	2021
FOC	4	2025	4	2025