Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army												Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
Total Program Element	-	148.458	154.639	102.778	-	102.778	102.970	124.646	135.633	138.518	0.000	907.642
AY5: *Soldier Squad Small Arms Armaments Advanced Tech*	-	11.029	6.516	6.651	-	6.651	7.966	10.870	10.879	10.956	0.000	64.867
AY7: *Small Arms Fire Control Advanced Technology*	-	12.616	3.066	2.575	-	2.575	-	-	-	-	0.000	18.257
AY9: *Body Armor & Integrated Headborne Advanced Tech*	-	7.422	8.097	8.247	-	8.247	10.726	10.658	8.160	8.274	0.000	61.584
AZ6: *Soldier Signature Management Advanced Technology*	-	2.861	3.084	3.130	-	3.130	3.149	3.152	3.155	3.189	0.000	21.720
BB3: *Dismounted Soldier Survivability Equip/Tech Integ*	-	2.915	3.458	3.538	-	3.538	3.538	3.542	3.544	3.583	0.000	24.118
BB8: *Soldier Centric Advanced Technology*	-	5.099	2.391	1.888	-	1.888	-	-	-	-	0.000	9.378
BC1: *Human Performance AdvTech for Mobility & Lethality*	-	13.433	9.415	7.017	-	7.017	7.415	17.346	24.359	26.062	0.000	105.047
BC8: *Training Advanced Technology (Other than STE)*	-	2.884	7.078	7.684	-	7.684	10.347	24.401	32.458	32.802	0.000	117.654
BC9: *Adv Soldier Sensors/ Displays AdvTech for Dismounts*	-	12.671	25.963	27.160	-	27.160	26.756	28.610	29.152	29.470	0.000	179.782
BD7: *Soldier Sys Interfaces/ Integration-Sensor AdvTech*	-	8.068	8.504	7.931	-	7.931	8.638	9.372	9.378	9.480	0.000	61.371
BD9: *Soldier & Sm Unit Tactical Energy AdvTech*	-	3.055	4.189	9.310	-	9.310	7.562	6.560	5.054	5.104	0.000	40.834
BE2: *Joint Service Combat Feeding Advanced Technology*	-	2.335	1.988	2.673	-	2.673	2.673	2.781	2.136	2.159	0.000	16.745
BE5: *Personnel & Airdrop Safety Advanced Technology*	-	6.628	6.484	6.632	-	6.632	6.705	7.354	7.358	7.439	0.000	48.600
BE9: *STE Advanced Technology*	-	12.942	10.656	8.342	-	8.342	7.495	-	-	-	0.000	39.435

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603118A *I Soldier Lethality Advanced Technology*							
BS8: *Soldier Lethality Advanced Technology*	-	44.500	53.750	-	-	-	-	-	-	-	0.000	98.250

A. Mission Description and Budget Item Justification

This Program Element (PE) matures and demonstrates Soldier Lethality technologies that improve Soldier operational performance by increasing lethality, mobility, protection, and optimizing situational awareness across the spectrum of operating environments and missions. This PE matures Soldier weapons and enabling components / subsystems, demonstrates lethal weapons systems with potential to provide greater lethality, target acquisition, fire control, and range at a significantly reduced weight for optimized Soldier and Small Unit system performance. The major focus areas for Soldier Lethality Science and Technology are Soldier weapons and ammunition technologies, protection technologies, cognitive and physical performance measures, training in synthetic training environments, and mission support capabilities such as situational awareness sensors and displays, dismounted power and energy technologies, and Soldier and Small Unit sustainment capabilities. This technology diverse PE also matures and demonstrates sensor technologies that increase Warfighter situational understanding, survivability, and lethality by providing sensor capabilities to acquire and engage all targets and threats at longer ranges in complex environments and operational conditions (e.g. day/night, obscured, smoke, adverse weather, and other degraded visual environments), and for advancing live training technologies that accurately replicate and realistically represent the effects of current and future weapons systems during force-on-force and force-on-target training. This PE matures and demonstrates effective technology in personal combat clothing, protective equipment such as personal armor, helmets, and eyewear, combat rations, shelters, logistical support items for aerial delivery of personnel and cargo, and energy systems to power current and emerging Soldier-born Intelligence, Surveillance, and Reconnaissance (ISR), sensor, optical, and communication systems with the least weight and sustainment burden on the Soldiers and Small Combat Units. This PE also matures and demonstrates technologies supporting the Army's Synthetic Training Environment (STE), a single, interconnected synthetic training system that will enable Army units and leaders to conduct realistic multi-echelon / multi-domain combined arms maneuver and mission command training, increasing proficiency through repetition. A specific research thrust area is applying systems-based practices to mature and demonstrate scientific and tailored knowledge of Soldiers' physical and cognitive architecture to facilitate rapid and efficient designs, assessments and trade-off analyses of technology insertions on the Soldier. Significant science and technology (S&T) investments are directed to improve the effectiveness of the technologies a Soldier utilizes while reducing the size and weight of the form factor of the equipment.

Research in this PE complements PE 0602143A (Soldier Lethality Technology).

This PE is directly aligned to the Soldier Lethality and STE Modernization Priorities.

Research in this Project is performed by the United States Army Futures Command.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603118A *I Soldier Lethality Advanced Technology*

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	152.369	100.935	92.336	-	92.336
Current President's Budget	148.458	154.639	102.778	-	102.778
Total Adjustments	-3.911	53.704	10.442	-	10.442
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	53.750			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.911	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	10.442	-	10.442
• FFRDC Transfer	-	-0.046	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: BS8: *Soldier Lethality Advanced Technology*		
Congressional Add: *Program Increase - Advanced AI/AA Analytics for Modernization and Readiness*	10.000	-
Congressional Add: *Program Increase - Small Arms Fire Control Advanced Technology*	8.000	4.500
Congressional Add: *Ferrium Steel for Improved Personal Protective Equipment*	5.000	-
Congressional Add: *Human Machine Teaming*	4.000	-
Congressional Add: *Impact Attenuation Materials for Limb Protection*	1.500	-
Congressional Add: *Soldier Situational Awareness*	8.000	-
Congressional Add: *Squad Operations Advanced Resupply*	8.000	-
Congressional Add: *Program Increase - ADVANCED TECHNOLOGY DEVELOPMENT FOR MDO TO SUPPORT SOLDIER LETHALITY*	-	15.000
Congressional Add: *Program Increase - HMD RISK REDUCTION FOR IVAS FUTURES*	-	5.000
Congressional Add: *Program Increase - HYPER ENABLED SOLDIER LETHALITY*	-	10.000
Congressional Add: *Program Increase - HYPERSONIC WEAPON DEVELOPMENT SOFTWARE*	-	2.000
Congressional Add: *Program Increase - SHOCK ATTENUATION AND BLUNT FORCE TRAUMA IMPROVEMENTS IN HEADBORNE*	-	5.000

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army	Date: March 2023
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603118A *I Soldier Lethality Advanced Technology*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Congressional Add: *Program Increase - SPECTROSCOPY DEVICES FOR CHEM BIO DETECTION AND DEACTIVATION WITH UV-C*	-	11.250
Congressional Add: *Program Increase - Improvements to Arctic Heaters for Tents and Shelters*	-	1.000
Congressional Add Subtotals for Project: BS8	44.500	53.750
Congressional Add Totals for all Projects	44.500	53.750

Change Summary Explanation

Funding increase will focus on soldier power and energy supply resiliency and advanced soldier sensor displays including integrated headborne sensors with preemptive threat detection.

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) AY5 / *Soldier Squad Small Arms Armaments Advanced Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
AY5: *Soldier Squad Small Arms Armaments Advanced Tech*	-	11.029	6.516	6.651	-	6.651	7.966	10.870	10.879	10.956	0.000	64.867
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project demonstrates individual and crew-served weapon designs and technologies that enhance the fighting capabilities and survivability of the dismounted Warfighter in support of the Army's Soldier Lethality Modernization priority and all of the Services. All work is led by the Joint Service Small Arms Program (JSSAP) and is based upon the Joint Service Small Arms Master Plan (JSSAMP) and the Joint Capabilities Integration Development System's Small Arms Analyses.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

This Project complements work done in Program Element (PE) 0602143A (Soldier Lethality Technology) / AY6 (Soldier Squad Small Arms Armaments Technology).

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Small Arms Technology Demonstration	4.720	6.417	6.651
Description: This effort matures and demonstrates advanced small arms ammunition, enablers, and weapon system technologies for integration into live fire demonstrations. It refines and optimizes weapon system integration and supports the Joint Warfighters' small arms capability needs. The effort validates small arms weapon system technology readiness levels and confidence of design functionality in advanced and emerging operating scenarios.			
FY 2023 Plans: Will validate small arms system/subsystem models in relevant environments to ensure optimal performance against relevant targets; optimize automated target recognition and engagement technologies, signature reduction devices, and technologies and evaluations for legacy and next generation weapons; improve performance of: ammunition for novel targets; augmented weapon system controllability and maintainability, and advanced optical systems with machine learning algorithms; demonstrate potential technology insertions into current and emerging systems identified by the Joint Warfighter.			
FY 2024 Plans: Will?demonstrate future small arms concepts to enable a more efficient, effective, and lethal Joint?Warfighter. Will mature weapon and munition prototypes to improve small arms system performance against future targets in relevant environments. Will validate			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** AY5 / *Soldier Squad Small Arms Armaments Advanced Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
signature reduction devices and automated target recognition technologies for fielded and next generation weapons. Will mature hardware, software, and algorithms to improve small arms fire control targeting and precision. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: Next Generation Family of Ammo ***Description:*** This effort matures and demonstrates the next generation of small arms live training ammunition by optimizing it through integration into new weapon systems that will provide an increased level of lethality.	6.309	-	-
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.099	-
Accomplishments/Planned Programs Subtotals	11.029	6.516	6.651

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) AY7 / *Small Arms Fire Control Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
AY7: *Small Arms Fire Control Advanced Technology*	-	12.616	3.066	2.575	-	2.575	-	-	-	-	0.000	18.257
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates fire control and targeting sensor technologies and techniques to improve targeting and lethality in order to maintain overmatch at longer ranges in all operational environments and to meet the capability needs of Army Science and Technology Soldier Lethality, Next Generation Combat Vehicle, and Long Range Precision Fires modernization priorities.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

This Project complements work done in Program Element (PE) 0602143A (Soldier Lethality Technology) / AY8 (Small Arms Fire Control Technology).

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Small Arms Fire Control Advanced Technology ***Description:*** This effort will mature and demonstrate fire control and targeting sensor technologies and techniques to improve targeting and lethality, and maintain overmatch at longer ranges in all environments.	11.310	-	-
Title: Advanced Fire Control Tech ***Description:*** This effort will mature and demonstrate fire control and targeting sensor technologies and techniques to improve targeting and lethality, and maintain overmatch at longer ranges in all environments. ***FY 2023 Plans:*** Mature machine vision databases for target recognition, to include optimization for dismounted weapon identification; validate approach for demonstration of platform architecture; improve internal communication to include the use of open source standards; demonstrate integration of augmented reality and polymer optic components for future live fire capability demonstration. ***FY 2024 Plans:***	1.306	2.954	2.575

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** AY7 / *Small Arms Fire Control Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will mature common fire control system interfaces and architecture. Will mature advanced target recognition and tracking for static and dynamic partially obscured objects. Will improve small arms precision while reducing target engagement time. Will validate the integration of shooter aim augmentation devices. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.112	-
Accomplishments/Planned Programs Subtotals	12.616	3.066	2.575

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) AY9 / *Body Armor & Integrated Headborne Advanced Tech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
AY9: *Body Armor & Integrated Headborne Advanced Tech*	-	7.422	8.097	8.247	-	8.247	10.726	10.658	8.160	8.274	0.000	61.584
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates body armor weight reductions and improves the performance of personal protection and survivability equipment. It also demonstrates combat helmet ballistic, blast, and small arms protection performance enhancements and the integration and optimization of power, energy, and digital sensor and display headborne technologies.

This Project supports Force Protection capability demonstrations for Soldiers and Small Units and demonstrated technologies from this effort transition to various Program Executive Office (PEO) Soldier programs.

This Project complements work done in Program Element (PE) 0602143A (Soldier Lethality Technology) / AZ2 (Body Armor & Integrated Headborne Technology).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Body Armor and Integrated Headborne Advanced Technology	7.422	7.915	8.247
Description: This effort focuses on maturing, integrating and demonstrating personal protective capabilities against ballistic, blast, and directed energy threats as well as the development and demonstration of Soldier worn platform architectures to optimize the integration of personal protective equipment and Soldier lethality enabling technologies. Demonstrates advanced test methods to validate personal protective equipment performance enhancements against current and emerging small arms, fragmentation, and blast threats from anti-personnel munitions. The objective of these technology development efforts is to significantly increase Soldier lethality by enhancing the protective capabilities and reducing sub-system and system-level weight of individual protective equipment to reduce the Soldier burden and increase survivability.			
FY 2023 Plans: Mature designs for personnel body armor against classified small arms threat that increase body armor protection capabilities without increasing the weight of armor material required; exploit anti-personnel munitions to characterize Soldier survivability against near-peer munition capabilities to further the optimization of personal body armor against high energy fragmenting			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** AY9 / *Body Armor & Integrated Headborne Advanced Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
munitions; mature novel fabric constructions integrated in the Soldier combat protective ensemble for ballistic protection; mature power and data interface architectures for combat helmets to develop common interface design standards for Soldier headborne technology; optimize the integration of communication headset subsystems with wireless down links to the individual radio and demonstrate enhanced audio capabilities to provide hearing protection and situational awareness cues; demonstrate integrated eye protection capability with enhanced fragmentation performance and situational awareness. ***FY 2024 Plans:*** Will optimize a standalone multi-threat plate designed to provide protection against multiple small arms threats without increasing the weight of armor material; mature modular and lightweight fragmentation protection garments for vulnerable or under protected regions of the body; ; demonstrate significant weight and bulk reductions of personnel body armor within the Soldier ensemble in support of the Combat Protective Ensemble (CAPE) program (PE 0603118A / Soldier Lethality Advanced Technology);demonstrate power and data interface architectures for combat helmets; to develop common interface designs;; Exploit novel and emerging helmet shell pre-forming and molding techniques to improve helmet performance; Improve mechanical and electrical integration of cable-free communication headset subsystems with wireless down links;; provide integrated eye protection with enhanced fragmentation performance and active anti-fog capability. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.182	-
Accomplishments/Planned Programs Subtotals	7.422	8.097	8.247

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army										Date: March 2023		
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*				Project (Number/Name) AZ6 / *Soldier Signature Management Advanced Technology*			
COST ($ in Millions)	**Prior Years**	**FY 2022**	**FY 2023**	**FY 2024 Base**	**FY 2024 OCO**	**FY 2024 Total**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**Cost To Complete**	**Total Cost**
AZ6: *Soldier Signature Management Advanced Technology*	-	2.861	3.084	3.130	-	3.130	3.149	3.152	3.155	3.189	0.000	21.720
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project optimizes, matures and demonstrates advances in novel materials, technologies, techniques, and applications increasing the capabilities of camouflage, concealment, and deception against known and emerging sensor threats. These technologies will produce proof of concept systems that decrease the probability of detection and targeting by peer and near-peer adversaries, enabling freedom of movement of semi-independent and dispersed formations, and increase protection of high-valued assets. This Project will demonstrate disruptive Camouflage, Concealment and Deception technologies, supporting expeditionary maneuver in the Multi-Domain Battle Environment to open and retain windows of advantage.

Research in this Project supports key Army needs and leverages/complements the technical research of several Program Elements (PEs) and Projects to include PE 0602143A (Soldier Lethality Technology) / BB4 (Dismounted Soldier Survivability Materials), Project AZ5 (Soldier Protection Technology - Vulnerability), Project AZ9 (Soldier Protection Advanced Tech - Detectability); PE 0601102A (Defense Research Sciences; and PE 0602145A (Next Generation Combat Vehicle Technology) / Project BI2 (Sensor Protection Technology).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Soldier Camouflage, Concealment and Decoys Demonstration	2.861	3.005	3.130
Description: This effort demonstrates innovative camouflage, concealment, and deception technologies for the dismounted Soldier to defeat advanced current and emerging adversary Intelligence, Surveillance and Reconnaissance (ISR) threats and to reduce the probability of detection and identification across the electromagnetic spectrum. Matures physics-based models for material and system performance that support probability of detection metrics in the multi-domain operational environment, assisting to close the capability gap between current camouflage, concealment, and deception technologies and defeating enemy sensorial capabilities in future operating environments.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** AZ6 / *Soldier Signature Management Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Mature materials specifically designed to reduce the radar cross section of individual Soldiers and their equipment from detection by ground surveillance radar threats; integrate and demonstrate passive ground surveillance radar threat detection capability into the Soldier's equipment to provide early threat detection and warning; attain and collect imagery data of Soldiers and squad formations against ground and aerial sensor threats to validate ground-force vulnerabilities in multiple bands of the electromagnetic spectrum against sensor threats to assess high impact camouflage and concealment opportunities; exploit and demonstrate aided target detection algorithms and provide vulnerability analysis of Soldier camouflage and concealment capabilities to support continued assessment of Soldier signature capability gaps. ***FY 2024 Plans:*** Will demonstrate overgarments specifically designed to camouflage a Soldier's signature from battlefield sensors operating in the infrared (thermal) wavelengths in multiple environments to enable Soldiers with greater freedom of movement in close combat; demonstrate optimized topical spray paints for Soldier clothing and individual equipment for improved concealment against SWIR sensor threats; optimize and perform Soldier user assessments of passive ground surveillance radar threat detection devices to provide advanced notice of threat for greater situational awareness and tactical advantage; collect imagery data of Soldiers and squad formations against ground and aerial sensor threats in jungle environments to validate ground-force vulnerabilities in multiple bands of the electromagnetic spectrum against sensor threats to assess high impact camouflage and concealment opportunities; baseline Soldier signature across the threat spectrum obtained in arctic, urban and jungle environments to define Soldier signature capability gaps against ground and air sensor threats. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.079	-
Accomplishments/Planned Programs Subtotals	2.861	3.084	3.130

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** AZ6 / *Soldier Signature Management Advanced Technology*

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BB3 / *Dismounted Soldier Survivability Equip/Tech Integ*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BB3: *Dismounted Soldier Survivability Equip/Tech Integ*	-	2.915	3.458	3.538	-	3.538	3.538	3.542	3.544	3.583	0.000	24.118
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates the integration of Soldier survivability materials and technologies to increase the speed and efficiency of dismounted Soldier movement and maneuver. This Project focuses on reducing Soldier-worn equipment weight, improving Soldier and system integration and reducing the dismounted Soldier's detectability, susceptibility, and vulnerability to operational threats. Operational threats are characterized as combat threats (e.g., flame and thermal, blast and ballistic, multispectral sensors, and laser threats), environmental threats (e.g., cold, heat, wet, vector, water contamination, concealment, etc.), and Soldier system components and system limitations (e.g., size, weight, and bulk). This Project includes the demonstration and validation of integrated technologies, novel subsystems/systems, and test methods.

This Project complements work done in Program Element (PE) 0602143A (Soldier Lethality Technology) / Project BB4 (Dismounted Soldier Survivability Materials).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Dismounted Soldier Survivability Equipment and Technology Integration	2.915	3.338	3.538
Description: This effort matures and integrates multifunctional protective materials, sub-components, and systems for field demonstrations to significantly increase the survivability of Soldiers through their multi-functional clothing and individual protective equipment. This effort also demonstrates and validates tradeoff analyses in sub-component and system-level designs of ballistic, blast, signature management and integrated protection clothing and equipment technologies.			
FY 2023 Plans: Demonstrate an improved load-management system that integrates body-worn individual equipment, power and data distribution network, hydration system, and torso protection to greatly improve Soldier lethality and maneuverability; mature enhancements in the combat ensemble that provide greater situational awareness of battlefield threats in (1) temperate to extreme cold environments and (2) temperate to extreme heat and high humidity environments to optimize Soldier readiness to shoot, move and communicate; perform Soldier user assessments of integration of matured camouflage and concealment materials from PE 0602143A (Soldier Lethality Technology) and modular ballistic and blast protection from PE 0602143A (Soldier Lethality			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BB3 / *Dismounted Soldier Survivability Equip/Tech Integ*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Technology) against anti-personnel munitions and small arms threats to evaluate compatibility with matured and optimized systems-engineering architecture for Soldier ensembles in support of the CAPE program. ***FY 2024 Plans:*** Will demonstrate optimized, well-integrated uniform and load management system enhancements that provide greater survivability against battlefield threats in (1) temperate to extreme cold environments and (2) temperate to extreme heat and high humidity environments; perform Soldier user assessments of optimized adjustable load frame to better accommodate the range of Soldier statures; mature and demonstrate Soldier and Squad level desalination devices that provide potable water from indigenous sources, improving maneuverability and reducing logistical burden; validate optimized camouflage and concealment materials from PE 0602143A (Soldier Lethality Technology) and modular ballistic and blast protection from PE 0602143A (Soldier Lethality Technology) against anti-personnel munitions and small arms threats for integration with uniform and load management system architectures matured under the Combat Protective Ensemble (CAPE) program. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding changes reflect planned life cycle of effort.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.120	-
Accomplishments/Planned Programs Subtotals	2.915	3.458	3.538

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BB8 / *Soldier Centric Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BB8: *Soldier Centric Advanced Technology*	-	5.099	2.391	1.888	-	1.888	-	-	-	-	0.000	9.378
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates an optimized training systems to enable effective training and provide increased levels of Soldier proficiency and readiness. This Project matures and demonstrates Soldier centric technologies for the Soldier/Squad virtual environment to support the Army's Synthetic Training Environment (STE). The STE is the next generation holistic collective training capability that will train units where they will fight, with whom they will fight with, and in complex operational environments to include dense urban and sub-terrain; within the entire range of combined arms maneuver tasks in support of Multi-Domain Operations. The Soldier/ Squad virtual environment combines and integrates several individual Soldier and Squad training capabilities, STE Squad Capability (SSC), 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 STE will provide the realistic repetitions necessary to fight 25 bloodless battles before the first battle.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy and supports the STE Cross Functional Team.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: STE Soldier/Squad Virtual Trainer	5.099	2.317	1.888
Description: This effort matures and demonstrates a common battle drill squad-level mixed reality based system that allows for the rapid conduct and repetition of squad-level training. The training system will make it possible to conduct diverse, repeatable and effective training without extensive training infrastructure. This effort matures and demonstrates novel and realistic training environments that provide increased levels of proficiency and readiness through immersive training scenarios conducted at the point of need.			
FY 2023 Plans: Demonstrate the performance of agnostic camera and tracking technologies required for dynamic occlusion to perform in daylight training environments successfully; improve individual Soldier position- and orientation-tracking; demonstrate multi-modal, Soldier interfaces (e.g., haptic suits, 3D sound, acoustics, etc.) for individual Soldiers in live training environments.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BB8 / *Soldier Centric Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will complete maturation of agnostic camera and tracking technologies required for dynamic occlusion to perform in daylight training environments; and optimize individual Soldier position- and orientation-tracking technologies. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease supports shift to long-term objectives of merging live and synthetic training.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.074	-
Accomplishments/Planned Programs Subtotals	5.099	2.391	1.888

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BC1 / *Human Performance AdvTech for Mobility & Lethality*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BC1: *Human Performance AdvTech for Mobility & Lethality*	-	13.433	9.415	7.017	-	7.017	7.415	17.346	24.359	26.062	0.000	105.047
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures technologies, methodologies, and human performance models to demonstrate increased mobility and lethality of the individual and small unit to achieve overmatch. It validates and integrates human performance assessment methods and algorithms into training/education, test and evaluation methodologies, and materiel solutions to compare performance impacts between different materiel and non-materiel solutions to maximize the individual Warfighter and small unit. These methods and algorithms have potential to enable the development of aspects of doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) improvements and efficiencies. This Project also uses Soldier assessments to iteratively improve the performance of, optimize, and integrate technologies to augment Soldier function (e.g. shoot, move, perceive, decide, and communicate) during missions for maximizing performance. This Project supports the Measuring and Advancing Soldier Tactical Readiness and Effectiveness (MASTR-E) Science and Technology program supported by the Office of the Secretary of Defense Close Combat Lethality Task Force.

This Project supports key Army needs and complements the technical research of Program Element (PE) 0602143A (Soldier Lethality Technology) / Project BC6 (Human Perf-Tech for Warfighter Enhancement) and project BC2 (Next Gen Mobility & Lethality Tech for Warfighters). This research is also supported by and fully coordinated with efforts conducted by Medical Research & Development Command (MRDC), Army Research Institute (ARI), U.S. Military Academy (USMA), and other academic and industry partners. This research is in partnership with Forces Command (FORSCOM) operational units and the appropriate Training and Doctrine Command (TRADOC) organizations as well as established transition partners, including Program Executive Office-Soldier (PEO-S). This Project also complements and is fully coordinated with work performed across Army, Navy, and Air Force under the Reliance 21 Human Systems Community of Interest: Systems Interfaces & Cognitive Processes and Protection, Sustainment, and Warfighter Performance.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Close Combat Lethality Task Force, the Army Modernization Strategy and supports the Soldier Lethality Cross Function Team (CFT) efforts.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Soldier/Squad Performance Metrics for Lethality	4.468	-	-
Description: This effort validates and matures technologies, methodologies, and human performance models to demonstrate increased Soldier and Small Unit mobility & lethality to achieve overmatch. The effort validates and integrates human performance sensors, models, and design guidance into training/education, test and evaluation, and materiel. The results of this work will allow			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BC1 / *Human Performance AdvTech for Mobility & Lethality*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
the Army to develop equipment, systems and training devices that maximize the close combat Soldier and small unit performance in multi-domain operations.			
Title: Operational Unit Partnership and Soldier Touch Point ***Description:*** This effort optimizes innovation through Science and Technology touch points with the Operational force, resulting in rapid iteration, concept maturation, integration, validation of laboratory findings, and transition of technologies and methodologies in response to operational unit demand signal. This effort streamlines demonstration, data collection, and technology maturation for near term DOTMLPF solutions, enabling faster delivery of materiel and non-materiel products/knowledge refined with direct Soldier input. This body of work allows validated, empirical, assessment of any equipment capability or training intervention as part of the Soldier architecture to inform future acquisition investments, training, and operational trade space decisions. ***FY 2023 Plans:*** Will conduct field and simulation studies to validate prediction models (previously trained with human performance data) in relevant environments/scenarios under realistic operational states (e.g., high stress, thermal load, dehydration, sleep restriction, etc.) in order to evaluate the correspondence between predictions and performance outcomes; conduct field studies testing the effectiveness of enhancement strategies on close combat performance outcomes and readiness. ***FY 2024 Plans:*** Will integrate field study data and algorithms into performance prediction models; conduct iterative Soldier Touch Points (STPs) demonstrations with FORSCOM partners to refine prediction models (e.g., prediction outcomes and information portrayal); demonstrate the capabilities and outputs from the Measuring and Advancing Soldier Tactical Readiness and Effectiveness MASTR-E) Program in a culminating event. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects the ramping down of the MASTR-E program	8.965	9.171	7.017
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.244	-
Accomplishments/Planned Programs Subtotals	13.433	9.415	7.017

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BC1 / *Human Performance AdvTech for Mobility & Lethality*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BC8 / *Training Advanced Technology (Other than STE)*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BC8: *Training Advanced Technology (Other than STE)*	-	2.884	7.078	7.684	-	7.684	10.347	24.401	32.458	32.802	0.000	117.654
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates advanced training technologies in support of the Army's need for simulations that accurately replicate and realistically represent the effects of current and future weapons systems during live and synthetic training. Integration of the live and synthetic environments into a single synthetic training environment will modernize the current Live Training Environment and allow fair fight engagements across all training environments and training devices.

This Project complements work done in Program Element (PE)0602143A (Soldier Lethality Technology) / Project BC7 (Training Technology (Other than STE).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: STE: Live Training Applications ***Description:*** This effort exploits technology to demonstrate enhanced fidelity of live training systems and develops future live training capabilities for conducting force-on-force, combined arms exercises to enhance readiness at Army home stations and Combat Training Centers.	2.884	-	-
Title: Advanced Processing Technologies for Live Training ***Description:*** This effort will improve technologies that reduce the computational burden, latency, and power consumption (battery weight) associated with training dismounted Soldiers in live training environments that leverage simulated tactical engagements. Such live training use-cases require virtual ballistic flyout calculations, casualty assessment, and visualization of terminal effects (e.g., munition impacts). ***FY 2023 Plans:*** Will demonstrate methods to couple lethality, vulnerability, and terrain models with real-world sensors to generate realistic virtual ballistic flyout and casualty assessment models that reduce weight and functional impacts to the Soldier; validate architectures to	-	3.828	4.449

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BC8 / *Training Advanced Technology (Other than STE)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
account for truncated calculation space, data compression, parallelization, 3D terrain tiling, high-speed commercial hardware, and smart RF network packet routing. ***FY 2024 Plans:*** Will mature and demonstrate hardware and algorithm benchmarks to validate ballistic flyout calculations and casualty assessments; demonstrate sensor fusion techniques to improve overall computational performance for ballistic flyout and casualty assessment in a distributed environment. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase covers the initial benchmarking activities to support the future optimization and validation of sensor fusion techniques.			
Title: Synthetic Cyberspace Effects for Training ***Description:*** This effort matures, demonstrates, and validates a data exchange model for cyberspace effects and a brokering architecture to propagate those cyberspace effects across Live, Virtual and Constructive models and simulations within distributed training environments for collective training. ***FY 2023 Plans:*** Will mature cyberspace data model and effects brokering architecture to incorporate cyber, electronic warfare, and Global Positioning System (GPS) effects for Brigade-level collective training; validate multi-domain use-cases and identify large-scale exercises to leverage for data collection and demonstration. ***FY 2024 Plans:*** Will continue to mature cyberspace data model and effects brokering architecture to incorporate cyber, electronic warfare, and Global Positioning System (GPS) effects for Brigade-level collective training; validate multi-domain use-cases and identify large-scale exercises to leverage for data collection and demonstration. Begin integration of external models to validate overall architecture decisions. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort	-	2.998	3.235
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:***	-	0.252	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BC8 / *Training Advanced Technology (Other than STE)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638			
Accomplishments/Planned Programs Subtotals	2.884	7.078	7.684

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BC9 / *Adv Soldier Sensors/Displays AdvTech for Dismounts*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BC9: *Adv Soldier Sensors/ Displays AdvTech for Dismounts*	-	12.671	25.963	27.160	-	27.160	26.756	28.610	29.152	29.470	0.000	179.782
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures, optimizes, and demonstrates fully digital sensor systems, architectures, and interfacing capabilities to fuse sensors, and network situational understanding information and targeting capabilities to enable maintained mounted and dismounted visual advantage, increased situational awareness, decreased fratricide, and decreased response times to all threats in all environments.

Research in this Project supports the Army Science and Technology Soldier Lethality, Next Generation Combat Vehicle, and Future Vertical Lift Army Modernization priorities.

This Project complements work done in Program Element (PE) 0602143A (Soldier Lethality Technology) / BD1 (Advanced Soldier Sensors/Displays Tech for Dismounts).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and supports the Soldier Lethality Cross Functional Team (CFT).

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Advanced Soldier Sensors/Displays Advanced Technology for Dismounts	12.671	25.302	27.160
Description: This effort will mature and demonstrate low cost Soldier-borne situational understanding systems with greater fidelity for improved maneuver and lethality, as well as integrates automated target cueing to increase probability of recognition/ identification and tracking of threats in all environments. ***FY 2023 Plans:*** Mature advanced infrared sensors leveraging emerging multiple sensor modalities for incorporation into various soldier borne sensor systems; mature covert eye tracking, parallax correction and multi-plane display technologies to enable the next generation of digital sensor and head mounted display capabilities for dismounted Soldier situational awareness and mobility; improve performance of optics detection capability against concealed infrared threats while reducing size and weight for small platform use; optimize sensor approaches enabling low false alarms, stand-off range, signature reduction, and threat location			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BC9 / *Adv Soldier Sensors/Displays AdvTech for Dismounts*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
accuracy; demonstrate AR systems for mounted infantry interactions with heading corrections and self-location capabilities within a combat vehicle while on the move; optimize sensor systems integrated with command and control systems for information sharing capabilities between dismounted and mounted Soldiers on a tactical vehicle platform for soldier touchpoint assessment on representative platforms; optimize sensor payloads and processing approaches for enhanced autonomy to enable target localization and notification capabilities on smaller aerial platforms enabling improved situational awareness against all threats; optimize performance of image processing techniques to improve threat detection at longer ranges, and frame rates required for dismounted hostile fire detection; validate optical and acoustic techniques to enable dismounted multi-modal hostile fire detection. ***FY 2024 Plans:*** Will optimize improved multi-plane display technologies and demonstrate parallax correction to expand use-cases while minimizing Size, Weight, and Power (SWaP); mature advanced covert depth sensing technologies to enable the next generation of digital sensor and head mounted display capabilities for dismounted Soldier situational awareness and mobility; integrate improved optics detection performance onto reduced pathfinder hardware with reduced SWaP and demonstrate in a field-relevant environment; mature sensor payload processing approaches to enable real-time course of action suggestion and automated cueing capabilities while on smaller aerial platforms for improved situational awareness and targeting against all threats; optimize sensor configurations on host platform and validate performance of image processing techniques for improved dismounted hostile fire detection; demonstrate trajectory visualization in a representative virtual environment to quantify improvement of target engagement timelines while validating required improved orientation sensing accuracy. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding increase represents funding for technology maturation needed to leverage breakthroughs in sensors and sensor fusion and inject them into critical dismounted Soldier systems to enable decision dominance and improved lethality at all echelons.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.661	-
Accomplishments/Planned Programs Subtotals	12.671	25.963	27.160

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BC9 / *Adv Soldier Sensors/Displays AdvTech for Dismounts*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BD7 / *Soldier Sys Interfaces/Integration-Sensor AdvTech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BD7: *Soldier Sys Interfaces/ Integration-Sensor AdvTech*	-	8.068	8.504	7.931	-	7.931	8.638	9.372	9.378	9.480	0.000	61.371
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project will integrate and mature technologies for sensing, processing, displaying information, interfacing with users, and cognitive improvement to enhance Soldier & Small Unit situational awareness & understanding. This Project will integrate and demonstrate battlefield, body-worn sensors, and data fusion algorithms to provide the dismounted Small Unit leader with clear, actionable information for making well informed, rapid, tactical decisions. This Project will also mature and integrate advanced dismounted Soldier robotic and autonomous systems technologies to demonstrate autonomous navigation, manned-unmanned teaming, and networked reconnaissance to improve Soldier lethality, situational awareness, and survivability during tactical operations.

Research in this Project complements several Program Elements (PEs) and Projects to include PE 0602143A (Soldier Lethality Technology) / BD6 (Soldier Sys Interfaces/Integration - Sensor Tech), Project BB9 (Human Performance Tech for Mobility & Lethality), and PE 0603118A (Soldier Lethality Advanced Technology) / Project BC9 (Adv Soldier Sensors/Displays AdvTech for Dismounts).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and the Soldier Lethality Cross Functional Team (CFT).

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Soldier System Interfaces & Integration (Sensor Advanced Technology)	8.068	8.254	7.931
Description: This effort will integrate battlefield and body-worn sensors and mature data-fusion algorithms to provide the dismounted Small Unit leader with clear, actionable information to make well informed, rapid, tactical decisions. This effort will mature and integrate advanced dismounted Soldier robotic and autonomous systems technologies to demonstrate autonomous navigation, manned-unmanned teaming, and networked reconnaissance to improve Soldier lethality, situational awareness, and survivability during tactical operations.			
FY 2023 Plans: Will mature and demonstrate Small Unit leader planning tools with the IVAS to enhance tactical decision making; mature and integrate human performance, Soldier equipment, and remote sensing capabilities with IVAS to enhance Soldier situational awareness & understanding during distributed operations; conduct field demonstrations of Sensored Soldier technologies with			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BD7 / *Soldier Sys Interfaces/Integration-Sensor AdvTech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
IVAS, Soldier Lethality, and other Army systems in relevant operational environments to validate performance and functionality; mature autonomous tactical algorithms for Army SUAS (e.g., nighttime navigation, perch and stare, landing site selection) and integrate them on military relevant platforms; demonstrate SUAS autonomy capabilities in relevant field environments to validate the performance and operation of the technologies; integrate and demonstrate small unit logistical planning tools that support data driven decisions for emergency and routine resupply at the tactical edge while conducting cross domain maneuver. ***FY 2024 Plans:*** Will optimize and mature actionable decision tools for the Integrated Visual Augmentation System (IVAS) to enhance remote sensing, equipment sensing, and human performance sensing capabilities for the Small Unit leader; conduct field demonstrations of integrated Soldier situational awareness technologies, sensors, and unmanned systems with IVAS and other networked Army platforms to improve tactical decision making and enhance Soldier Lethality for cross-domain maneuver; mature, integrate and demonstrate advanced autonomous tactical capabilities for Army SUAS (Soldier Borne Sensor (SBS) and Short Range Reconnaissance (SRR)) during Soldier field events to enhance the Squad and Platoons targeting and situational awareness; integrate and validate additional logistical delivery platforms with the small unit resupply consumption and delivery mission planning tool, for both routine and emergency logistical resupply situations and in support of contested logistics. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects realignment of $300K to PE 0602143A (Soldier Lethality Technology) / BD6 (Soldier Sys Interfaces/ Integration - Sensor Tech).			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.250	-
Accomplishments/Planned Programs Subtotals	8.068	8.504	7.931

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BD7 / *Soldier Sys Interfaces/Integration-Sensor AdvTech*

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BD9 / *Soldier & Sm Unit Tactical Energy AdvTech*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BD9: *Soldier & Sm Unit Tactical Energy AdvTech*	-	3.055	4.189	9.310	-	9.310	7.562	6.560	5.054	5.104	0.000	40.834
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project will demonstrate advanced Power and Energy (P&E) technologies for the dismounted Soldier to lighten equipment load, reduce resupply need, and enhance mobility. This Project will conduct Soldier and Small Unit power and energy technology maturation, integration with clothing and individual equipment, technical analysis, and operational assessment.

Work in this Project complements several Program Elements (PEs) to include PE 0603118A (Soldier Lethality Advanced Technology) / project BD7 (Soldier Sys Interfaces/ Integration AdvTech), Project BD8 (Soldier & Sm Unit Tactical Energy Tech), and PE 0603118A (Soldier Lethality Advanced Technology) / Project BC9 (Adv Soldier Sensors/Displays AdvTech for Dismounts).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and the Soldier Lethality Cross Functional Team (CFT).

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Dismounted Soldier Power and Energy	3.055	4.143	4.269
Description: This effort matures, integrates, and demonstrates advanced Soldier P&E technologies that are used to power the dismounted Soldier and small unit's command and control, communications, computers, and sensor devices during tactical operations. This work will result in the Army being able to provide the power and energy the future Soldier requires to operate effectively, while doing so at a reduced physical burden.			
FY 2023 Plans: Will optimize technologies to efficiently transfer power between the conformal wearable battery and the Soldier's weapon to recharge the weapon battery during dismounted operations; mature technologies to improve the safety and increase the energy density of Soldier carried rechargeable batteries; mature Soldier carried power generators to increase efficiency, reduce weight, and improve compatibility with Soldier equipment; conduct field demonstrations to validate the performance and operation of			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BD9 / *Soldier & Sm Unit Tactical Energy AdvTech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Soldier and Squad power technologies; mature and validate a Soldier worn, portable data-acquisition system to accurately measure power and energy metrics during Soldier field evaluations. ***FY 2024 Plans:*** Will demonstrate high energy density Soldier batteries, such as Small Tactical Universal Battery (STUB) and the Conformal Wearable Battery (CWB), powering the Soldier's electronic equipment during Soldier field events; demonstrate advanced Soldier-carried power generators recharging batteries during Soldier field events; demonstrate efficient Soldier- worn power- transfer and management technologies for recharging the Soldier's batteries during Soldier field events. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.046	-
Title: Supply Resiliency for Soldier Power ***Description:*** This effort addresses battery supply chain security issues by specifically addressing small battery standardization maturity for DoD applications to be more lethal in dismounted operations. ***FY 2024 Plans:*** Will improve and demonstrate affordable small, standardized batteries, such as Small Tactical Universal Battery (STUB), Conformal Wearable Battery (CWB) and BB-2590 that are domestically sourced, to optimize operational runtime and reduce the weight and Soldier burden; optimize system adaptors for use with small, standardized batteries operating within Soldier tactical portable devices, such as Next Generation Squad Weapon (NGSW) and Enhanced Night Vision Goggle-Binocular (ENVG-B); mature Operational Single Cell for Accessory Readiness (OCSAR) to enable safe, single cell operation in enabler devices; characterize and validate operational capabilities at field demonstrations and finalize military standards (MIL-PRF-32383) so these standardized batteries can be readily adopted. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	-	5.041

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BD9 / *Soldier & Sm Unit Tactical Energy AdvTech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
This increase addresses defense-wide critical battery supply chain security issues that would prevent the Army from fielding modernized capabilities on the Soldier platform using common standardized batteries such as sights, goggles, weapons, radios, GPS, etc. FY23 work in this task is linked to PE 0603462/BH6.			
Accomplishments/Planned Programs Subtotals	3.055	4.189	9.310

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BE2 / *Joint Service Combat Feeding Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BE2: *Joint Service Combat Feeding Advanced Technology*	-	2.335	1.988	2.673	-	2.673	2.673	2.781	2.136	2.159	0.000	16.745
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates combat ration and field feeding technologies to optimize Warfighter performance, decrease the risk of exposure to chemical and biological contaminants in foods, and reduce the logistics burden to enable semi-independent operations. The Army serves as the Executive Agent for this Department of Defense (DoD) program, with oversight and coordination provided by the DoD Combat Feeding Research and Engineering Board.

This Project matures and demonstrates research done in Program Element (PE) 0602143A (Soldier Lethality Technology) / Project BE3 (Joint Service Combat Feeding Technology).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Joint Service Combat Feeding Advanced Technology Demonstration	2.335	1.969	2.673
Description: This effort matures and demonstrates combat ration and field feeding technologies to optimize Warfighter performance, decrease risk of exposure to chemical and biological contaminants in foods, and reduce the logistics burden to enable semi-independent operations.			
FY 2023 Plans: Will demonstrate field-deployable biosensor detection platforms for multiple pathogens in food matrices to reduce risk of food-borne illness on the battlefield; validate effect of Close Combat Assault Ration on Warfighter physical performance to enable semi-independent operations; optimize commercially available surface treatment chemicals for mobile field feeding kitchen surfaces to improve force health protection; demonstrate stability and safety of membrane concentrate technology to reduce combat load; continue optimization of small scale atmospheric water harvester performance using an environmental chamber technique to decrease logistical burdens in multi-domain operations; and mature and demonstrate additive manufacturing technology to provide targeted nutrition-on-demand for optimal physical performance.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BE2 / *Joint Service Combat Feeding Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Will validate manufacturability of developed phenolic containing products; optimize shelf stable Amino Acid/Protein ration components by completing storage studies and sensory analysis and acceptability; food matrices in support of alternative protein ration components will be down-selected for storage studies and evaluated for food safety, acceptability, and compound stability; mature, develop, assess, and demonstrate Food Additive Manufacturing (FAM) solutions; assess industry readiness for FAM to print nutrient tailored foods; validate the effectiveness of a non-thermal concentration technology to produce a microbiologically safe juice concentrate and subsequent ration components, and conduct a limited technology demonstration to assess user acceptance; demonstrate military packaging reductions technologies and validate results to determine if they meet these critical requirements: integrity, barrier performance, durability, and sensory analysis. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding in the amount of $642K realigned from PE 0602143A (Soldier Lethality Technology) / Project BE3 (Joint Service Combat Feeding Technology). Funding increase will enable future maturation and demonstration of combat ration and field feeding technologies.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.019	-
Accomplishments/Planned Programs Subtotals	2.335	1.988	2.673

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BE5 / *Personnel & Airdrop Safety Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BE5: *Personnel & Airdrop Safety Advanced Technology*	-	6.628	6.484	6.632	-	6.632	6.705	7.354	7.358	7.439	0.000	48.600
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates equipment and innovative techniques for precision aerial delivery of cargo and personnel. Technologies support Army Modernization Priority, Soldier Lethality. Aerial delivery is a key capability for rapid force projection and global precision delivery to support the mission readiness profile for Global Response Force (GRF). These efforts are designed to advance state of the art precision delivery technologies such as parachutes; guidance, navigation, and control (GNC) components and subsystems; tracking sensors; software algorithms; and safety rigging that integrates with currently equipped aircraft, unmanned aerial systems (UAS), and advanced rotary wing aircraft. These efforts provide the Warfighter with highly accurate, timely cargo/payload delivery and resupply in all terrain and weather conditions. Precision delivery/resupply reduces vulnerability of ground Soldiers, aircraft, and aircrew. Precision aerial delivery supports remote warfare with activities such as placement of battlefield sensors and reduction of Soldier load.

Research in this Project supports key Army needs and complements the technical research in Program Element (PE) 0602143A (Soldier Lethality Technology) / Project BR9 (Personnel & Airdrop Safety Technology). This Project also complements research done in the Science & Technology Precision, Navigation and Timing Modernization priority.

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Personnel & Airdrop Safety Advanced Technology	6.628	6.308	6.632
Description: This effort matures and demonstrates parachute materials and designs, precision guidance, navigation software and hardware, tracking sensors, and safety devices to increase the accuracy of delivering cargo to remote locations and/or complex terrains in global positioning system (GPS) denied environments. This effort also provides technologies that increase safety during personnel insertions into theaters of operation. This effort supports capability demonstrations for mitigating the Army' s challenge of overburdened Soldiers through the use of tactical aerial resupply technologies, as well as supporting Anti-Access/Area Denial (A2/ AD) and manned-unmanned teaming (MUM-T) operational concepts by demonstrating airdrop from non-traditional platforms.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BE5 / *Personnel & Airdrop Safety Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Optimize and demonstrate integration of low-cost suite of guidance, navigation, and control sensors, to enable robust positioning estimates in GPS denied conditions; demonstrate and validate sensor integration on an autonomously guided aerial resupply system, in operationally relevant environment; incrementally mature and demonstrate autonomous technologies on personnel infiltration/exfiltration systems (PIES) in live environment, with both dependent and autonomous controls; demonstrate Next Generation Static Line (NGSL) advancements in control authority in a live environment that reflects IRF challenges. ***FY 2024 Plans:*** Will Integrate personnel infiltration system subcomponents and demonstrate full mission profile in live environment; Integrate and demonstrate preflight mission planning subcomponents into resupply vehicle's mission execution hardware; Validate and mature design of resupply vehicles that enhance autonomy, increase offset distances, and increase cargo weight; Demonstrate next generation static line (NGSL) performance and safety technologies, addressing increased weight capacity and improved weight distribution on the soldier. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding change reflects planned lifecycle of this effort.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.176	-
Accomplishments/Planned Programs Subtotals	6.628	6.484	6.632

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BE9 / *STE Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BE9: *STE Advanced Technology*	-	12.942	10.656	8.342	-	8.342	7.495	-	-	-	0.000	39.435
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates technologies supporting the Army's Synthetic Training Environment (STE). The STE is the next generation holistic collective training capability that will train units where they will fight, with whom they will fight with, and in complex operational environments to include dense urban and sub-terrain; within the entire range of combined arms maneuver tasks in support of Multi- Domain Operations. STE Information Systems (STE-IS) delivers the Common Synthetic Environment consisting of Global Terrain/One World Terrain (OWT), Training Simulation Software (TSS), and Training Management Tools (TMT). The STE will be available where training occurs (home station, combat training centers, armories, institutions, shipboard, deployed) and will include Air and Ground Reconfigurable Virtual Collective Trainers (RVCTs), a Soldier/Squad Virtual Training (S/SVT), and a live training capability. The STE will be cloud-enabled, compatible with the Army Enterprise Network, and service-based through the Common Operating Environment, including Live and Constructive. The STE will provide the realistic repetitions necessary to fight 25 bloodless battles before the first battle.

This Project complements research done in Program Element (PE) 0602143A (Soldier Lethality Technology) / Project BE8 (Synthetic Training Environment (STE) Technology).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas, the Army Modernization Strategy, and supports the STE Cross Functional Team efforts.

Research in this Project is performed by the United States Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: STE Training Management Tool	3.187	2.814	1.705
Description: This effort matures and demonstrates STE-relevant tools and technologies that automatically adapt training to the learner's skill level, conduct intelligent after action reviews, automate team training assessments, and enable the visualization of and interaction with a Mixed Reality Common Operating Picture of the battlespace.			
FY 2023 Plans: Demonstrate the integration of automated performance measures from both live and simulated small-unit training events in a team-competency tracking architecture that uses Department of Defense standards; optimize models and algorithms to measure squad-level competencies for integration into the STE; exploit human-performance data and demonstrate dashboards that visualizes competency acquisition over time and across multiple training interactions; mature and demonstrate the integration			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BE9 / *STE Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
between competency tracking architecture and visualization tools for small-unit after-action review and for Multi-Domain Operations mission planning and mission command at higher echelons. ***FY 2024 Plans:*** Will validate the integration of automated performance measures from both live and simulated small-unit training events in a team-competency tracking architecture; mature models and algorithms to measure squad-level competencies for integration into the STE; mature dashboards to visualize competency acquisition over time and across multiple training interactions; exploit competency tracking and visualization technologies for small-unit after-action review and for Multi-Domain Operations mission planning and mission command at higher echelons. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects a shift in research focus from the near-term development of the STE capabilities to longer term research supporting training of multi-domain operations on complex, data-intensive battlefields.			
Title: STE One World Terrain ***Description:*** This effort matures and demonstrates tools and methods that improve the speed, fidelity and delivery of synthetic terrain and environmental data needed to support mission rehearsal and training in a representation of the globe, fully accessible through the Army network and usable by all simulation trainers. This effort also matures and develops complex representations (including megacities and subterranean) of the operational environment and the Multi-Domain battlefield in synthetic training environments. ***FY 2023 Plans:*** Demonstrate processes, tools and software for surface indentation, classification and extraction for material and terrain artifacts supporting the ability to access, explore, modify, and retrieve 3-D content from the OWT 3-D Foundational Data; establish processes and standards to balance the tradespace of enterprise (unconstrained) vs. point-of-need (constrained) terrain needs conforming to network design and constraint space such as how much content should be pre-loaded vs. on-demand; demonstrate automation across the 3-D terrain generation pipeline to accelerate ground-truth 3-D content delivery. ***FY 2024 Plans:*** Will demonstrate processes, tools and software to deliver 3D synthetic content in constrained and unconstrained environments; continue to optimize 3D user interfaces for the identification, classification, and extraction of material and terrain artifacts for usage in collective training. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	2.805	4.171	6.637

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BE9 / *STE Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding increase to provide and demonstrate processes and tools that could enable OWT content and application usage in constrained environments.			
Title: STE Training Simulation Software ***Description:*** This effort matures and demonstrates technologies that support Multi-Domain Operations modeling and simulation configuration and scalability technologies for collective training. In addition, matures and demonstrates technologies that allow the synthesis of robust military behaviors that enable the scaling of STE collective training configurations and delivery to the Point of Need through the exploitation of emerging computing and networking technologies that optimize computing architectures for integrating components (models, behaviors, data, etc.) of the Training Simulation Software (TSS). ***FY 2023 Plans:*** Demonstrate dynamic integration of STE-simulation components (models, behaviors, data, etc.) in a point-of-need collective-training use case featuring local and distributed simulation; mature and demonstrate Operational Environment models (e.g., Areas, Structures, Capabilities, Organizations, People, Events [ASCOPE]/Political, Military, Economic, Social, Information, Infrastructure- Physical environment and Time [PMESII-PT]) to enhance the representation of Multi-Domain Operations in Army simulations. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding decrease reflects a shift in research focus from the near-term development of the STE capabilities to longer-term research supporting training of multi-domain operations on complex, data-intensive battlefields.	6.950	3.367	-
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.304	-
Accomplishments/Planned Programs Subtotals	12.942	10.656	8.342

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BE9 / *STE Advanced Technology*

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603118A / *Soldier Lethality Advanced Technology*	Project (Number/Name) BS8 / *Soldier Lethality Advanced Technology*	

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
BS8: *Soldier Lethality Advanced Technology*	-	44.500	53.750	-	-	-	-	-	-	-	0.000	98.250
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Congressional Interest Item funding provided for Soldier Lethality Advanced Technology.

A. Mission Description and Budget Item Justification

Congressional Interest Item funding provided for Soldier Lethality Advanced Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
Congressional Add: Program Increase - Advanced AI/AA Analytics for Modernization and Readiness	10.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Advanced AI/AA Analytics for Modernization and Readiness		
Congressional Add: Program Increase - Small Arms Fire Control Advanced Technology	8.000	4.500
FY 2022 Accomplishments: Congressional Interest Item funding provided for Small Arms Fire Control Advanced Technology		
FY 2023 Plans: Congressional Interest Item funding provided for Small Arms Fire Control Advanced Technology		
Congressional Add: Ferrium Steel for Improved Personal Protective Equipment	5.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Ferrium Steel for Improved Personal Protective Equipment		
Congressional Add: Human Machine Teaming	4.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Human Machine Teaming		
Congressional Add: Impact Attenuation Materials for Limb Protection	1.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BS8 / *Soldier Lethality Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2022 Accomplishments: Congressional Interest Item funding provided for Impact Attenuation Materials for Limb Protection		
Congressional Add: Soldier Situational Awareness	8.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Soldier Situational Awareness		
Congressional Add: Squad Operations Advanced Resupply	8.000	-
FY 2022 Accomplishments: Congressional Interest Item funding provided for Squad Operations Advanced Resupply		
Congressional Add: Program Increase - ADVANCED TECHNOLOGY DEVELOPMENT FOR MDO TO SUPPORT SOLDIER LETHALITY	-	15.000
FY 2023 Plans: Congressional Interest Item funding provided for ADVANCED TECHNOLOGY DEVELOPMENT FOR MDO TO SUPPORT SOLDIER LETHALITY		
Congressional Add: Program Increase - HMD RISK REDUCTION FOR IVAS FUTURES	-	5.000
FY 2023 Plans: Congressional Interest Item funding provided for HMD RISK REDUCTION FOR IVAS FUTURES		
Congressional Add: Program Increase - HYPER ENABLED SOLDIER LETHALITY	-	10.000
FY 2023 Plans: Congressional Interest Item funding provided for HYPER ENABLED SOLDIER LETHALITY		
Congressional Add: Program Increase - HYPERSONIC WEAPON DEVELOPMENT SOFTWARE	-	2.000
FY 2023 Plans: Congressional Interest Item funding provided for HYPERSONIC WEAPON DEVELOPMENT SOFTWARE		
Congressional Add: Program Increase - SHOCK ATTENUATION AND BLUNT FORCE TRAUMA IMPROVEMENTS IN HEADBORNE	-	5.000
FY 2023 Plans: Congressional Interest Item funding provided for SHOCK ATTENUATION AND BLUNT FORCE TRAUMA IMPROVEMENTS IN HEADBORNE		
Congressional Add: Program Increase - SPECTROSCOPY DEVICES FOR CHEM BIO DETECTION AND DEACTIVATION WITH UV-C	-	11.250

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603118A / *Soldier Lethality Advanced Technology*	**Project (Number/Name)** BS8 / *Soldier Lethality Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023
FY 2023 Plans: Congressional Interest Item funding provided for SPECTROSCOPY DEVICES FOR CHEM BIO DETECTION AND DEACTIVATION WITH UV-C		
Congressional Add: Program Increase - Improvements to Arctic Heaters for Tents and Shelters	-	1.000
FY 2023 Plans: Congressional Interest Item funding provided for Improvements to Arctic Heaters for Tents and Shelters		
Congressional Adds Subtotals	44.500	53.750

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A