Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army											Date: April 2022	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603774A *I Night Vision Systems Advanced Development*							
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	-	15.179	62.820	18.048	-	18.048	75.231	35.374	36.095	36.446	Continuing	Continuing
BQ5: *Visual Augmentation System Advanced Development*	-	5.475	56.519	12.094	-	12.094	69.370	29.663	30.268	30.563	Continuing	Continuing
VT7: *Soldier Maneuver Sensors - Adv Dev*	-	7.039	3.777	3.909	-	3.909	3.808	3.661	3.777	3.813	Continuing	Continuing
VT8: *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*	-	2.665	2.524	2.045	-	2.045	2.053	2.050	2.050	2.070	Continuing	Continuing

A. Mission Description and Budget Item Justification

A portion of this funding line is directly aligned to the Army Soldier Lethality Modernization Priority in support of situational awareness for the Close Combat Soldier. This Program Element focuses on efforts to evaluate and integrate technologies and representative prototype systems that facilitate the development of Soldier-borne sensor devices transitioning from the laboratory to operational use. Efforts focus on proving out commonality across as broad a spectrum of users as possible to provide enhanced Soldier products, giving them superiority on the battlefield.

Project BQ5 (Visual Augmentation System-Advanced Development) This project evaluates and integrates technologies and representative prototype systems transitioning from the Science and Technology (S&T) stage. It focuses on developing the next generation augmented vision and situational awareness system that provides the Soldier with the ability to fight, rehearse, train and win during multi-domain operations. Funded efforts will accelerate the development of components, terrain shared coordinate data and processing, algorithms including machine learning/artificial intelligence and demonstrations in support of the next generation augmented vision and situational awareness system. Efforts will provide rapid decision making and targeting capabilities with the integration of external video and data sources such as weapon sights, unmanned air and ground vehicles and other data sources enabled by tactical cloud package and advanced network services. This project will provide data driven analytics to optimize unit performance and enhance lethality and to enable Synthetic Training Environment (STE) squad capability to perform live mixed reality training and rehearsing. This project includes costs for efforts associated with movement of information and high level processing, integration, and interface of products with the Soldiers' head, body, weapon, and transportation. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy. This project supports the Soldier Lethality Cross Functional Team. The total cost of the Integrated Visual Augmentation System Rapid Prototyping Middle Tier of Acquisition effort is $863.9 million RDT&E from FY18 to FY23. The totality of the RDT&E is from the combined APEs of 603774A BQ5 and 604710A BQ6.

Project VT7 (Soldier Maneuver Sensors-Advanced Development) project enables development of emerging capabilities for the maneuver force, that are envisioned by the Soldier Lethality Cross Functional Team, the Maneuver Center of Excellence (MCoE), the Maneuver Capabilities Development Integration Directorate (MCDID), the Science and Technology (S&T) community, industry partners or the acquisition workforce that may provide the Soldier or Squad increased capability to "fight, win and survive, day and night, in a multi- domain environment now and tomorrow". This project also allows pursuit of technology breakthroughs that challenge current technical solutions and have the potential for providing increased Soldier performance. This effort focuses on capabilities that enable modernization of Soldier sensor and laser

devices, including digital features and enhanced solutions including maneuver capabilities to detect, recognize and identify targets, and to provide target acquisition and handoff but not limited to capabilities to mitigate threats. The integration of higher performing multi-spectral sensors with smart processing will provide adjusted weapon sight reticles and leverage network connectivity for improved situational awareness/understanding. Additional project capabilities include advanced optical components and assemblies and techniques for signature management, resiliency across the electromagnetic spectrum, and integration of a modular design structure for target acquisition applications including support for wireless data transfer, passive range determination, technologies for working in a GPS contested environment, advanced GPS replacement technologies and mitigation of manned and unmanned threat sensor systems. This project supports efforts to evaluate and integrate technologies and representative prototype systems including Micro Electronics Modules (MEMS) technology with improved size, weight and power for development of modernized Soldier sensor capabilities transitioning from the S&T stage to operational use. This project includes costs for efforts associated with development, certification, verification and validation of interface products into the Adaptive Squad Architecture (ASA). This project also includes development of tools and emulators of ASA components. Funding in this project aligns with Army's priorities in support of the National Defense Strategy.

Project VT8 (Soldier Precision Targeting Devices - Advanced Development) enables development of emerging capabilities for the maneuvers and fires community, that are envisioned by the Soldier Lethality Cross Functional Team, the Maneuver Center of Excellence (MCoE), the Fires Center of Excellence (FCoE), the Maneuver Capabilities Development Integration Directorate (MCDID), the Science and Technology (S&T) community, industry partners or the acquisition workforce that may provide the Soldier or Squad increased capability to "fight, win and survive, day and night, in a multi- domain environment now and tomorrow." This project also allows pursuit of technology breakthroughs that challenge current technical solutions and have the potential for providing increased Soldier performance. This project focuses on developing component technologies and representative prototype systems for Soldier portable precision targeting devices to continue improvements to system performance while reducing size, weight, and power required by those systems. The effort will consider emerging Micro-Electronic Modules (MEMs) technologies for improved efficiency and performance. Efforts will improve the Soldier's ability to precisely locate and designate targets across a broader range of operating environments, including all weather conditions, GPS-contested environments using active and passive methodologies and technologies. Component technology development will precede integration into specific systems and will include improved Precision Azimuth and Vertical Angle Measurement (PAVAM) devices; solid-state, improved lasers for range finding/designation/marking; novel passive target acquisition methods; electro-optical sensors such as infrared, near-infrared, ultra-violet, and visible spectrum imagers; sensor and data fusion; laser designator spot detection and imaging; integration of advanced power management technologies. Funding in this project aligns with Army's priorities in support of the
National Defense Strategy.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army	Date: April 2022
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603774A *I Night Vision Systems Advanced Development*

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	15.429	18.000	0.000	-	0.000
Current President's Budget	15.179	62.820	18.048	-	18.048
Total Adjustments	-0.250	44.820	18.048	-	18.048
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-10.180			
• Congressional Rescissions	-	-			
• Congressional Adds	-	55.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.250	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	18.048	-	18.048

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2021	FY 2022
Project: BQ5: *Visual Augmentation System Advanced Development*		
Congressional Add: *FY22 Congressional Add*	-	55.000
Congressional Add Subtotals for Project: BQ5	-	55.000
Congressional Add Totals for all Projects	-	55.000

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) BQ5 / *Visual Augmentation System Advanced Development*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
BQ5: *Visual Augmentation System Advanced Development*	-	5.475	56.519	12.094	-	12.094	69.370	29.663	30.268	30.563	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project evaluates and integrates technologies and representative prototype systems transitioning from the Science and Technology (S&T) stage. It focuses on developing the next generation augmented vision and situational awareness system that provides the Soldier with the ability to fight, rehearse, train and win during multi-domain operations. Funded efforts will accelerate the development of components, terrain shared coordinate data and processing, algorithms including machine learning/artificial intelligence and demonstrations in support of the next generation augmented vision and situational awareness system. Efforts will provide rapid decision making and targeting capabilities with the integration of external video and data
sources such as weapon sights, unmanned air and ground vehicles and other data sources enabled by tactical cloud package edge computing, "See Through" Armor and sharing information across on and off platform advanced network services. This project will provide data driven analytics to optimize unit performance and enhance lethality and to enable Synthetic Training Environment (STE) squad capability to perform live mixed reality training and rehearsing. This project includes costs for efforts associated with movement of information and high level processing, integration, and interface of products with the Soldiers' head, body, weapon, and transportation. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy. This project supports the Soldier Lethality Cross Functional Team. The total cost of the Integrated Visual Augmentation System Rapid Prototyping Middle Tier of Acquisition effort is $863.9 million RDT&E from FY18 to FY23. The totality of the RDT&E is from the combined APEs of 603774A BQ5 and 604710A BQ6.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Heads Up Display (HUD)	5.475	1.463	12.094
Description: Integrated Visual Augmentation System (IVAS) HUD provides a first generation single platform for Soldier/Marines to fight, rehearse, and train in day and night that provides increased lethality, mobility, and situational awareness necessary to achieve overmatch against our current and future adversaries.			
FY 2022 Plans: Develop technology improvements to IVAS focused on sensor performance (low light and high resolution binocular thermal), wireless communications, reduced weight, and improved usability (Soldier Authentication). Soldier Authentication capability was developed by the Government and improves Soldier experience and security. Develop advanced artificial intelligence/machine learning mission planning and performance tools using the IVAS Software Development Kits (SDKs). These tools will extend IVAS capabilities and be driven by Soldier Centered Design activities. Begin market research and technology assessments in			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** BQ5 / *Visual Augmentation System Advanced Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
order to establish the acquisition strategy for the second generation of IVAS capability with consideration for classified usage, reduced size/weight and greater combat helmet and CBRNE integration. ***FY 2023 Plans:*** Integrate imagers, authentication tools, and hardware components and software into IVAS 1.2. Improve thermal and low light sensors, develop AI data integration, improve device authentication software. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Received a Congressional Mark in FY22 of $10.18 million. Funding increased from $1.463 million in FY22 to $11.328 million in FY23 due to the maturation of IVAS 1.2 technology.			
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC 638 ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC 638 ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC 638	-	0.056	-
Accomplishments/Planned Programs Subtotals	5.475	1.519	12.094

	FY 2021	FY 2022
Congressional Add: FY22 Congressional Add ***FY 2022 Plans:*** Development of human factors and user experience updates to IVAS systems.	-	55.000
Congressional Adds Subtotals	-	55.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• K36402: *IVAS/Heads Up Display*	670.476	405.140	400.024	-	400.024	91.282	-	-	-	Continuing	Continuing
• BQ6: *Visual Augmentation System Eng Dev*	7.495	4.934	34.543	-	34.543	8.142	72.395	73.868	74.586	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** BQ5 / *Visual Augmentation System Advanced Development*

D. Acquisition Strategy

This project utilizes competitively awarded contracts using best value source selection procedures.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** BQ5 / *Visual Augmentation System Advanced Development*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	VARIOUS : VARIOUS	-	2.758		-		1.266	Nov 2022	-		1.266	0.000	4.024	-
SBIR/STTR Trasnfer	TBD	To Be Determined : To Be Determined	-	-		0.056		-		-		-	0.000	0.056	-
		Subtotal	-	2.758		0.056		1.266		-		1.266	0.000	4.080	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Heads Up Display (HUD)	C/FFP	Microsoft : Redmond, WA	185.328	0.019	Nov 2020	49.625		4.351	Nov 2022	-		4.351	0.000	239.323	-
Heads Up Display (HUD)	TBD	To Be Determined : To Be Determined	-	1.041		6.838		3.156		-		3.156	0.000	11.035	-
Vehicle Integration	C/TBD	TBD : TBD	-	-		-		3.321		-		3.321	0.000	3.321	-
		Subtotal	185.328	1.060		56.463		10.828		-		10.828	0.000	253.679	N/A

Remarks

For FY 2022, Product Development of the Heads Up Display (HUD) includes: binocular thermal development, low light sensor enhancements, and Mission planning/execution Tools (App development).

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems, Test and Evaluation	TBD	Various : Various	-	1.657		-		-		-		-	0.000	1.657	-
		Subtotal	-	1.657		-		-		-		-	0.000	1.657	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) BQ5 / *Visual Augmentation System Advanced Development*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	185.328	5.475		56.519		12.094		-		12.094	0.000	259.416	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** BQ5 / *Visual Augmentation System Advanced Development*

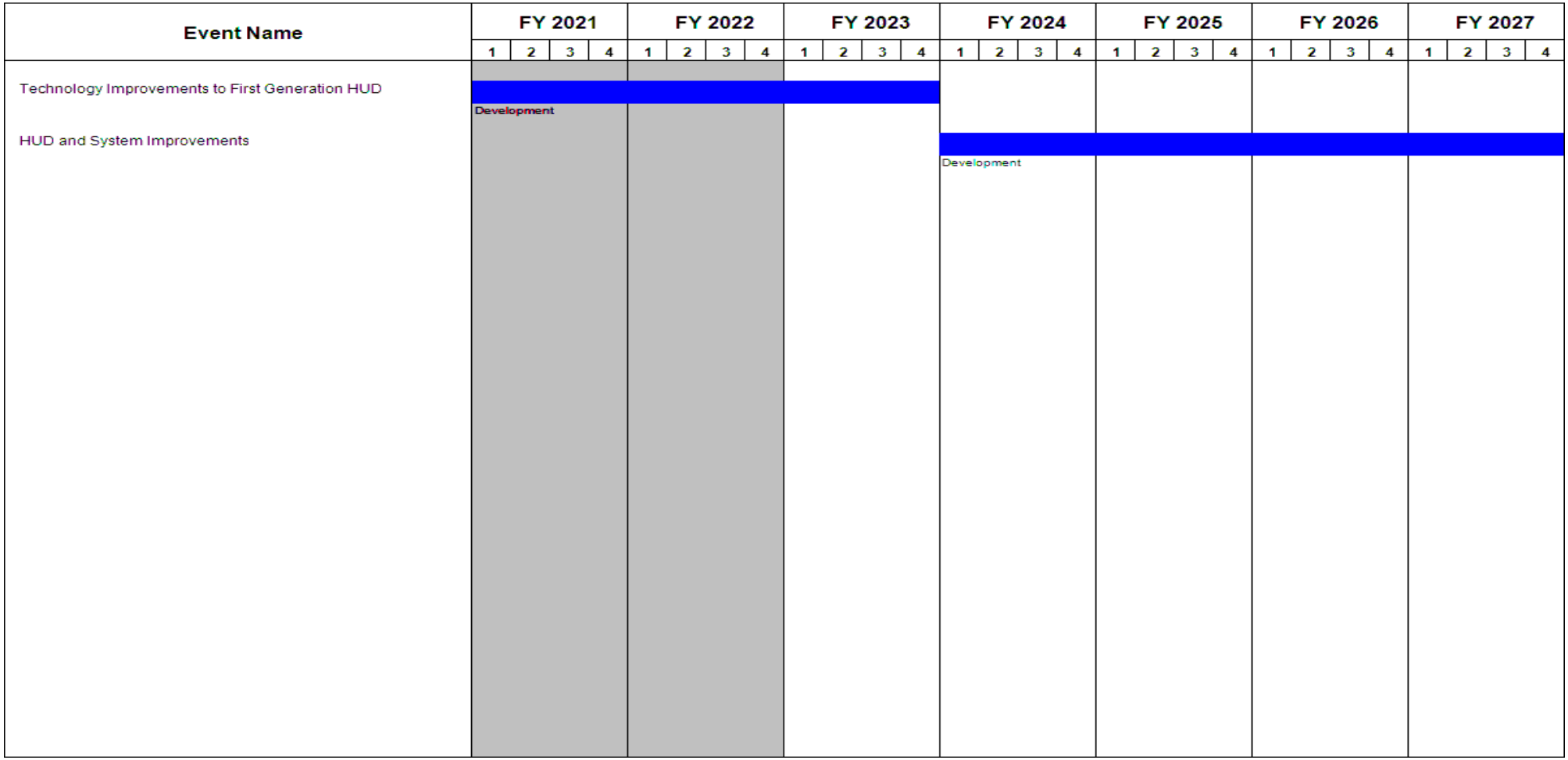

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** BQ5 / *Visual Augmentation System Advanced Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Heads Up Display (HUD)	4	2018	4	2020
Technology Improvements to First Generation HUD	1	2021	4	2023
HUD and System Improvements	1	2024	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) VT7 / *Soldier Maneuver Sensors - Adv Dev*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
VT7: *Soldier Maneuver Sensors - Adv Dev*	-	7.039	3.777	3.909	-	3.909	3.808	3.661	3.777	3.813	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project enables development of emerging capabilities for the maneuver force, that are envisioned by the Soldier Lethality Cross Functional Team, the Maneuver Center of Excellence (MCoE), the Maneuver Capabilities Development Integration Directorate (MCDID), the Science and Technology (S&T) community, industry partners or the acquisition workforce that may provide the Soldier or Squad increased capability to "fight, win and survive, day and night, in a multi- domain environment now and tomorrow". This project also allows pursuit of technology breakthroughs that challenge current technical solutions and have the potential for providing increased Soldier performance. This effort focuses on capabilities that enable modernization of Soldier sensor and laser devices, including digital features and enhanced solutions including maneuver capabilities to detect, recognize and identify targets, and to provide target acquisition and handoff but not limited to capabilities to mitigate threats. The integration of higher performing multi-spectral sensors with smart processing will provide adjusted weapon sight reticles and leverage network connectivity for improved situational awareness/understanding. Additional project capabilities include advanced optical components and assemblies and techniques for signature management, resiliency across the electromagnetic spectrum, and integration of a modular design structure for target acquisition applications including support for wireless data transfer, passive range determination, technologies for working in a GPS contested environment, advanced GPS replacement technologies and mitigation of manned and unmanned threat sensor systems. This project supports efforts to evaluate and integrate technologies and representative prototype systems including Micro Electronics Modules (MEMS) technology with improved size, weight and power for development of modernized Soldier sensor capabilities transitioning from the S&T stage to operational use. This project includes costs for efforts associated with development, certification, verification and validation of interface products into the Adaptive Squad Architecture (ASA). This project also includes development of tools and emulators of ASA components. Funding in this project aligns with Army's priorities in support of the National Defense Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Soldier Enhanced Sensing Capabilities	1.490	3.639	3.909
Description: Soldier Enhanced Sensing Capabilities provides the next generation vision capabilities for day and night that will reduce the Soldier's burden and allow hands free operation. Soldier Enhanced Sensing Capabilities will provide automatic adjustment of imagery and matched sensor fields of view. This effort will further enhance day/night Rapid Target Acquisition (RTA) capabilities by ensuring goggle connectivity to weapon sights, and improved situational capabilities by enabling day/night data display on the Soldier Warrior End User Device/Computer (EUD) and Soldier Borne Sensor systems. The goggle interfaced will be compatible with Integrated Vision Augmentation System (IVAS) displays. This effort considers methods for obtaining range estimates without the use of active laser devices and extends the ability to send/receive data to the EUD to support advanced EUD applications by processing of sensor video, integrating it with external data sources, and producing advanced processed imagery with overlay data display. This effort will review and consider improved antenna designs and placement to maximize			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT7 / *Soldier Maneuver Sensors - Adv Dev*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
efficiencies of wireless communications. This effort will further work to reduce size, weight and power of sensor and laser components including consideration of MEMS technology and considers IVAS successes to explore integrated digital, low profile, conformal day/night displays. This effort considers alternatives to potentially replace or augmenting the aging fleet of fielded night vision devices with a digital Near-Infrared (NIR) device, a peripheral overlay device, a bi-focal lens vision device, an adjustable objective lens, a wide field of view device and/or a white phosphor night vision device. ***FY 2022 Plans:*** In addition to continuing unfinished work initiated in FY 2021, wireless integration and enhancements are expected in the Family of Weapon Sights and Small Tactical Optical Rifle Mounted programs of record including integration and evaluation of Intra Soldier Wireless (ISW) 256-bit encryption. In addition, NSA certified radio modules will be evaluated and considered for integration. FY22 includes technology development to improve robustness of the Augmented Reality (AR), Artificial Intelligence (AI) and Machine Learning (ML) capabilities in ENVG-B. Investments are expected to solidify and enhance the supply of organic light emitting diodes for existing and emerging programs while work continues on advanced displays including waveguides and projection systems. Investments continue in multi-spectral devices that provide Soldiers capabilities beyond near peer adversaries and help to determine the capabilities featured in the Night Vision Device-Next. ***FY 2023 Plans:*** Continue development and integration of Augmented Reality (AR), Artificial Intelligence (AI) and Machine Learning (ML) as they relate to Soldier Maneuver platforms. Integrate and analyze benefits versus size, weight and power impacts of emerging RTI technologies that immerse the individual Soldier in the Digital Battlefield. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 increase required as more opportunities for integration are available and will be explored including ENVG III, ENVG-B, and/or a Next Generation Night Vision Device.			
Title: Target Acquisition Laser Capabilities	2.438	-	-
Description: Target Acquisition Capabilities develops modular laser components and representative prototype systems to support target acquisition for pointing, ranging, target hand-off, detection and mitigation of threat sensors. This effort continues to explore non-standard electro-magnetic spectrum waveforms for exploitation in Soldier borne devices. This project also allows pursuit of technology breakthroughs that challenge current technical solutions and have the potential for providing increased Soldier performance. Modules will be developed with full documentation, including specifications and interface control documents such that they support the Adaptive Soldier Architecture. This effort develops target acquisition capabilities to include, but is not limited to, augmented reality cues within target locators and target handoff capabilities that are less detectable, conducted wirelessly moving towards a covert target handoff, pointing, range finding capability, and technologies that enable self and target location in			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT7 / *Soldier Maneuver Sensors - Adv Dev*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
a GPS contested environment. This effort also includes individual Soldier laser event recording and laser warning devices. This effort enables refinement of pre-shot threat detection systems.			
Title: Advanced Sensor Development ***Description:*** Advanced Sensor Development is the next generation weapon target acquisition system for use on Next Generation Squad Weapons (NGSW). The increased Advanced Sensor Development of all digital capabilities includes, but is not limited to: wireless remote weapon sight viewing compatibility with the emerging goggle solutions Night Vision Systems (NVS) including Integrated Vision Augmentation System (IVAS)) to provide a heads up Rapid Target Acquisition (RTA) capability; wireless interface with the future Soldier processing component to exchange Mission Command information; day and night capabilities to image in multiple spectral bands; target interrogation; laser range finding; target handoff with coded sources; adjusted and displaced reticule; facial recognition capabilities at tactical ranges and connectivity to the intelligent / powered weapon rail.	2.471	-	-
Title: Adaptive Squad Architecture (ASA) Tools ***Description:*** This project contains tools and services that support the Adaptive Squad Architecture (ASA) integration effort. This project considers emerging products as well as legacy products for size, weight and power efficiencies. This project develops interface control documentation for integration into the ASA, Next Gen Squad Weapon power / intelligent rail and enables upgrades, enhancements, certifications, validation, verification of evolving Intra-Soldier Wireless products. ASA will pursue a common weapon remote to operate all weapon enablers. This project supports certification of new ISW encryption solutions requisite re-certification needs, ISW enhancement and costs associated with ISW bug fixes.	0.640	-	-
Title: SBIR/SSTR Transfer ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC 638 ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC 638	-	0.138	-
Accomplishments/Planned Programs Subtotals	7.039	3.777	3.909

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• L67: *Soldier Night Vision Devices*	11.043	13.474	7.663	-	7.663	6.189	5.942	5.825	5.880	Continuing	Continuing
• K22002: *FWS-INDIVIDUAL*	83.820	147.271	150.273	-	150.273	135.562	153.900	109.025	108.973	0.000	888.824

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT7 / *Soldier Maneuver Sensors - Adv Dev*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• K22003: *FWS-CREW SERVED*	-	25.673	40.985	-	40.985	43.522	52.203	43.145	43.126	Continuing	Continuing
• K22004: *FWS-SNIPER*	2.569	11.201	11.000	-	11.000	10.350	10.237	5.236	5.233	Continuing	Continuing
• B53800: *Laser Target Locator Systems*	14.347	27.331	24.229	-	24.229	21.995	22.409	22.307	22.326	Continuing	Continuing
• K35110: *Small Tactical Optical Rifle Mounted MLRF*	7.715	21.103	11.357	-	11.357	26.057	11.332	11.528	11.523	Continuing	Continuing
• K36402: *IVAS/Heads Up Display*	670.476	405.140	400.024	-	400.024	91.282	-	-	-	Continuing	Continuing
• BQ5: *Visual Augmentation System Advanced Development*	5.475	56.519	12.094	-	12.094	69.370	29.663	30.268	30.563	Continuing	Continuing
• BQ6: *Visual Augmentation System Eng Dev*	7.495	4.934	34.543	-	34.543	8.142	72.395	73.868	74.586	Continuing	Continuing
• K36400: *Helmet Mounted Enhanced Vision Devices*	183.000	234.906	0.000	-	0.000	-	-	-	-	0.000	417.906

Remarks

D. Acquisition Strategy

The various developmental programs in this Project continue to exercise competitively awarded contracts using best value source selection procedures.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) VT7 / *Soldier Maneuver Sensors - Adv Dev*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	Various : Various	1.131	0.279	Feb 2021	0.340	Jun 2022	0.350	Dec 2022	-		0.350	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.138		-		-		-	0.000	0.138	-
		Subtotal	1.131	0.279		0.478		0.350		-		0.350	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Soldier Enhanced Sensing Capabilities	MIPR	RTI : FT BELVOIR, VA	7.153	-		3.151	Jan 2022	3.409	Jan 2023	-		3.409	Continuing	Continuing	-
Target Acquisition Laser Capabilities	MIPR	RTI : FT BELVOIR, VA	0.829	-		-		-		-		-	0.000	0.829	-
NVS AR4C ARA EMULATOR	MIPR	NVESD RTI : FT BELVOIR, VA	-	0.300	Mar 2021	-		-		-		-	0.000	0.300	-
LETHALITY SMART SYSTEM (LSS)	MIPR	NVESD RTI : FT BELVOIR, VA	-	3.970	Feb 2021	-		-		-		-	0.000	3.970	-
NVESD ISW ICD	MIPR	NVESD RTI : FT BELVOIR, VA	-	0.500	Mar 2021	-		-		-		-	0.000	0.500	-
NVG-Next	MIPR	NVESD RTI : FT BELVOIR, VA	-	1.866	Jul 2021	-		-		-		-	0.000	1.866	-
		Subtotal	7.982	6.636		3.151		3.409		-		3.409	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	NVESD : FT BELVOIR, VA	1.739	0.124	Mar 2021	0.148	Jun 2022	0.150	Dec 2022	-		0.150	Continuing	Continuing	-
		Subtotal	1.739	0.124		0.148		0.150		-		0.150	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) VT7 / *Soldier Maneuver Sensors - Adv Dev*	

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	10.852	7.039		3.777		3.909		-		3.909	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT7 / *Soldier Maneuver Sensors - Adv Dev*

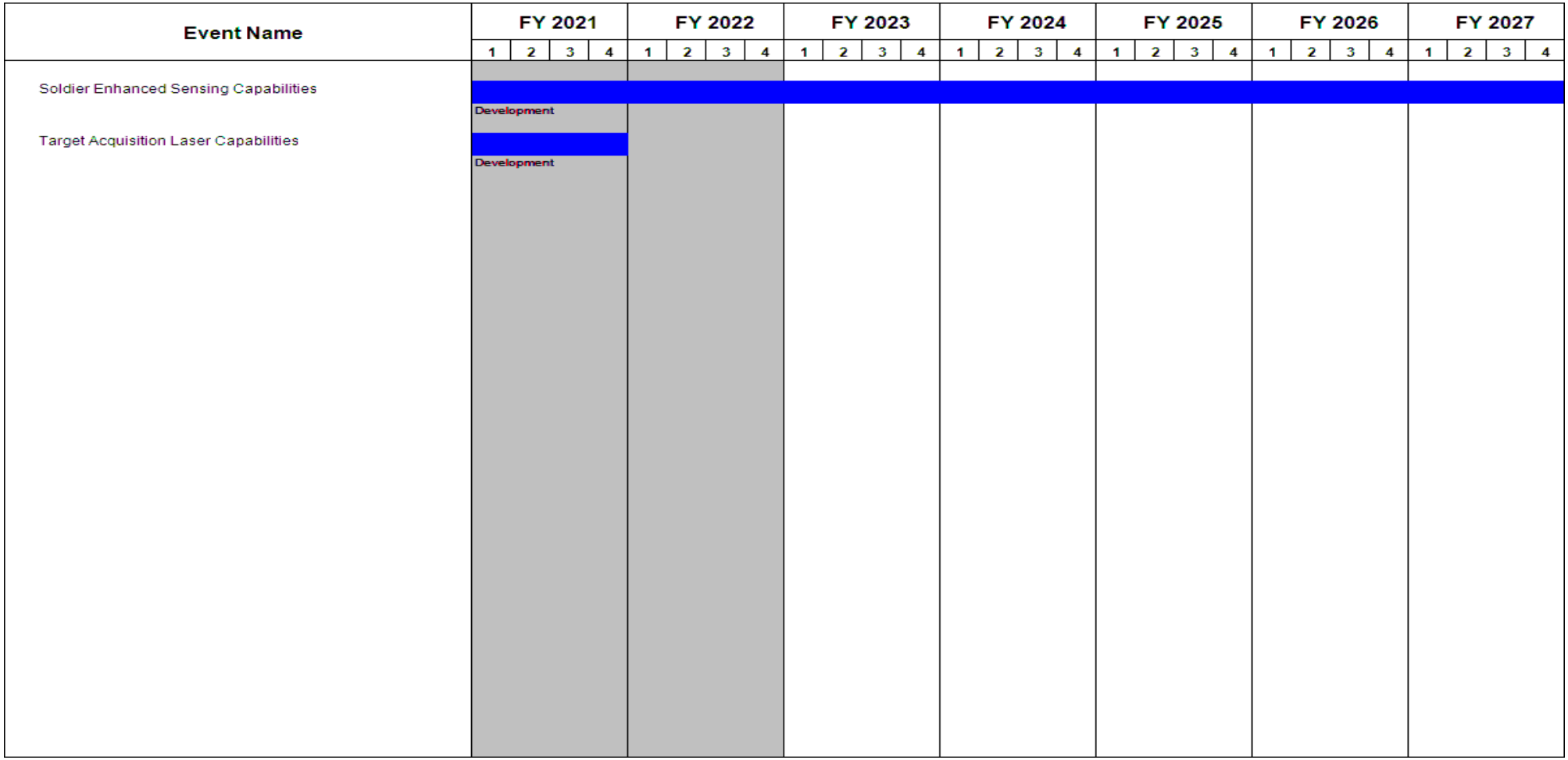

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT7 / *Soldier Maneuver Sensors - Adv Dev*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Soldier Enhanced Sensing Capabilities	1	2019	4	2027
Target Acquisition Laser Capabilities	1	2019	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) VT8 / *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
VT8: *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*	-	2.665	2.524	2.045	-	2.045	2.053	2.050	2.050	2.070	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project enables development of emerging capabilities for the maneuvers and fires community, that are envisioned by the Soldier Lethality Cross Functional Team, the Maneuver Center of Excellence (MCoE), the Fires Center of Excellence (FCoE), the Maneuver Capabilities Development Integration Directorate (MCDID), the Science and Technology (S&T) community, industry partners or the acquisition workforce that may provide the Soldier or Squad increased capability to "fight, win and survive, day and night, in a multi- domain environment now and tomorrow." This project also allows pursuit of technology breakthroughs that challenge current technical solutions and have the potential for providing increased Soldier performance. This project focuses on developing component technologies and representative prototype systems for Soldier portable precision targeting devices to continue improvements to system performance while reducing size, weight, and power required by those systems. The effort will consider emerging Micro-Electronic Modules (MEMs) technologies for improved efficiency and performance. Efforts will improve the Soldier's ability to precisely locate and designate targets across a broader range of operating environments, including all weather conditions, GPS-contested environments using active and passive methodologies and technologies. Component technology development will precede integration into specific systems and will include improved Precision Azimuth and Vertical Angle Measurement (PAVAM) devices; solid-state, improved lasers for range finding/designation/marking; novel passive target acquisition methods; electro-optical sensors such as infrared, near-infrared, ultra-violet, and visible spectrum imagers; sensor and data fusion; laser designator spot detection and imaging; integration of advanced power management technologies. Funding in this project aligns with Army's priorities in support of the National Defense Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Precision Pointing and Navigation Component Development	2.665	2.432	2.045
Description: This project supports development of advanced components and prototype systems for Soldier-borne precision targeting devices. Dismounted Soldiers will have the capability to rapidly acquire, accurately locate, positively identify, and precisely designate targets and battlefield threats 24/7, across a broader range of operating environments such as in all weather conditions, in GPS-contested conditions using active and passive methodologies and technologies.			
FY 2022 Plans: Resources will continue the development of component technologies and mature sub-system integration for Precision Azimuth and Vertical Angle Measurement (PAVAM) devices to achieve reduced size, weight and power. These resources will also continue to develop technologies that allow precision targeting systems to operate in GPS-contested environments.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT8 / *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 resources will continue the development and initiate testing of component technologies and mature sub-system integration for PAVAM devices to achieve reduced size, weight and power. These resources will also continue to develop technologies that allow precision targeting systems to operate in GPS-contested environments. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 decrease in funding is due to Army program resource adjustments.			
Title: SBIR/STTR Transfer ***FY 2022 Plans:*** Funding transferred in accordance with Title 15 USC 638 ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC 638	-	0.092	-
Accomplishments/Planned Programs Subtotals	2.665	2.524	2.045

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• L79: *Joint Effects Targeting Systems (JETS)*	5.363	5.116	11.434	-	11.434	13.519	6.318	6.609	6.006	0.000	54.365
• K32101: *JOINT EFFECTS TARGETING SYSTEM (JETS)*	54.206	62.082	10.304	-	10.304	49.938	70.355	70.269	70.891	0.000	388.045

Remarks

D. Acquisition Strategy

The various developmental programs in this project continue to exercise competitively awarded contracts using best value source selection procedures.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Army			Date: April 2022
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 0603774A / *Night Vision Systems Advanced Development*	Project (Number/Name) VT8 / *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM SSL : Ft. Belvoir, VA 22060	0.041	0.089	Feb 2021	0.090	Nov 2021	0.092	Nov 2022	-		0.092	Continuing	Continuing	-
SBIR/STTR	TBD	Various : Various	-	-		0.092		-		-		-	0.000	0.092	-
		Subtotal	0.041	0.089		0.182		0.092		-		0.092	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Precision Pointing and Navigation	C/FFP	Various : Various	1.314	2.102	Mar 2021	2.030	Jan 2022	1.645	Jan 2023	-		1.645	Continuing	Continuing	-
		Subtotal	1.314	2.102		2.030		1.645		-		1.645	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	NVESD : Ft. Belvoir, VA 22060	0.067	0.028	Feb 2021	0.071	Nov 2021	0.058	Nov 2022	-		0.058	Continuing	Continuing	-
Science and Engineering Support	SS/CPFF	Johns Hopkins University : Laurel, MD	-	0.446	Apr 2021	0.241	Apr 2022	0.250	Feb 2023	-		0.250	Continuing	Continuing	-
		Subtotal	0.067	0.474		0.312		0.308		-		0.308	Continuing	Continuing	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.422	2.665		2.524		2.045		-		2.045	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT8 / *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*

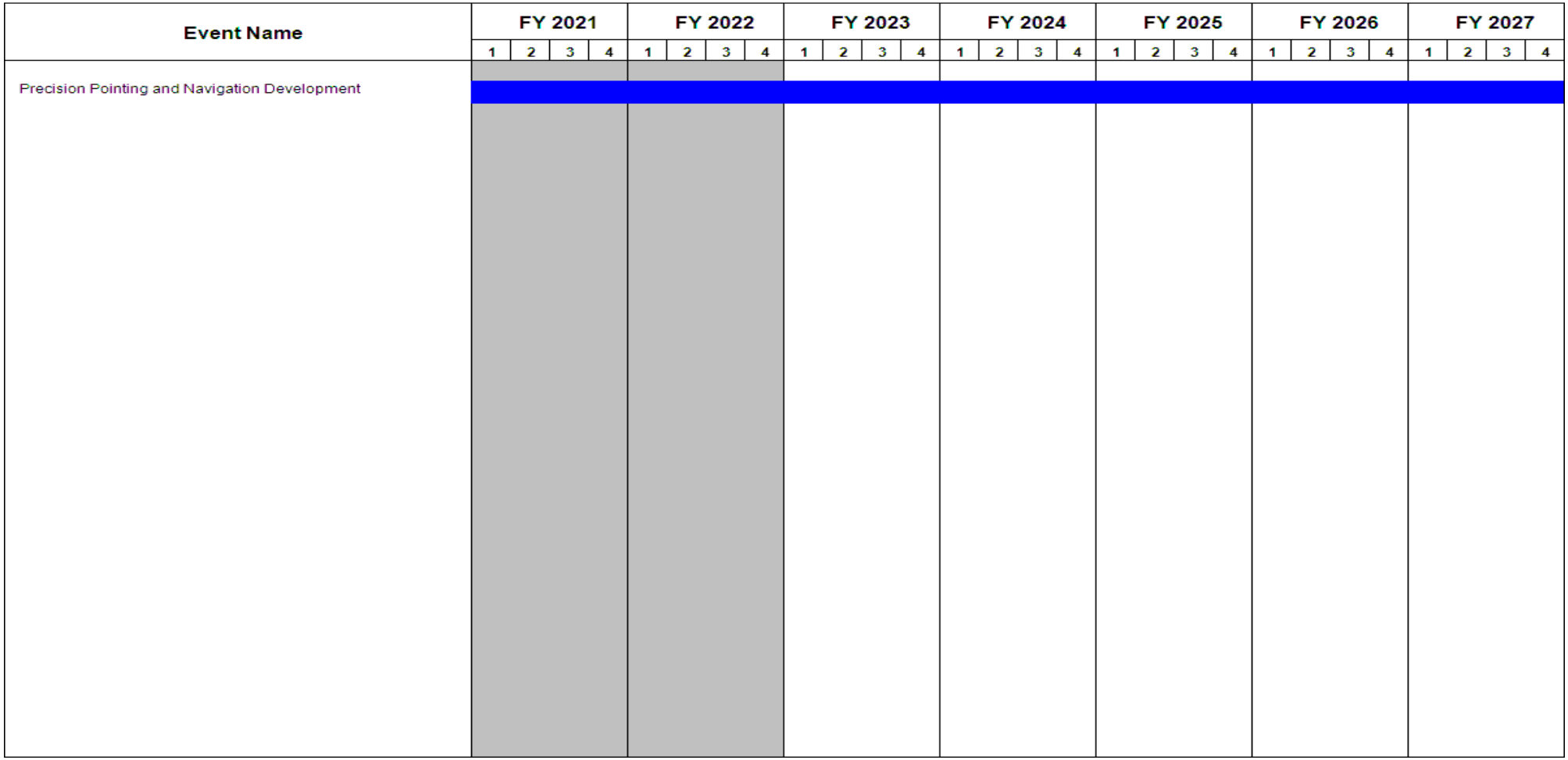

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0603774A / *Night Vision Systems Advanced Development*	**Project (Number/Name)** VT8 / *SOLDIER PRECISION TARGETING DEVICES - ADV DEV*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Precision Pointing and Navigation Development	3	2020	4	2027