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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>
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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	-	62.534	97.478	73.675	-	73.675	34.683	35.422	35.800	36.199	Continuing	Continuing
BQ5: <i>Visual Augmentation System Advanced Development</i>	-	56.463	86.594	67.935	-	67.935	29.084	29.703	30.021	30.356	Continuing	Continuing
VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	-	3.639	8.839	3.729	-	3.729	3.589	3.707	3.746	3.787	Continuing	Continuing
VT8: <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>	-	2.432	2.045	2.011	-	2.011	2.010	2.012	2.033	2.056	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 passive 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 was \$871 million RDT&E from FY18 to FY21. The total cost of the IVAS 1.2 Middle Tier of Acquisition effort is \$221 million RDT&E from FY23 to FY24.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army Date: March 2023

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>
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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 global positioning system (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 technologies for the Fires community, that are envisioned by the Fires Center of Excellence (FCoE), the Fires Capabilities Development Integration Directorate (FCDID), the Science and Technology (S&T) community, industry partners and the acquisition workforce that provide the Fire Support Soldier increased capability and reduced weight to improve operational effectiveness. 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 laser designate targets across a broader range of operating environments, including all weather conditions and in GPS-contested environments using active and passive methods 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/markings; 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, and GPS M-Code receivers. Funding in this project aligns with Army's priorities in support of the National Defense Strategy.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	62.820	18.048	75.231	-	75.231
Current President's Budget	62.534	97.478	73.675	-	73.675
Total Adjustments	-0.286	79.430	-1.556	-	-1.556
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	79.430			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.286	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-1.556	-	-1.556

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** BQ5: *Visual Augmentation System Advanced Development*

Congressional Add: *FY22 Congressional Add*

	<b>FY 2022</b>	<b>FY 2023</b>
Congressional Add Subtotals for Project: BQ5	55.000	-
Congressional Add Totals for all Projects	55.000	-

**Change Summary Explanation**

Decreased funding to support higher Army priorities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>				<b>Project (Number/Name)</b> BQ5 / <i>Visual Augmentation System Advanced Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
BQ5: <i>Visual Augmentation System Advanced Development</i>	-	56.463	86.594	67.935	-	67.935	29.084	29.703	30.021	30.356	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 passive 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 was \$871 million RDT&E from FY18 to FY21. The total cost of the IVAS 1.2 Middle Tier of Acquisition effort is \$221 million RDT&E from FY23 to FY24.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Heads Up Display (HUD)	1.463	86.153	67.935
<b>Description:</b> Integrated Visual Augmentation System (IVAS) HUD provides a multiple generation single platform for Soldier 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.			
<b>FY 2023 Plans:</b> Integrate imagers, hardware components, and software into IVAS 1.2. Improve thermal and low light sensors while improving HUD form factor.			
<b>FY 2024 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> BQ5 / <i>Visual Augmentation System Advanced Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
Improve HUD design by integrating improved sensors and updating hardware components and software into IVAS 1.2. Improve thermal and low light sensors, develop AI data integration, improve IVAS extensibility, improve form factor, and reliability, reduce weight and develop applications.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Decrease in funding for FY 2024 reflects costs for IVAS 1.2 developmental efforts.			
<b>Title:</b> SBIR/STTR Transfer  <b>Description:</b> Funding transferred in accordance with Title 15 USC 638  <b>FY 2023 Plans:</b> Funding transferred in accordance with Title 15 USC 638  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638.	-	0.441	-
<b>Accomplishments/Planned Programs Subtotals</b>	1.463	86.594	67.935

	<b>FY 2022</b>	<b>FY 2023</b>
<b>Congressional Add:</b> FY22 Congressional Add	55.000	-
<b>FY 2022 Accomplishments:</b> Development of human factors and user experience updates to IVAS systems.		
<b>Congressional Adds Subtotals</b>	55.000	-

<b>C. Other Program Funding Summary (\$ in Millions)</b>												
<b>Line Item</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
• K36402: <i>IVAS/Heads Up Display</i>	405.140	-	89.451	-	89.451	-	-	-	-	-	Continuing	Continuing
• BQ6: <i>Visual Augmentation System Eng Dev</i>	6.254	68.043	7.973	-	7.973	70.982	72.490	73.262	74.079		Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**  
This project utilizes competitively awarded contracts using best value source selection procedures.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / Night Vision Systems Advanced Development	<b>Project (Number/Name)</b> BQ5 / Visual Augmentation System Advanced Development
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<b>Management Services (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Program Management	MIPR	VARIOUS : VARIOUS	2.758	-		4.589	Sep 2023	5.349	Nov 2023	-		5.349	0.000	12.696	-
SBIR/STTR Transfer	TBD	To Be Determined : To Be Determined	-	-		0.441	Mar 2023	-		-		-	0.000	0.441	-
<b>Subtotal</b>			2.758	-		5.030		5.349		-		5.349	0.000	13.137	N/A

<b>Product Development (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Heads Up Display (HUD)	C/FFP	Microsoft : Redmond, WA	185.347	47.927	Dec 2022	61.888	Dec 2023	44.598	Mar 2024	-		44.598	0.000	339.760	-
Heads Up Display (HUD)	TBD	To Be Determined : To Be Determined	1.041	8.536	Sep 2022	18.906	Mar 2023	13.658	Mar 2024	-		13.658	0.000	42.141	-
Vehicle Integration	C/TBD	TBD : TBD	-	-		0.270	Feb 2023	0.540	Mar 2024	-		0.540	0.000	0.810	-
<b>Subtotal</b>			186.388	56.463		81.064		58.796		-		58.796	0.000	382.711	N/A

**Remarks**  
 Of the \$62.719M in FY 2023 for the Heads Up Display for Microsoft, only \$917K is carried over to be award in December 2023.  
  
 Of the \$18.906M in the various Heads Up Display, \$18M is Congressionally earmarked for day/light display of \$12M, immersive AR/VR of \$2M, and universal HUD of \$4M. These funds need to be transferred over to VT7 for execution. Thus, only \$906K will be awarded in March 2023.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Systems, Test and Evaluation	TBD	Various : Various	1.657	-		0.500	Feb 2023	3.790	Mar 2024	-		3.790	0.000	5.947	-
<b>Subtotal</b>			1.657	-		0.500		3.790		-		3.790	0.000	5.947	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Army</b>								<b>Date: March 2023</b>			
<b>Appropriation/Budget Activity</b> 2040 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>				<b>Project (Number/Name)</b> BQ5 / <i>Visual Augmentation System Advanced Development</i>			
	<b>Prior Years</b>	<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	190.803	56.463		86.594		67.935	-	67.935	0.000	401.795	N/A

**Remarks**  
Some cost categories include multiple efforts, so award date is the last date where funds were awarded.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>			<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> BQ5 / <i>Visual Augmentation System Advanced Development</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.2 Tech Insertion					Development																							
HUD and System Improvements									Development																			
Extensibility and Platform Integration									Development																			
1.3 / 2.0 Development Cycle																	Development											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> BQ5 / <i>Visual Augmentation System Advanced Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Heads Up Display (HUD)	4	2018	4	2020
1.2 Tech Insertion	1	2023	1	2025
HUD and System Improvements	1	2025	4	2028
Extensibility and Platform Integration	2	2023	4	2028
1.3 / 2.0 Development Cycle	2	2026	2	2028

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
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<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	-	3.639	8.839	3.729	-	3.729	3.589	3.707	3.746	3.787	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 global positioning system (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)**

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Soldier Enhanced Sensing Capabilities	3.639	8.696	3.729
<b>Description:</b> 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 interface will be compatible with Integrated Visual 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			

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>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.</p> <p><b>FY 2023 Plans:</b> 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.</p> <p><b>FY 2024 Plans:</b> 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.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> The decrease in funding from FY 2023 to FY 2024 is due to the schedule of efforts for the program.</p>			
<p><b>Title:</b> SBIR/STTR Transfer</p> <p><b>Description:</b> Funding transferred in accordance with Title 15 USC 638</p> <p><b>FY 2023 Plans:</b> Funding transferred in accordance with Title 15 USC 638.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638.</p>	-	0.143	-
<b>Accomplishments/Planned Programs Subtotals</b>	3.639	8.839	3.729

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>			<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To</b>	
			<b>Base</b>	<b>OCO</b>	<b>Total</b>					<b>Complete</b>	<b>Total Cost</b>
• L67: <i>Soldier Night Vision Devices</i>	11.482	4.435	6.061	-	6.061	5.826	5.716	5.776	5.840	Continuing	Continuing
• K22002: <i>FWS-INDIVIDUAL</i>	151.956	143.833	129.807	-	129.807	147.556	95.922	94.803	94.234	0.000	858.111
• K22003: <i>FWS-CREW SERVED</i>	25.673	33.850	42.649	-	42.649	51.220	-	-	46.863	Continuing	Continuing
• K22004: <i>FWS-SNIPER</i>	11.101	11.000	13.178	-	13.178	13.491	13.213	13.483	13.711	Continuing	Continuing

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	
			Base	OCO	Total					Complete	Total Cost
• B53800: <i>Laser Target Locator Systems</i>	27.771	34.229	21.539	-	21.539	22.055	2.820	2.846	21.942	Continuing	Continuing
• K35110: <i>Small Tactical Optical Rifle Mounted MLRF</i>	21.103	11.357	15.484	-	15.484	11.119	2.217	1.599	11.338	Continuing	Continuing
• K36402: <i>IVAS/Heads Up Display</i>	405.140	-	89.451	-	89.451	-	-	-	-	Continuing	Continuing
• BQ5: <i>Visual Augmentation System Advanced Development</i>	56.463	86.594	67.935	-	67.935	29.084	29.703	30.021	30.356	Continuing	Continuing
• BQ6: <i>Visual Augmentation System Eng Dev</i>	6.254	68.043	7.973	-	7.973	70.982	72.490	73.262	74.079	Continuing	Continuing
• K36400: <i>Helmet Mounted Enhanced Vision Devices</i>	234.906	300.000	30.153	-	30.153	-	-	-	-	0.000	565.059

**Remarks**

**D. Acquisition Strategy**

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

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army** **Date:** March 2023

<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>
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<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management	MIPR	Various : Various	1.410	0.288	Jun 2022	0.205	Feb 2023	0.360	Dec 2023	-		0.360	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.143	Mar 2023	-		-		-	0.000	0.143	-
<b>Subtotal</b>			1.410	0.288		0.348		0.360		-		0.360	Continuing	Continuing	N/A

<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Soldier Enhanced Sensing Capabilities	MIPR	C5ISR (RTI) : FT BELVOIR, VA	7.153	3.201	Jan 2022	8.412	Jun 2023	3.214	Jan 2023	-		3.214	Continuing	Continuing	-
<b>Subtotal</b>			7.153	3.201		8.412		3.214		-		3.214	Continuing	Continuing	N/A

<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Support	MIPR	C5ISR (RTI) : FT BELVOIR, VA	1.863	0.150	Jun 2022	0.079	Dec 2022	0.155	Dec 2023	-		0.155	Continuing	Continuing	-
<b>Subtotal</b>			1.863	0.150		0.079		0.155		-		0.155	Continuing	Continuing	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		10.426	3.639	8.839	3.729	-	3.729	Continuing	Continuing	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>			<b>Date: March 2023</b>		
<b>Appropriation/Budget Activity</b> 2040 / 4		<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advan</i> <i>ced Development</i>		<b>Project (Number/Name)</b> VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Soldier Enhanced Sensing Capabilities																												
	Development																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> VT7 / <i>Soldier Maneuver Sensors - Adv Dev</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Soldier Enhanced Sensing Capabilities	1	2019	4	2028

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 2040 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>				<b>Project (Number/Name)</b> VT8 / <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
VT8: <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>	-	2.432	2.045	2.011	-	2.011	2.010	2.012	2.033	2.056	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This project enables development of emerging technologies for the Fires community, that are envisioned by the Fires Center of Excellence (FCoE), the Fires Capabilities Development Integration Directorate (FCDID), the Science and Technology (S&T) community, industry partners and the acquisition workforce that provide the Fire Support Soldier increased capability and reduced weight to improve operational effectiveness. 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 laser designate targets across a broader range of operating environments, including all weather conditions and in GPS-contested environments using active and passive methods 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/marketing; 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, and GPS M-Code receivers. Funding in this project aligns with Army's priorities in support of the National Defense Strategy.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> Precision Pointing and Navigation Component Development	2.432	1.970	2.011
<b>Description:</b> 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.			
<b>FY 2023 Plans:</b> 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.			
<b>FY 2024 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> VT8 / <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
FY 2024 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.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> The increase is due to a projected rise in development and testing costs.			
<b>Title:</b> SBIR/STTR Transfer  <b>Description:</b> Funding transferred in accordance with Title 15 USC 638  <b>FY 2023 Plans:</b> Funding transferred in accordance with Title 15 USC 638.  <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638.	-	0.075	-
<b>Accomplishments/Planned Programs Subtotals</b>	2.432	2.045	2.011

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u> <u>Base</u>	<u>FY 2024</u> <u>OCO</u>	<u>FY 2024</u> <u>Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• L79: <i>Joint Effects Targeting Systems (JETS)</i>	4.929	11.434	24.165	-	24.165	19.973	6.486	5.900	5.965	0.000	78.852
• K32101: <i>JOINT EFFECTS TARGETING SYSTEM (JETS)</i>	62.082	2.576	8.932	-	8.932	9.347	69.020	69.683	69.753	0.000	291.393

**Remarks**

**D. Acquisition Strategy**

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army												Date: March 2023			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 4				PE 0603774A / Night Vision Systems Advanced Development				VT8 / SOLDIER PRECISION TARGETING DEVICES - ADV DEV							
<b>Management Services (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM IVAS : Ft. Belvoir, VA 22060	0.130	0.226	May 2022	0.239	Feb 2023	0.244	Dec 2023	-		0.244	Continuing	Continuing	-
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.075	Mar 2023	-		-		-	0.000	0.075	-
<b>Subtotal</b>			0.130	0.226		0.314		0.244		-		0.244	Continuing	Continuing	N/A
<b>Product Development (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Precision Pointing and Navigation	C/FFP	Various : Various	3.416	1.911	Jan 2022	1.455	Feb 2023	1.491	Jan 2024	-		1.491	Continuing	Continuing	-
<b>Subtotal</b>			3.416	1.911		1.455		1.491		-		1.491	Continuing	Continuing	N/A
<b>Support (\$ in Millions)</b>				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	C5ISR (RTI) : Ft. Belvoir, VA 22060	0.095	0.041	Jan 2022	0.026	Feb 2023	0.026	Dec 2023	-		0.026	Continuing	Continuing	-
Science and Engineering Support	SS/CPFF	Johns Hopkins University : Laurel, MD	0.446	0.254	Jan 2022	0.250	Feb 2023	0.250	Jan 2024	-		0.250	Continuing	Continuing	-
<b>Subtotal</b>			0.541	0.295		0.276		0.276		-		0.276	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			4.087	2.432		2.045		2.011		-		2.011	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Army</b>			<b>Date: March 2023</b>		
<b>Appropriation/Budget Activity</b> 2040 / 4		<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>		<b>Project (Number/Name)</b> VT8 / <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>	

Event Name	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Precision Pointing and Navigation Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Army		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems Advanced Development</i>	<b>Project (Number/Name)</b> VT8 / <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Precision Pointing and Navigation Development	3	2020	4	2028