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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2021 Army										<b>Date:</b> February 2020		
<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>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	7.072	200.791	24.316	-	24.316	22.282	16.958	72.311	34.349	Continuing	Continuing
BQ5: <i>Visual Augmentation System Advanced Development</i>	-	0.000	193.280	13.986	-	13.986	11.843	11.819	67.534	30.314	Continuing	Continuing
VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	-	7.072	6.028	7.565	-	7.565	7.675	3.141	2.779	2.037	Continuing	Continuing
VT8: <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>	-	0.000	1.483	2.765	-	2.765	2.764	1.998	1.998	1.998	Continuing	Continuing

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

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) focuses on developing the next generation vision system that provides the Soldier with the ability to "fight, win and survive, day and night, in a multi-domain environment now and tomorrow". Funded efforts will accelerate the development of components, algorithms and demonstrations in support of the next generation day/night vision system. Provide Rapid Target Acquisition capability with the Family of Weapon Sights-Individual and next generation End User Device (EUD), to include advanced EUD applications. The focus is to integrate external data sources and advanced processed imagery with overlay data display. This project supports efforts to evaluate and integrate technologies and representative prototype systems for development of Soldier sensor devices, transitioning from the Science and Technology (S&T) stage to operational use. This project includes associated costs for efforts associated with integration and interface of products on the Soldiers' head, body, and weapon. This is a priority of the Secretary's Close Combat Lethality Task Force. Funding in this project aligns with the Army's priorities in support of the National Defense Strategy.

Project VT7 (Soldier Maneuver Sensors-Advanced Development) focuses on developing integrated and enhanced solutions that provide the Soldier with the ability to "fight, win and survive, day and night, in a multi-domain environment now and tomorrow". Products include maneuver capabilities to detect, recognize and identify targets, and to provide target acquisition capabilities to mitigate threats prior to being engaged. 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 capabilities include signature management and resiliency across the electromagnetic spectrum, integration of a modular design structure for target acquisition applications including support for wireless data transfer passive range determination, and mitigation of manned and unmanned threat sensor systems. This project supports efforts to evaluate and integrate technologies and representative prototype systems for development of Soldier sensor devices transitioning from the Science and Technology (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

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2021 Army	<b>Date:</b> February 2020
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<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army I 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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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) 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. Efforts will improve the Soldier's ability to precisely locate and designate targets across a broader range of operating environments, including all weather conditions and GPS-contested environments. 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; 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 the Army's priorities in support of the National Defense Strategy.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	7.341	251.011	10.340	-	10.340
Current President's Budget	7.072	200.791	24.316	-	24.316
Total Adjustments	-0.269	-50.220	13.976	-	13.976
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-50.220			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.269	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	13.976	-	13.976

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Army										<b>Date:</b> February 2020		
<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 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
BQ5: <i>Visual Augmentation System Advanced Development</i>	-	0.000	193.280	13.986	-	13.986	11.843	11.819	67.534	30.314	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

This project focuses on developing the next generation vision system that provides the Soldier with the ability to "fight, win and survive, day and night, in a multi-domain environment now and tomorrow". Funded efforts will accelerate the development of components, algorithms and demonstrations in support of the next generation day/night vision system. Provide Rapid Target Acquisition capability with the Family of Weapon Sights-Individual and next generation End User Device (EUD), to include advanced EUD applications. The focus is to integrate external data sources and advanced processed imagery with overlay data display. This project supports efforts to evaluate and integrate technologies and representative prototype systems for development of Soldier sensor devices, transitioning from the Science and Technology (S&T) stage to operational use. 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. This is a priority of the Secretary's Close Combat Lethality Task Force. 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.

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> Heads Up Display (HUD)	-	184.503	13.986	-	13.986
<b>Description:</b> 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.					
<b>FY 2020 Plans:</b> Complete the development and technology improvements to IVAS.					
<b>FY 2021 Base Plans:</b> Develop technology improvements to the first generation IVAS system.					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding decreased from \$193,280,000 in FY 2020 to \$13,986,000 in FY 2021 due to the transition from rapid prototyping to rapid fielding. Major initial development efforts for the first generation IVAS are completed in FY 2020.					
<b>Title:</b> FY 2020 SBIR/STTR Transfer	-	8.777	-	-	-

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Description:</b> Funding transferred in accordance with Title 15 USC 638					
<b>FY 2020 Plans:</b> Funding transferred in accordance with Title 15 USC 638					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638					
<b>Accomplishments/Planned Programs Subtotals</b>	-	193.280	13.986	-	13.986

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• K36402: <i>IVAS/Heads Up Display</i>	-	-	906.045	-	906.045	1,045.688	319.670	-	148.426	Continuing	Continuing
• BQ6: <i>Visual Augmentation System Eng Dev</i>	-	63.200	8.991	-	8.991	4.995	8.108	8.125	70.754	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

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

**UNCLASSIFIED**

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

<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>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		8.777		-		-		-	0.000	8.777	-
<b>Subtotal</b>			-	-		8.777		-		-		-	0.000	8.777	N/A

<b>Product Development (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Heads Up Display (HUD)	Option/TBD	Various : Various	-	-		179.426	Mar 2020	10.000	Nov 2020	-		10.000	0.000	189.426	-
<b>Subtotal</b>			-	-		179.426		10.000		-		10.000	0.000	189.426	N/A

<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Matrix Support	MIPR	NVESD : Fort Belvoir, Virginia 22060	-	-		5.077	Mar 2020	3.986	Nov 2020	-		3.986	0.000	9.063	-
<b>Subtotal</b>			-	-		5.077		3.986		-		3.986	0.000	9.063	N/A

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		-	-	193.280	13.986	13.986	0.000	207.266	N/A

**Remarks**  
 In FY 2020 Management Services and Test and Evaluation Cost Category Items will be funded from PE 0604710A Night Vision Systems - Engineering Development project BQ6 Visual Augmentation System - Engineering Development.

**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Army</b>		<b>Date:</b> February 2020
<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 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Heads Up Display (HUD)	Development																											
Technology Improvements to First Generation HUD									Development																			
Second Generation HUD																	Development											

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Army		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems</i> <i>Advanced Development</i>	<b>Project (Number/Name)</b> BQ5 / <i>Visual Augmentation System</i> <i>Advanced Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Heads Up Display (HUD)	4	2018	4	2020
Technology Improvements to First Generation HUD	1	2021	4	2023
Second Generation HUD	1	2024	4	2025

**UNCLASSIFIED**

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<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
VT7: <i>Soldier Maneuver Sensors - Adv Dev</i>	-	7.072	6.028	7.565	-	7.565	7.675	3.141	2.779	2.037	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

This project focuses on developing integrated and enhanced solutions that provide the Soldier with the ability to "fight, win and survive, day and night, in a multi-domain environment now and tomorrow". Products include maneuver capabilities to detect, recognize and identify targets, and to provide target acquisition capabilities to mitigate threats prior to being engaged. 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 capabilities include signature management and resiliency across the electromagnetic spectrum, integration of a modular design structure for target acquisition applications including support for wireless data transfer passive range determination, and mitigation of manned and unmanned threat sensor systems. This project supports efforts to evaluate and integrate technologies and representative prototype systems for development of Soldier sensor devices transitioning from the Science and Technology (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 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> Soldier Enhanced Sensing Capabilities	5.803	1.912	1.490	-	1.490
<p><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 provide day/night Rapid Target Acquisition (RTA) capability by interfacing with Family of Weapon Sights-Individual (FWS-I), day/night data display for the Soldier Network Warrior End User Device/Computer (EUD), and ability to send/receive data to the EUD to support advanced EUD applications to process the sensor video, integrate it with external data sources, and produced advanced processed imagery with overlay data display. This effort will consider Integrated Vision Augmentation System (IVAS) successes and explore an integrated digital, low profile, conformal day/night display. Prototyping will provide multiple knowledge point events to gauge vendor progress and capability to the force. This effort also includes continued digital Near-infrared (NIR) sensor development for potentially replace the aging fleet of Night Vision Devices.</p> <p><b>FY 2020 Plans:</b></p>					

**UNCLASSIFIED**

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<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>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>For FY 2020, in addition to continuing unfinished work initiated in FY 2019, integration and enhancements are expected in the Enhanced Night Vision Goggle-Binocular (ENVG-B) product line. ENVG-B furthers wireless Augmented Reality (AR) and Machine Learning (ML) into the goggle and incorporation of enhancements is anticipated. Work is continuing on a more robust, harder to detect and intercept wireless solution. Integration of this 256-bit encryption solution will be performed on all Soldier Maneuver and Precision Targeting programs of record in an effort to establish a Intra Soldier Wireless (ISW) network. In FY 2020, the ISW network will be documented (via ICDs) and available for use on any program that desires wireless connectivity with the ISW network.</p> <p><b>FY 2021 Base Plans:</b> For FY 2021, in addition to continuing unfinished work initiated in FY 2020, integration and enhancements are expected in the Family of Weapon Sights and Small Tactical Optical Rifle Mounted programs of record. Migration from an Intra Soldier Wireless (ISW) 128-bit encryption to a 256-bit encryption solution and ultimately to an NSA certified 256-bit solution will be evaluated and appropriately acted upon for all Soldier Maneuver and Precision Targeting, ENVG-B employs Augmented Reality (AR) and Machine Learning (ML) capabilities. 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.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY 2020 to FY 2021 slight decrease as component technologies have matured and synchronized with IVAS resources</p>					
<p><b>Title:</b> Target Acquisition Laser Capabilities</p> <p><b>Description:</b> Target Acquisition Laser 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 will develop a common laser range finding core for fire control and other laser capabilities based on Squad member Table of Organization and Equipment (TOE) position. 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 handoff capabilities that are less detectable moving towards a covert target handoff, pointing and range finding capability. This effort also includes individual Soldier laser event recording and laser warning devices.</p> <p><b>FY 2020 Plans:</b></p>	1.269	2.272	2.701	-	2.701

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Continue development and integration of modular target acquisition laser components.  <b>FY 2021 Base Plans:</b> For FY 2021, resources will be used for development of modular laser components and prototype devices that leverage interface control documents and the Adaptive Squad Architecture. Integration of interfaces such as Intra-Soldier Wireless and an Intelligent/Powered Rail will support a modular system-of-systems approach for target acquisition, pointing, ranging, and target hand-off.  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY 2020 to FY 2021 increase in required funding as laser capabilities are integrated into Advanced Sensor Development.					
<b>Title:</b> Advanced Sensor Development  <b>Description:</b> Advanced Sensor Development is the next generation weapon target acquisition system for use on Next Generation Squad Weapons (NGSW). The increased Advanced Sensor Development all digital capabilities include: wireless remote weapon sight viewing compatibility with the emerging goggle solutions (Enhanced Night Vision Goggle - Binocular (ENVG-B) and 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; and facial recognition capabilities at tactical ranges.  <b>FY 2020 Plans:</b> FY 2020 should complete the development of laser components including the "ATOM" Short Wave Infra-Red (SWIR) laser that is planned for incorporation into the Advanced Sensor Development. The ATOM lasers primarily used for aiming, target handoff, target illumination and ranging.  <b>FY 2021 Base Plans:</b> Plans to integrate advanced capabilities, employ system engineering principals in support of the Adaptive Squad Architecture and refine capability emergence from lab to Program Management responsibility.  <b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY 2020 to FY 2021 increase in required funding as IVAS matured some component technology ahead of schedule.	-	1.571	2.734	-	2.734
<b>Title:</b> Adaptive Squad Architecture (ASA) Tools	-	-	0.640	-	0.640

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p><b>Description:</b> 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.</p> <p><b>FY 2021 Base Plans:</b> Strategically plan for Soldier Integration Facility and ASA support, NGSW integration and ISW growth.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> The ASA is established to identify and capture resources required for enduring support to the ASA mission.</p>					
<p><b>Title:</b> FY 2020 SBIR/STTR Transfer</p> <p><b>Description:</b> Funding transferred in accordance with Title 15 USC 638</p> <p><b>FY 2020 Plans:</b> Funding transferred in accordance with Title 15 USC 638</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638</p>	-	0.273	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	7.072	6.028	7.565	-	7.565

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• L67: <i>Soldier Night Vision Devices</i>	56.793	35.060	14.653	-	14.653	9.231	12.519	17.161	17.163	Continuing	Continuing
• K36400: <i>Helmet Mounted Enhanced Vision Devices</i>	112.251	50.632	207.626	-	207.626	245.012	6.436	318.684	-	Continuing	Continuing
• K22002: <i>FWS-INDIVIDUAL</i>	90.932	81.541	99.160	-	99.160	61.858	71.526	77.718	84.792	Continuing	Continuing
• K22003: <i>FWS-CREW SERVED</i>	22.698	-	31.861	-	31.861	78.066	78.193	77.228	64.934	Continuing	Continuing
• K22004: <i>FWS-SNIPER</i>	-	-	2.569	-	2.569	11.336	18.843	19.767	11.489	Continuing	Continuing
• B53800: <i>Laser Target Locator Systems</i>	32.704	24.354	13.704	0.643	14.347	20.817	23.752	21.663	49.820	Continuing	Continuing

**UNCLASSIFIED**

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<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)**

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2021</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• K35110: <i>Small Tactical Optical Rifle Mounted MLRF</i>	16.990	22.623	13.954	-	13.954	21.355	26.060	29.315	3.131	Continuing	Continuing
• K36402: <i>IVAS/Heads Up Display</i>	-	-	906.045	-	906.045	1,045.688	319.670	-	148.426	Continuing	Continuing
• BQ5: <i>Visual Augmentation System Advanced Development</i>	-	193.280	13.986	-	13.986	11.843	11.819	67.534	30.314	Continuing	Continuing
• BQ6: <i>Visual Augmentation System Eng Dev</i>	-	63.200	8.991	-	8.991	4.995	8.108	8.125	70.754	Continuing	Continuing

**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 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 4				PE 0603774A / Night Vision Systems Advanced Development				VT7 / Soldier Maneuver Sensors - Adv Dev							
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	Various : Various	-	0.406	Nov 2018	0.556	Dec 2019	0.394	Nov 2020	-		0.394	Continuing	Continuing	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.273		-		-		-	0.000	0.273	-
<b>Subtotal</b>			-	0.406		0.829		0.394		-		0.394	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Soldier Enhanced Sensing Capabilities	MIPR	NVESD : FT BELVOIR, VA	-	5.262	Dec 2018	1.949	Feb 2020	1.490	Nov 2020	-		1.490	Continuing	Continuing	-
Target Acquisition Laser Capabilities	MIPR	NVESD : FT BELVOIR, VA	-	1.023	Jan 2019	2.309	Jan 2020	2.353	Nov 2020	-		2.353	Continuing	Continuing	-
Advanced Sensor Development	TBD	TBD : TBD	-	-		0.336	Feb 2020	2.040	Nov 2020	-		2.040	Continuing	Continuing	-
Adaptive Squad Architecture (ASA) Tools	TBD	TBD : TBD	-	-		-		0.640	Nov 2020	-		0.640	Continuing	Continuing	-
<b>Subtotal</b>			-	6.285		4.594		6.523		-		6.523	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	NVESD : FT BELVOIR, VA	-	0.381	Nov 2018	0.605	Jan 2020	0.648	Nov 2020	-		0.648	Continuing	Continuing	-
<b>Subtotal</b>			-	0.381		0.605		0.648		-		0.648	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	7.072		6.028		7.565		-		7.565	Continuing	Continuing	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Army</b>		<b>Date:</b> February 2020
<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>

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Advanced Sensor Development																																
Advanced Sensor Development MS B																	1 MS B															
Target Acquisition Laser Capabilities																																
Soldier Enhanced Sensing Capabilities																																
Adaptive Squad Architecture (ASA) Tools																																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Army		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 2040 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603774A / <i>Night Vision Systems</i> <i>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
Advanced Sensor Development	1	2019	2	2023
Advanced Sensor Development MS B	2	2023	2	2023
Target Acquisition Laser Capabilities	1	2019	4	2025
Soldier Enhanced Sensing Capabilities	1	2019	4	2025
Adaptive Squad Architecture (ASA) Tools	1	2021	4	2025

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Army										<b>Date:</b> February 2020		
<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 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
VT8: <i>SOLDIER PRECISION TARGETING DEVICES - ADV DEV</i>	-	0.000	1.483	2.765	-	2.765	2.764	1.998	1.998	1.998	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

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. Efforts will improve the Soldier's ability to precisely locate and designate targets across a broader range of operating environments, including all weather conditions and GPS-contested environments. 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; 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)**

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> Precision Pointing and Navigation Component Development	-	1.416	2.765	-	2.765
<p><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, and in GPS-contested conditions.</p> <p><b>FY 2020 Plans:</b> FY 2020 resources will be used to integrate Intra-Soldier Wireless capabilities into Soldier Precision Targeting Devices (SPTD) Fires portfolio. In addition, as the Army begins to introduce M-Code, the more robust north finding solution will be integrated into the Fires SPTD products.</p> <p><b>FY 2021 Base Plans:</b> FY 2021 resources will be used for development of component technologies and initial sub-system integration for Precision Azimuth and Vertical Angle Measurement (PAVAM) devices with reduced size, weight, and power. Additionally, FY 2021 resources will continue integration of M-Code into Dismounted Fires systems to improve operational capabilities in a GPS-contested environment.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Army		<b>Date:</b> February 2020
<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 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
FY 2020 to FY 2021 increase in required funding to provide GPS denied capability.					
<b>Title:</b> FY 2020 SBIR/STTR Transfer	-	0.067	-	-	-
<b>Description:</b> Funding transferred in accordance with Title 15 USC 638					
<b>FY 2020 Plans:</b> Funding transferred in accordance with Title 15 USC 638					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC 638					
<b>Accomplishments/Planned Programs Subtotals</b>	-	1.483	2.765	-	2.765

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• L76: <i>Dismounted Fire Support Laser Targeting Systems</i>	14.761	-	0.000	-	0.000	-	-	-	-	0.000	14.761
• L79: <i>Joint Effects Targeting Systems (JETS)</i>	10.080	6.410	5.566	-	5.566	5.603	5.035	5.604	6.004	0.000	44.302
• K32101: <i>JOINT EFFECTS TARGETING SYSTEM (JETS)</i>	66.574	25.330	69.641	-	69.641	67.932	69.629	69.624	69.623	0.000	438.353
• KA3100: <i>Mod Of In-Svc Equip (LLDR)</i>	24.833	6.044	0.000	-	0.000	-	-	-	-	0.000	30.877

**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 2021 Army												Date: February 2020			
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 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	PM SSL : Ft. Belvoir, VA 22060	-	-		0.023	Jan 2020	0.023	Nov 2020	-		0.023	Continuing	Continuing	-
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		0.067		-		-		-	0.000	0.067	-
<b>Subtotal</b>			-	-		0.090		0.023		-		0.023	Continuing	Continuing	N/A
<b>Product Development (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Precision Pointing and Navigation	C/FFP	Various : Various	-	-		1.372	Feb 2020	2.715	Dec 2020	-		2.715	Continuing	Continuing	-
<b>Subtotal</b>			-	-		1.372		2.715		-		2.715	Continuing	Continuing	N/A
<b>Support (\$ in Millions)</b>				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Matrix Support	MIPR	NVESD : Ft. Belvoir, VA 22060	-	-		0.021	Jan 2020	0.027	Nov 2020	-		0.027	Continuing	Continuing	-
<b>Subtotal</b>			-	-		0.021		0.027		-		0.027	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			-	-		1.483		2.765		-		2.765	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Army</b>			<b>Date:</b> February 2020
<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 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Precision Pointing and Navigation Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Army		<b>Date:</b> February 2020
<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	2025