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 0604115A *I Technology Maturation Initiatives*							
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	-	141.109	132.561	269.756	-	269.756	255.077	255.061	255.146	257.629	0.000	1,566.339
AX3: *Technology Maturation Initiatives*	-	15.638	12.109	220.050	-	220.050	255.077	255.061	255.146	257.629	0.000	1,270.710
AX5: *Next Generation Close Combat Missile*	-	4.813	3.000	-	-	-	-	-	-	-	0.000	7.813
AX6: *Active Protection Systems Integration*	-	3.000	-	-	-	-	-	-	-	-	0.000	3.000
AX7: *Multi-Mission High Energy Laser (MMHEL) Sys Demo*	-	7.844	-	-	-	-	-	-	-	-	0.000	7.844
AX8: *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)*	-	14.500	24.700	23.421	-	23.421	-	-	-	-	0.000	62.621
AX9: *Adv Mobility Experimental Prototype Adv Tech*	-	15.209	12.500	15.234	-	15.234	-	-	-	-	0.000	42.943
AY2: *Army Operational Fires*	-	17.336	37.832	11.051	-	11.051	-	-	-	-	0.000	66.219
AY3: *Strategic Long Range Cannon*	-	62.769	-	-	-	-	-	-	-	-	0.000	62.769
CE4: *Emerging Technology Initiatives Development*	-	-	42.420	-	-	-	-	-	-	-	0.000	42.420

A. Mission Description and Budget Item Justification

This Program Element (PE) funds the Technology Maturation Initiative (TMI), which matures and integrates component technologies into early system and sub-system experimental prototypes for demonstration in relevant environments and tactical/operational scenarios. The Technology Maturation Initiative takes emerging Science and Technology (S&T) Technology Readiness Level (TRL) 6 products to a goal of TRL 7, integrating them into technology demonstrators and experimental prototypes that meet existing Program of Record (PoR) requirements and reduce the risk of technology insertion for future acquisition programs. This Initiative streamlines the development and insertion of mature technologies that support advanced ground systems; aviation systems; command, control, communication and reconnaissance systems and equipment; precision and hypersonic weapons; navigation and situational awareness systems; and Soldier equipment. It provides the Army an improved mechanism for incorporating innovative technologies and advanced capabilities in the early stages of acquisition program planning, and more closely aligns high-priority S&T products and Programs of Record modernization plans.

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 0604115A *I Technology Maturation Initiatives*

This PE also provides a tiered evaluation and feasibility application of innovation and disruptive technologies to Army capability gaps at any stage in a technology's lifecycle. The project will partner with academia, small, non-traditional companies, and the defense industrial base to incubate ideas, stage pilot evaluations and to ensure more rapid integration and prototyping of the best, most innovative solutions into Army systems. Project teams comprise of both Science and Technology Subject Matter Experts (SMEs) and PoR technical leads to develop the project concept, execute the program, fabricate and evaluate the prototype, and develop the acquisition plan for incorporating the technology into the PoR upon successful evaluation of the prototype.

Through the Army's Technology Maturation Board, Army senior leadership approves Technology Maturation Initiative projects prior to budget year programming based on priority and opportunity, ensuring that demonstrations have a high potential for filling capability gaps, and the project's plan for transitioning to Army PoRs. Approved Technology Maturation Initiative projects are typically 2-4 years in duration and are budgeted under Projects AX3, AX5, AX8, AX9, AY2, and CE4.

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

Work in this Project is performed by Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	141.109	270.124	0.000	-	0.000
Current President's Budget	141.109	132.561	269.756	-	269.756
Total Adjustments	0.000	-137.563	269.756	-	269.756
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-137.563			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	269.756	-	269.756

Change Summary Explanation

Fiscal Year 2023 (FY23) funding increase reflects the fact that the FY22 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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX3 / *Technology Maturation Initiatives*	

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
AX3: *Technology Maturation Initiatives*	-	15.638	12.109	220.050	-	220.050	255.077	255.061	255.146	257.629	0.000	1,270.710
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project funds the Technology Maturation Initiative (TMI), which matures and integrates component technologies into early system and sub-system experimental prototypes for demonstration in relevant environments and tactical/operational scenarios. The focus is to improve technology transition to Programs of Record (PoRs) supporting 3 categories of projects: (1) Supersystem projects that prototype, integrate, and demonstrate emerging technologies that fill requirements across traditional PEO/PoR boundaries. (2) Technology Product Prototyping projects that mature technologies from S&T BA3 that have demonstrated at TRL6, but are experimental prototypes with higher risk (but potentially greater impact) than the baseline approach currently taken by a PoR, (3) Emerging / Disruptive Technology Opportunity projects (from S&T, industry, or non-traditional sources) that require out-of-cycle funding to prototype and evaluate disruptive impact against PoR requirements (threshold or objective).

This Initiative streamlines the development and insertion of mature technologies that support advanced ground systems; aviation systems; command, control, communication and reconnaissance systems and equipment; precision and hypersonic weapons; navigation and situational awareness systems; and Soldier equipment. It provides the Army an improved mechanism for incorporating innovative technologies and advanced capabilities in the early stages of acquisition program planning, and more closely aligns high-priority S&T products and Programs of Record modernization plans.

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

Work in this Project is performed by Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Future Vertical Lift (FVL) Helmet Mounted Display	5.961	-	-
Description: This task integrates and demonstrates a TRL 7 rotorcraft Helmet Mounted Display (HMD) compatible with current 56P helmets and FVL distributed aperture systems (DASs). This enables heads up, eyes out pilotage and improve situational awareness (SA) and maneuver for FVL pilots in all conditions. The HMD has a head tracker system that is self-contained and self-calibrating.			
Title: Large Caliber Armament System Prototype	9.677	-	-

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Description: This task completes fabrication of turret and ammunition handling systems; integrates the weapon system components including the gun, turret, ammunition handling system, fire control and targeting sensor; and characterize munitions to establish expected performance.			
Title: Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms	-	2.996	41.170
Description: This effort leverages the technologies developed under the IVAS (Integrated Vision Augmented System) program and applies them for use on Air and Ground vehicle platforms. Air: This architecture will enable better situational awareness for the air crew (pilots and rear crew) and passenger warfighters in the air platform with augmented reality data system for displaying 360 degree sensors, pilotage and targeting sensors, blue/red force tracking data, communications, mission data, and vehicle flight data. Ground Vehicle: This architecture will enable better situational awareness for the crew (commander, gunner, driver, and vehicle crew) and passenger warfighters in the ground platform with augmented reality data system for displaying 360 degree sensors, driver, commander, and targeting sensors, blue/red force tracking data, communications, mission data, and vehicle data. The system will interface to ATLAS (ground system) and other architecture systems. ***FY 2022 Plans:*** Will complete definitions of the IVAS technologies and architecture for use on Air and Ground Platforms. Will fabricate mid program prototyping of Air and Ground A/R prototyping to for Warfighter touch points on the technologies and design to increase capability and reduce risk in the FY23 prototypes. Effort is being funded by AX3 and a reallocation of funds from the CE4 Emerging Technology Initiatives Development effort. ***FY 2023 Plans:*** Mature Augmented Reality (A/R) technologies and optimize A/R performance. Assess A/R effectiveness at Soldier touch points. Demonstrate A/R capabilities for air and ground vehicle users and applications. Mature and demonstrate end-state vehicle computing and information processing capabilities in both air and ground platforms. Mature and demonstrate networked enabled operations in mission-based operational scenarios. Demonstrate improved line of sight head tracking capability with existing aviation head mounted display systems. Mature and demonstrate applications to IVAS tactical heads up display software to enable seamless transition from dismounted to mounted on-the-move operations. Mature and transition a government-owned hardware, software and interface baseline ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase in funding from FY22 to FY23 reflects substantial hardware design maturation, long-lead purchases and delivery of ruggedized processing solutions in FY22, and FY23			
Title: Universal MDO Fire Control and SA Systems	-	8.672	34.700

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Description: This effort supports experimental prototypes to demonstrate high priority capability to provide mid to large caliber weapon platforms a real time 360-degree situational awareness (SA) and sensor input to the targeting / firing control systems. This effort will prototype a common architecture and interface kit containing infrared/radio frequency (IR/RF) sensors to ensure interoperability and sustainment across platforms. This effort is needed to enable a timely start of common architecture and interface definitions and interface hardware development that supports a platform agnostic prototype demonstration of 360-degree sensing system for fire control and SA across dynamic battlefield conditions. The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. ***FY 2022 Plans:*** Will develop an initial architecture and interface specification that is compatible with installation and interface to multiple mid to larger caliber weapons platforms. Will prototype universal sensing modules and architecture functionality on a mid or large caliber weapon platform for evaluation in a dynamic battlefield environment. Effort is being funded by AX3 and a reallocation of funds from the AX5 Next Generation Close Combat Missile. ***FY 2023 Plans:*** Mature and assess multiple vendor Universal 360 multi-spectral sensing system prototypes including day, low-light, and thermal technologies with on-sensor Aided Target Recognition (AiTR) capabilities. Mature and document the government controlled, platform-agnostic data framework, architecture, and interface specifications. Demonstrate and assess through virtual prototyping the sensor data structure, Universal 360 sensor bandwidth, and intelligent data sharing/distribution. Evaluate scalability of the Universal 360 sensor system and architecture across multiple ground vehicle system requirements. Mature Artificial Intelligence (AI) software architecture, AI-enabled tracking, and advanced data and target location capabilities focusing on near-vehicle threats and driving obstacles. Integrate Advance Targeting Lethality Automated Systems (ATLAS) Technology Maturation Initiative AiTR algorithms. Evaluate AiTR detection, identification, and tracking effectiveness in the AiTR evaluation lab. Mature vehicle crew helmet mounted display technologies and assess effectiveness through data collection at Warfighter touch points. Improve head tracking hardware and software to enable precise tracking for visual information display to enable see through armor and improved situational awareness. Integrate the Integrated Vision Augmented System Ground Technology Maturation Initiative hardware, software, architecture/interface baseline and helmet mounted display crew user experiences. Demonstrate Universal 360 sensor data on select crew, troop, and fire control systems. Fabricate and integrate mid-program prototypes of platform-agnostic Universal 360 sensors, architecture, and display technologies on ground vehicle platforms. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase in funding from FY22 to FY23 reflects fabrication and integration of platform agnostic Universal 360 sensors, architecture, and display technologies on ground vehicle platforms.			
Title: Tactical Navigation Warfare (NAVWAR) Plexus	-	-	8.580

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Description: Tactical Navigation Warfare (NAVWAR) Plexus supports the technology maturation and integration of NAVWAR Situational Awareness technologies into Electronic Warfare and field artillery systems. This effort incorporates NAVWAR sensors, data fusion algorithms, and decision making software to maintain Army Fires capabilities in Global Positioning System degraded and denied environments. NAVWAR sensor interfaces will be modernized to comply with open system standards and their data will be processed through fusion algorithms to produce a real time Common Operating Picture (COP) of the NAVWAR environment. This COP will be distributed to the Fires Command and Control system to optimize the performance of field artillery in degraded environments. ***FY 2023 Plans:*** Will initiate modernization of the NAVWAR sensor interface for integration with data fusion algorithms. Will complete development of the heat map algorithms for displaying degraded and denied areas. Will integrate the heat map algorithms into Electronic Warfare (EW) software system to create the COP. Will also initiate interface integration of the field artillery system to the EW software system. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.			
Title: Anubis Software Defined Chipset for M-Code and Advanced PNT Applications ***Description:*** This effort will demonstrate M-Code Global Positioning System (GPS) receiver capability on a commercially available System on Chip (SoC). It will prototype mounted, dismounted, and munition GPS receiver reference designs to be used for testing, evaluation, and insertion into Army Programs of Record. This effort will also include security certification through U.S. Space Force in order to handle the required encryption keys. The cited work is consistent with the Army Modernization Strategy. ***FY 2023 Plans:*** Initiate security certification process with U.S. Space Force and enable M-Code capability on core SoC components. Develop initial GPS receiver reference designs for selected form factor (mounted, dismounted, or munition). ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Increase in funding due to the need for security certificates and development of different reference designs supporting transitions to three (3) Program Executive Offices.	-	-	21.700
Title: Assured Navigation for Future Tactical Unmanned Aerial Systems (FTUAS) ***Description:*** This effort will build on previous Defense Advanced Research Projects Agency (DARPA) All Source Positioning and Navigation (ASPN), and Seeker Cost Transformation (SECTR) vision based navigation technology efforts, as well as the Army Aviation and Missile Center's (AvMC) current efforts under the Future Vertical Lift Cross Functional Team (FVL CFT) and	-	-	5.700

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Program Executive Office Aviation's efforts focused on low altitude vision based navigation (VBN) to deliver a full government owned navigation system in small size, weight, and power for tactical Unmanned Aerial Systems. DARPA SECTR is a production prototype that has been demonstrated in cross country flight and currently works at altitudes of 1000+feet. This effort will extend the technology to all operational altitudes, and miniaturize and ruggedize the technology. This effort will be part of an overall Assured Position Navigation and Timing solution that will enable the use of FTUAS and Air Launched Effects in GPS denied environments. ***FY 2023 Plans:*** Initiate maturation of low altitude vision based navigation, and determine sensor requirements. Begin miniaturization of the prototype sensor package and processing module that will be designed, tested, and transitioned. Begin optimization of VBN algorithms for low-altitude applications. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.			
Title: Air Launched Effects (ALE) Off-board Survivability ***Description:*** This effort will develop a new variant of the ALE Family of Systems focused on protection of the manned helicopter fleet in contested environments. The effort will mature multispectral payloads that offload survivability and targeting functions from manned platforms. ***FY 2023 Plans:*** Implement multiple survivability and targeting payloads using off-board ALE platforms to relay critical information to manned systems for battlespace situational awareness and tactics execution. Complete system architecture development and optimization including required communications and artificial intelligence/machine learning-based data fusion backbone. Mature high payoff payload technologies that perform survivability and targeting functions in low-Size, Weight and Power (SWaP) packages suitable for off-board use and demonstrate payloads and associated tactics, techniques and procedures on test bed platform. Development air vehicle prototype including a digital twin for sizing and payload optimization analyses followed by SWaP-optimized integration of payloads to demonstrate performance and tactics in free flight test flights in operationally relevant environments. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.	-	-	28.530
Title: Target Seeking (TS) - Extended Range (ER) Seeker (TS-ER) ***Description:*** The TS-ER Seeker will combine advances made by the Strategic Capabilities Office, Defense Advanced Research Projects Agency, Air Force, and Army in the fields of airframes, electronics, and seeker technologies to enable: extended range	-	-	17.820

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
performance from 70km to 150km by integrating with advanced airframes; decrease risk of performance against red force countermeasures from medium to low by improving Automatic Target Recognition capability; improve munition terminal effects against armored targets and Integrated Air Defense Systems by enhancing munition accuracy. These seeker technologies will be integrated with the XM1155 Extended Range Artillery Projectile, with the requirement to prosecute moving or relocated targets in Global Positioning System denied environments at extended ranges (150km in accordance with the Cannon Delivered Area Effects Munition draft Capabilities Development Document). Enhanced seeker technologies will be critical in enabling munition performance at these ranges with high target location error. ***FY 2023 Plans:*** Mature and integrate seeker hardware. Perform open-loop testing of seeker hardware. Perform live fire gun hardening All-Up-Round testing. Will demonstrate integrated seeker performance in open-loop and closed-loop demonstrations. Perform live fire gun hardening all round up testing. Demonstrate integrated seeker performance in open-loop and closed-loop demonstrations. Deliver an integrated terminal seeker. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New start effort in FY 2023 approved by the Technology Maturation Board.			
Title: Tactical Analytics Architecture (TA2) ***Description:*** This effort will prototype AI software/algorithms and hardware for AI-enabled Command and Control (C2) common operating picture (COP) / decision-support for Multi-Domain Operations at multiple echelons. Increased Speed and Accuracy of decision making will be demonstrated thru integration of AI-enabled decision support technologies that are emerging from Science and Technology programs and existing C2 systems used across warfighting functions and domains. ***FY 2023 Plans:*** Develop Software/Hardware (SW/HW) Prototype COP that integrates data, information and knowledge-sharing across echelon and function including Maneuver, Integrated Air and Missile Defense, Fires, Intel, Logistics, etc. Using emerging data fabrics and processing frameworks, develop necessary application programming interfaces to demonstrate sharing of data, algorithms and Machine learning tools; and translate across different architectures and standards. Transition/mature emerging COP visualization SW/HW, and AI-enabled decision support tools being developed under Project Convergence. Incorporate synthetic training environment One World Terrain, Integrated Visual Augmentation Systems, and other real-time sensor updates for dynamic situation understanding pay-offs that include fast, accurate automated recommendations for target development, target selection, target/weapons pairing, synchronization of fires, air space and target de-confliction, route planning, automated integration and	-	-	22.400

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
assessment of voice and chat data, AI-enabled electronic warfare for assured interoperability between radio frequency (RF) systems, classification of RF emitters, and automated battle damage assessments. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.			
Title: Common Hypersonic Glide Body (CHGB) Seeker Integration ***Description:*** The Army Long Range Hypersonic Weapon (LRHW) Common Hypersonic Glide Body (CHGB) Seeker Integration activities are leveraging development efforts that were executed with prior year 6.3 S&T funding, supporting Seeker Component Development. The 6.3 S&T CHGB Seeker Component Development will continue through FY27, and will transition mature technologies to the 6.4 CHGB Seeker Integration efforts. Per the TMI Board decision in May 2021, the TMI program will fund these 6.4 CHGB Seeker Integration efforts in FY23. Starting in FY24, the RCCTO Transition Partner, Program Executive Office Missiles and & Space, will continue CHGB Seeker Integration efforts to support the development timeline for implementation into future LRHW batteries. ***FY 2023 Plans:*** Will integrate sensor hardware, update flight software, and integrate capability into weapon control and mission planning software and tools. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.	-	-	15.450
Title: Autonomous Operations for Unmanned Aerial Systems (UAS) ***Description:*** Autonomous Operations for Unmanned Aerial Systems (UAS) will provide Army aircraft reconnaissance, targeting and weapon options to engage and defeat threat targets at standoff. It will provide manned and unmanned aircraft capabilities to operate dispersed as part of the larger collaborative lethality network or as autonomous contributors for reconnaissance, surveillance, and target acquisition (RSTA). ***FY 2023 Plans:*** Transition products to enable autonomous operations for RSTA missions using 5 or more Air Launched Effects (ALE) collaborating under a single human supervisor while operating in contested environments. Identify candidate Science and Technology (S&T) products and integrate and align them to the Program Manager's (PM) Unmanned Aerial Systems (UAS) Family of Systems Architecture and Requirements Specification for ALE, Gray Eagle and Scalable Control Interface (SCI) Programs of Record. Analyze, test and integrate ALE S&T autonomy software and platform components to meet PM's UAS Requirements Specification for ALE. Develop an Integration and Test Plan to standardize approach and metrics to integrate ALE S&T components aligned to Abbreviated- Capability Development Document (A-CDD) for ALE and ALE Use Cases. Perform	-	-	12.700

Exhibit R-2A, RDT&E Project Justification: PB 2023 Army		Date: April 2022
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
flight test risk reduction efforts of S&T autonomy software and control interfaces in operationally relevant environments against pacing threats. Perform communications testing to determine communications waveforms, link budgets and other requirements to support the autonomy and control interfaces. Integrate into the Army network through integration activities and Project Convergence 21. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.			
Title: Reconfigurable Aperture Precision Targeting Radar (RAPTR) for Vehicle and Dismount Exploitation Radar (VADER) (RADER) ***Description:*** The current RADAR sensor (VADER) on Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS-V) was designed for counterinsurgency operations limiting the effectiveness against near-peer threats. This effort will mature wide-band, multi-function RF, aperture technology developed under Army Science and Technology (S&T) to deliver an advanced payload that significantly increases range, accuracy and survivability of current airborne surveillance radar systems. This effort will integrate an advanced payload into a digital radar pod to address performance deficiencies related to Multi-Domain Operations, address sustainability, and provide performance growth across all synthetic aperture radar (SAR) / moving target indication (MTI) capabilities. The additional RAPTR capabilities will make EMARSS-V more effective in Multi-Domain Operations extending the platforms relevance to support future missions. ***FY 2023 Plans:*** Initiate design and build of a dual band Active Electronically Scanned Array (AESA) to augment current surveillance radar range, accuracy and survivability. Initiate design and production of integrated circuit chip package optimized to address performance and manufacturing deficiencies from S&T chip spins. Initiate open architecture hardware and software upgrades to accommodate upgraded signal processor and enable sharable digital interface for multifunction aperture. Initiate long lead material procurement to support fabrication, unit test, and integration. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** New Start effort in FY 2023 approved by the Technology Maturation Board.	-	-	11.300
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) ***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	-	0.441	-
Accomplishments/Planned Programs Subtotals	15.638	12.109	220.050

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX3 / *Technology Maturation Initiatives*	

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
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.441		-		-		-	0.000	0.441	-
		Subtotal	-	-		0.441		-		-		-	0.000	0.441	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
Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms	C/Various	Various : Various	-	-		2.996		-		-		-	0.000	2.996	-
Universal 360 MDO Fire Control and SA Systems	C/Various	Various : Various	-	-		8.672		-		-		-	0.000	8.672	-
Target Seeking - Extended Range (ER) Seeker (TS-ER)	TBD	PEO Ammo : Picatinny Arsenal, NJ	-	-		-		17.820		-		17.820	0.000	17.820	-
Common Hypersonic Glide Body (CHGB) Seeker Integration	C/Various	RCCTO : Various : Various	-	-		-		15.450		-		15.450	0.000	15.450	-
Artificial Intelligence (AI) Enabled Operations	TBD	AFC : TBD	-	-		-		22.400		-		22.400	0.000	22.400	-
Anubis: COTS-based M-Code GPS Receiver	TBD	DEVCOM-ARL : TBD	-	-		-		21.700		-		21.700	0.000	21.700	-
Air Launched Effects (ALE) Off-board Survivability	TBD	DEVCOM AvMC : TBD	-	-		-		28.530		-		28.530	0.000	28.530	-
Assured NAV for FTUAS	TBD	PEO Aviation : TBD	-	-		-		5.700		-		5.700	0.000	5.700	-
Tactical NAVWAR Plexus	TBD	DEVCOM C5ISRC : TBD	-	-		-		8.580		-		8.580	0.000	8.580	-
Universal 360 MDO Sensor Prototypes	TBD	C5ISR Ft. Belvoir : TBD	-	-		-		4.283		-		4.283	0.000	4.283	-

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

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
Universal 360 MDO Common Architecture & Data Framework	TBD	C5ISR Ft. Belvoir : TBD	-	-		-		2.494		-		2.494	0.000	2.494	-
Mature AI software architecture & prototype ATR	TBD	C5ISR Ft. Belvoir : TBD	-	-		-		4.011		-		4.011	0.000	4.011	-
Mature & Demonstrate Crew Station, Crew HMD, Troop HMD, and Fire Control	TBD	C5ISR Ft. Belvoir : TBD	-	-		-		8.784		-		8.784	0.000	8.784	-
Platform Prototyping, Integration & Demonstration	TBD	C5ISR Ft. Belvoir : TBD	-	-		-		15.127		-		15.127	0.000	15.127	-
IVAS - Design Platform Augmented Reality (AR) Architecture	TBD	C5ISR Fort Belvoir, VA; : TBD	-	-		-		1.123		-		1.123	0.000	1.123	-
IVAS - AR Architecture Implementation, Integration, and Fabrication	TBD	C5ISR Fort Belvoir, VA; : TBD	-	-		-		12.620		-		12.620	0.000	12.620	-
IVAS - Systems Engineering - Interfaces, Head Pose Tracking, Position, Navigation, Timing, Power	TBD	C5ISR Fort Belvoir, VA; : TBD	-	-		-		10.112		-		10.112	0.000	10.112	-
IVAS - Software Engineering - AR User Experiences	TBD	C5ISR Fort Belvoir, VA; : TBD	-	-		-		4.028		-		4.028	0.000	4.028	-
IVAS - Software/Hardware Integration - IVAS and Pilot / Crew Helmet Mounted Displays	TBD	C5ISR Fort Belvoir, VA; : TBD	-	-		-		11.911		-		11.911	0.000	11.911	-
IVAS - Capability Demonstration	TBD	C5ISR Fort Belvoir, VA; : TBD	-	-		-		1.377		-		1.377	0.000	1.377	-

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

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
Autonomous Operations for Unmanned Aerial Systems (UAS)	TBD	DEVCOM AvMC : TBD	-	-		-		12.700		-		12.700	0.000	12.700	-
Reconfigurable Aperture Precision Targeting Radar (RAPTR) for Vehicle and Dismount Exploitation Rada	TBD	DEVCOM C5ISR : TBD	-	-		-		11.300		-		11.300	0.000	11.300	-
		Subtotal	-	-		11.668		220.050		-		220.050	0.000	231.718	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
Future Vertical Lift Helmet Mounted Display (FVL HMD)	C/Various	AFC : Fort Belvoir, VA	-	5.961		-		-		-		-	13.000	18.961	-
Large Caliber Armament System Prototype	C/Various	AFC : Picatinny, NJ	-	9.677		-		-		-		-	18.400	28.077	-
		Subtotal	-	15.638		-		-		-		-	31.400	47.038	N/A

	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	-	15.638		12.109		220.050		-		220.050	31.400	279.197	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

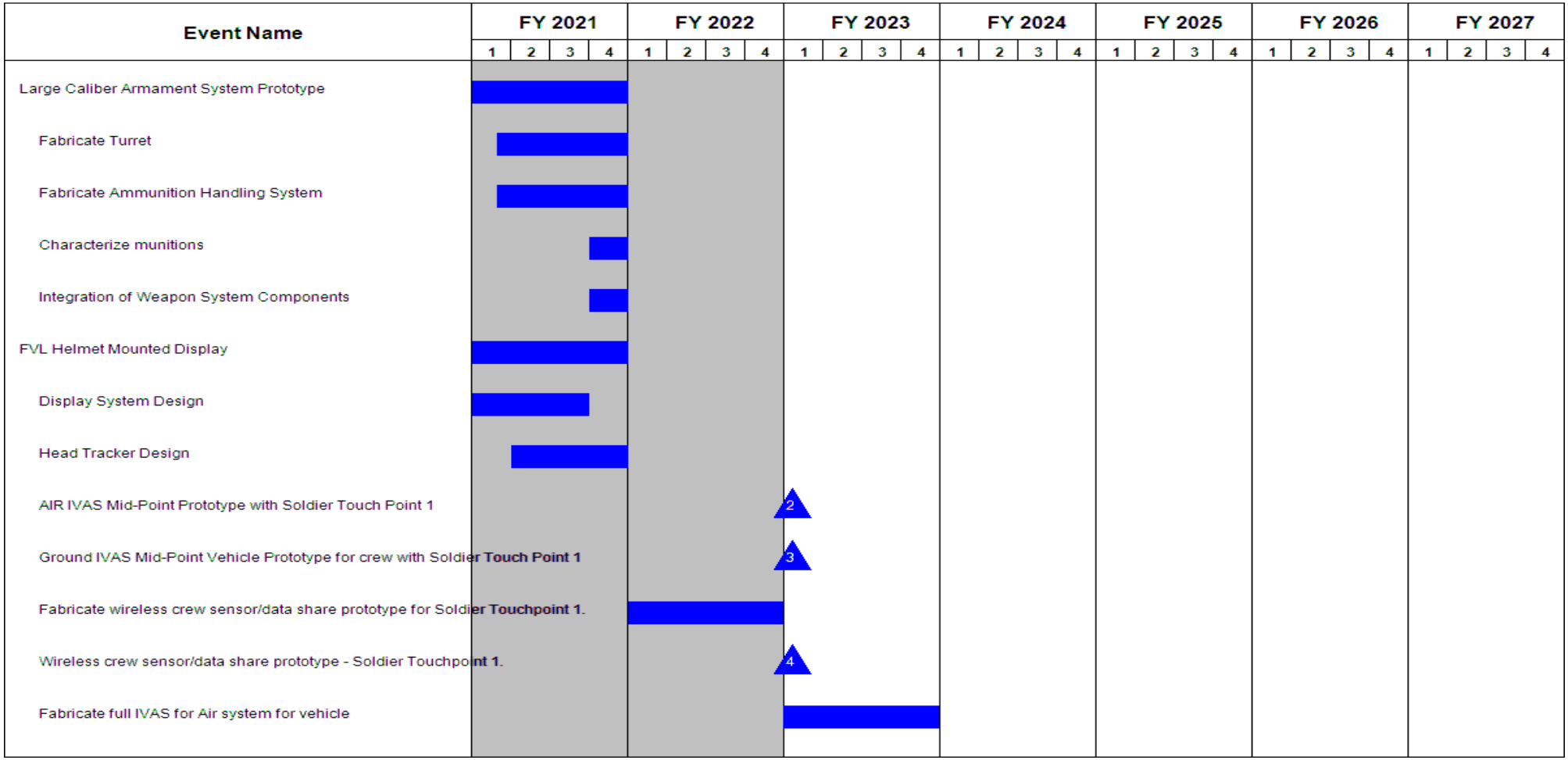

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

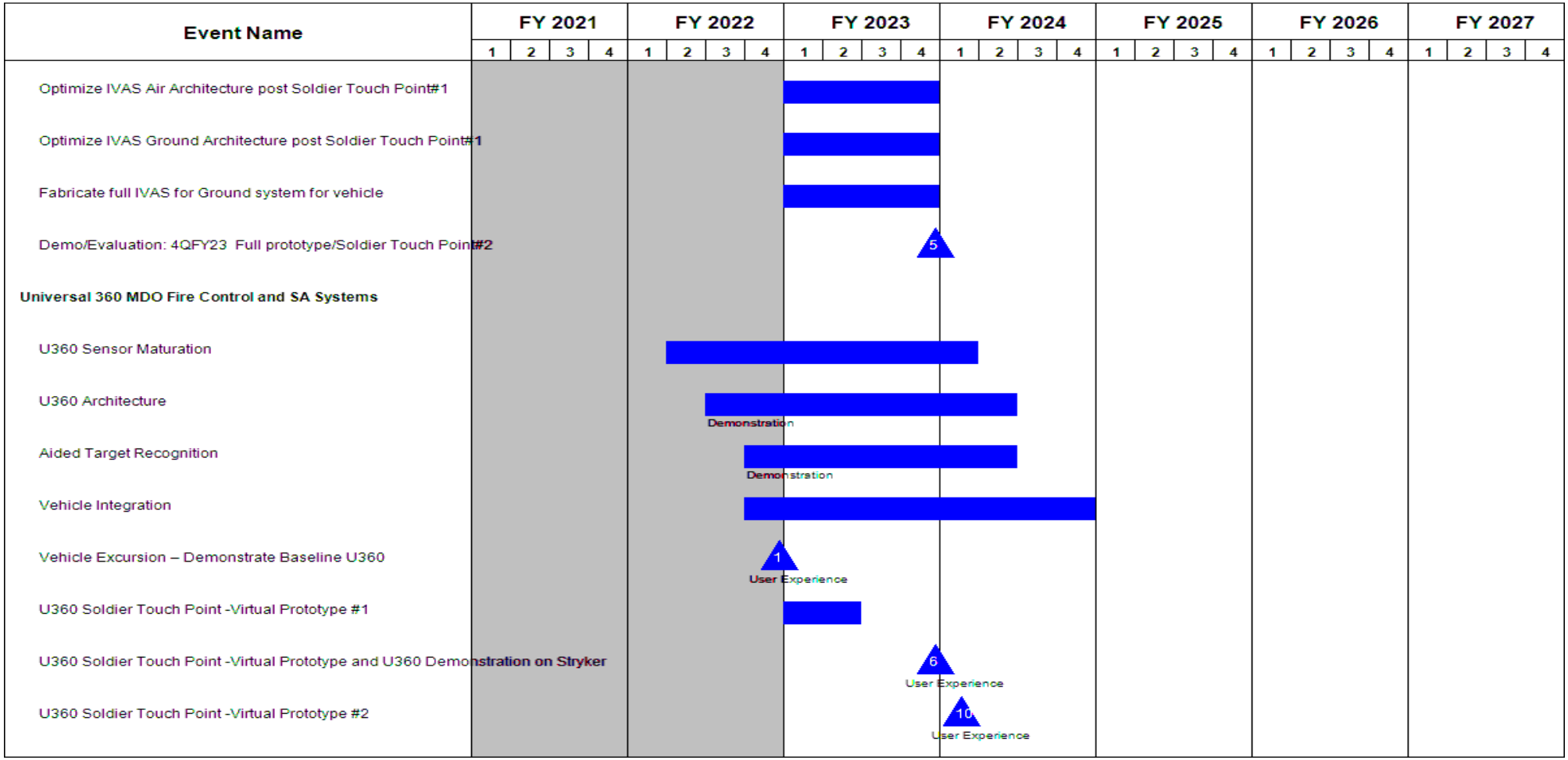

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

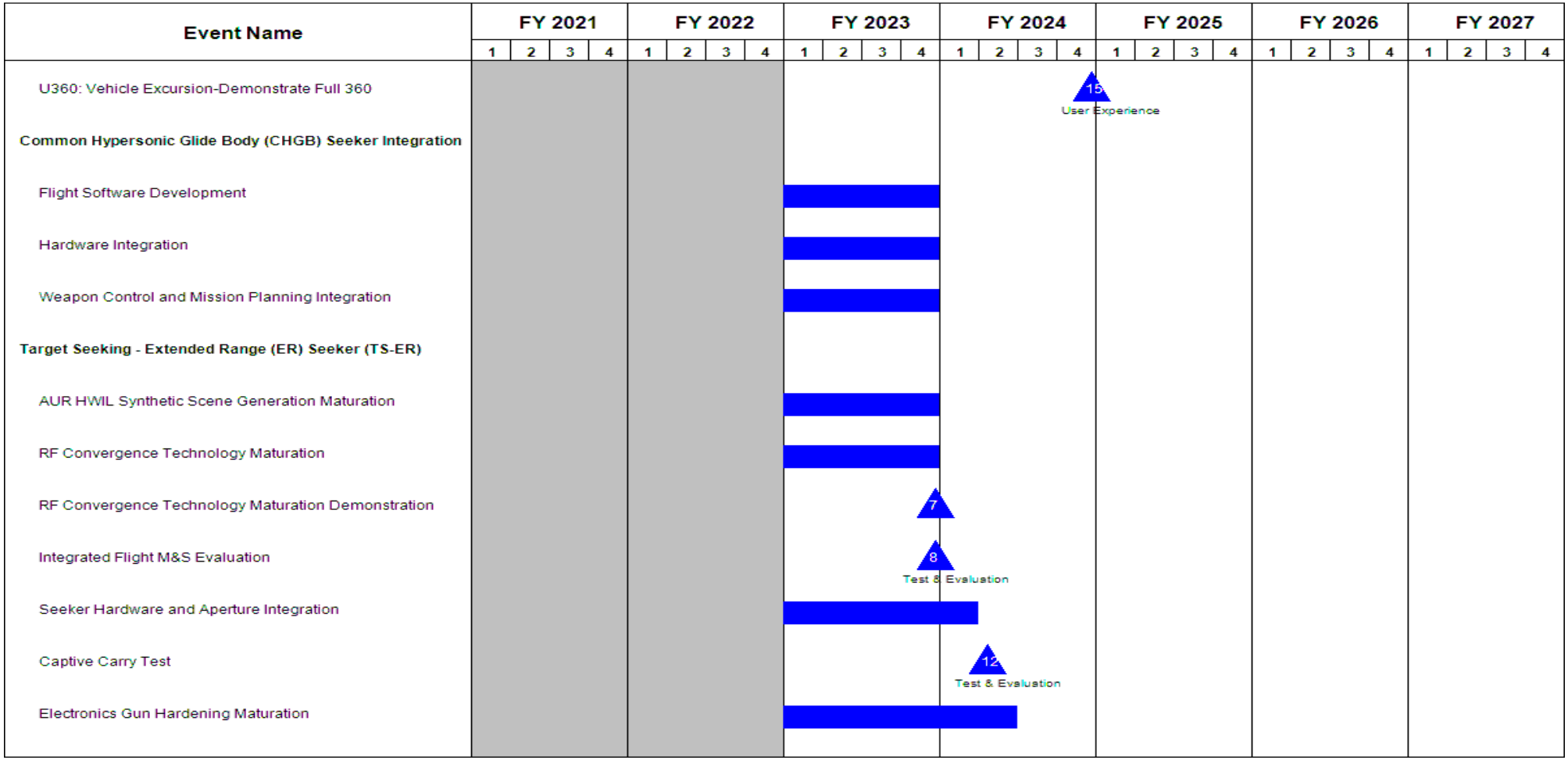

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

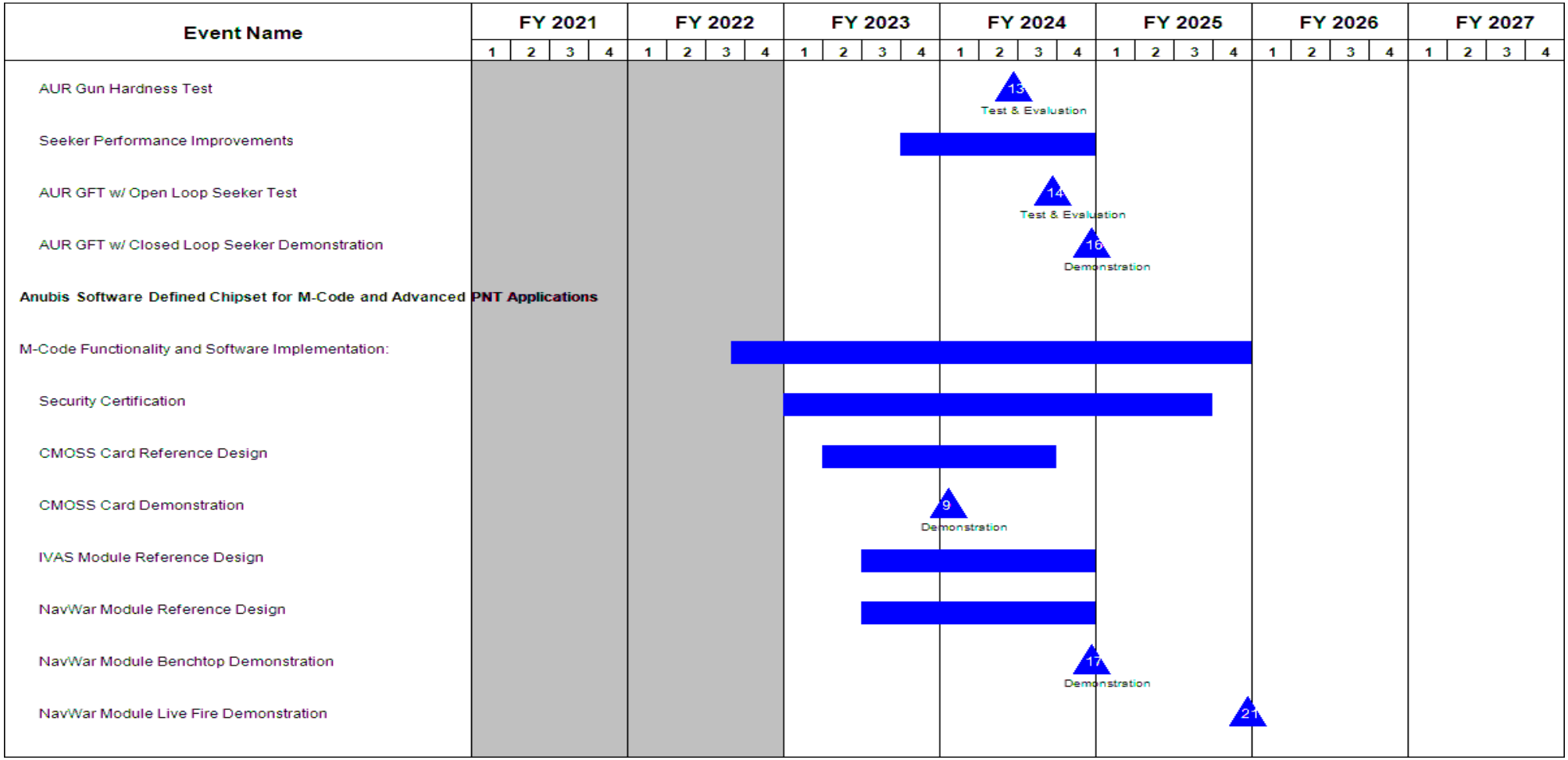

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

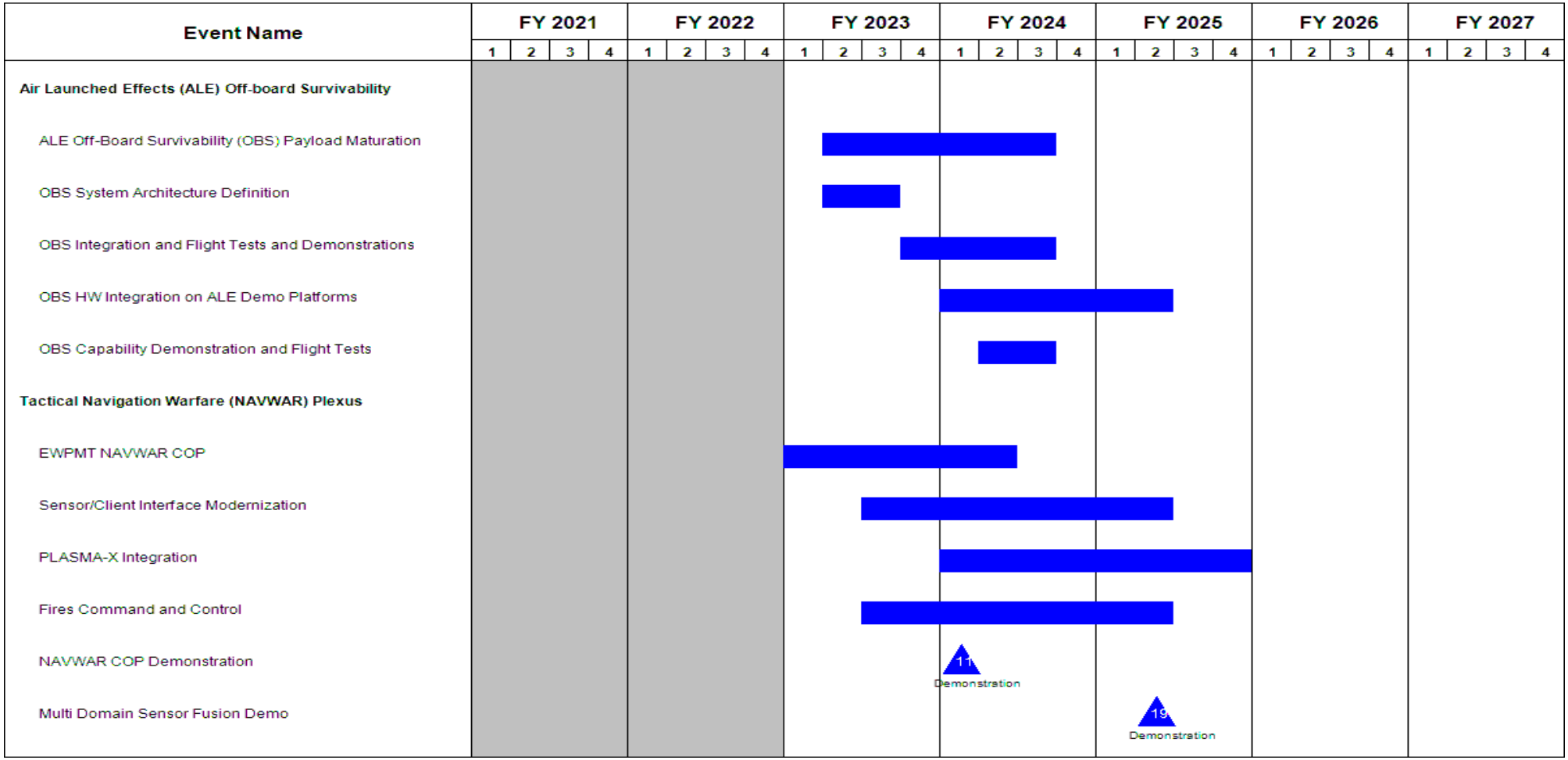

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

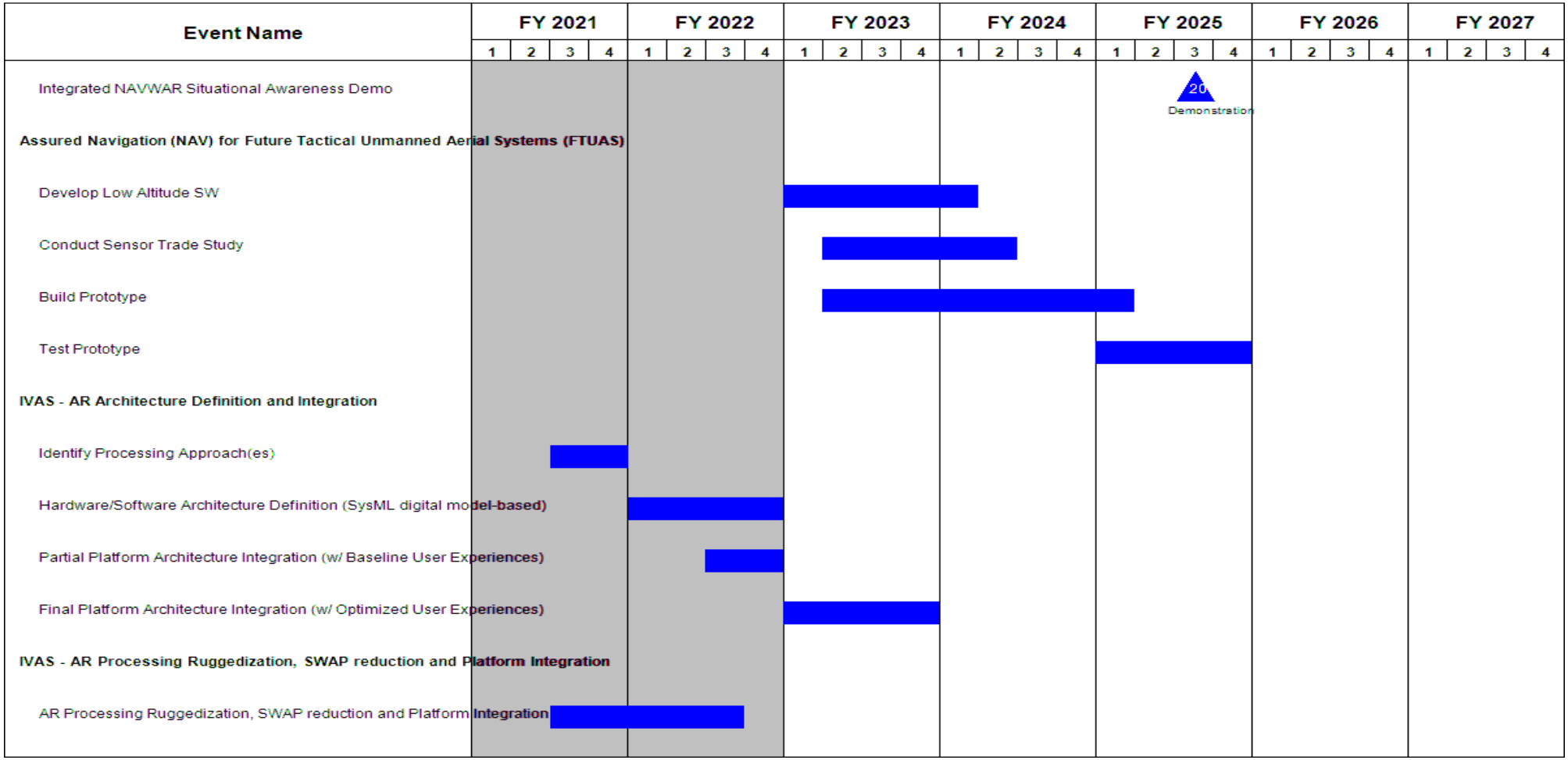

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

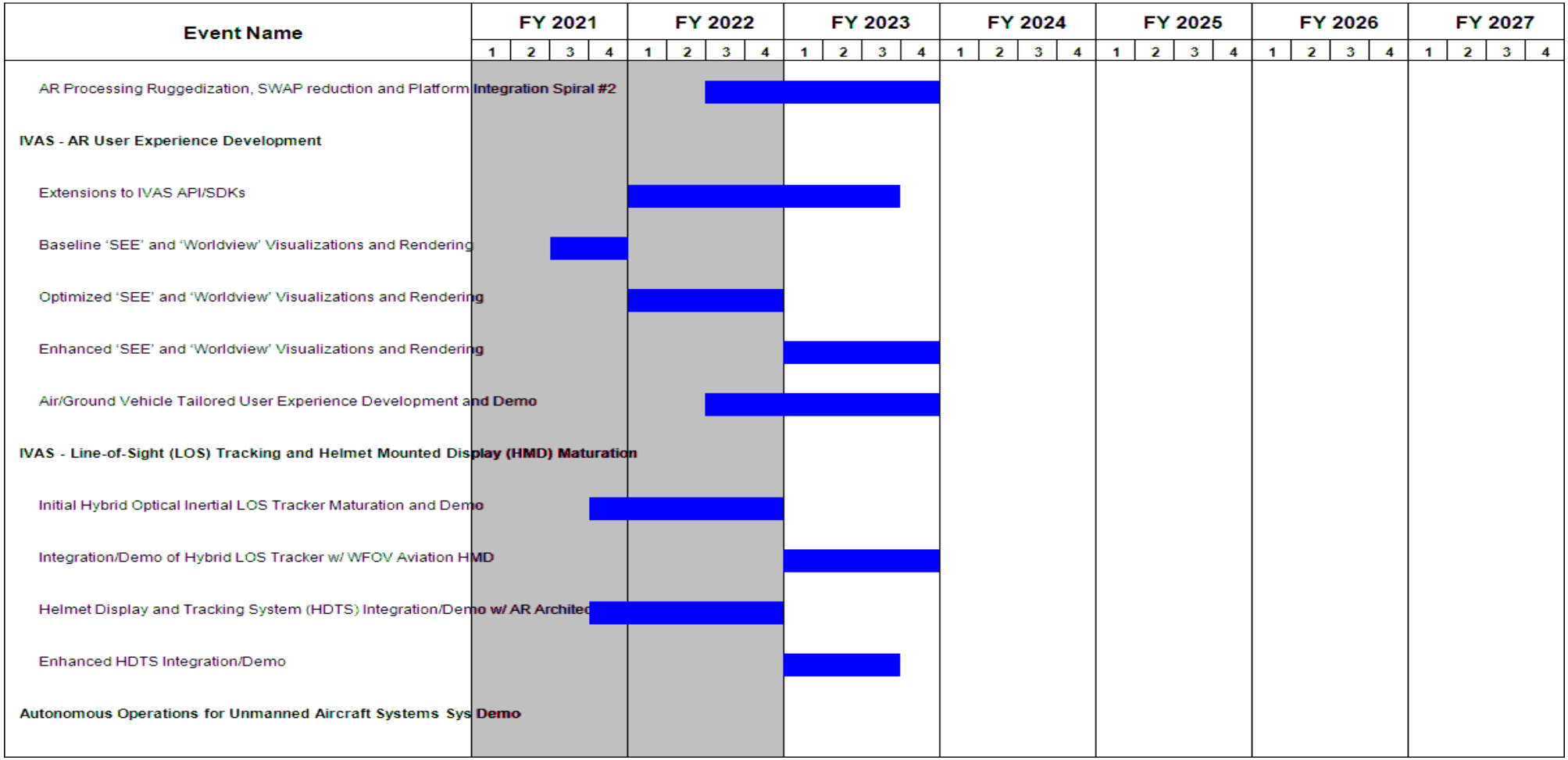

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

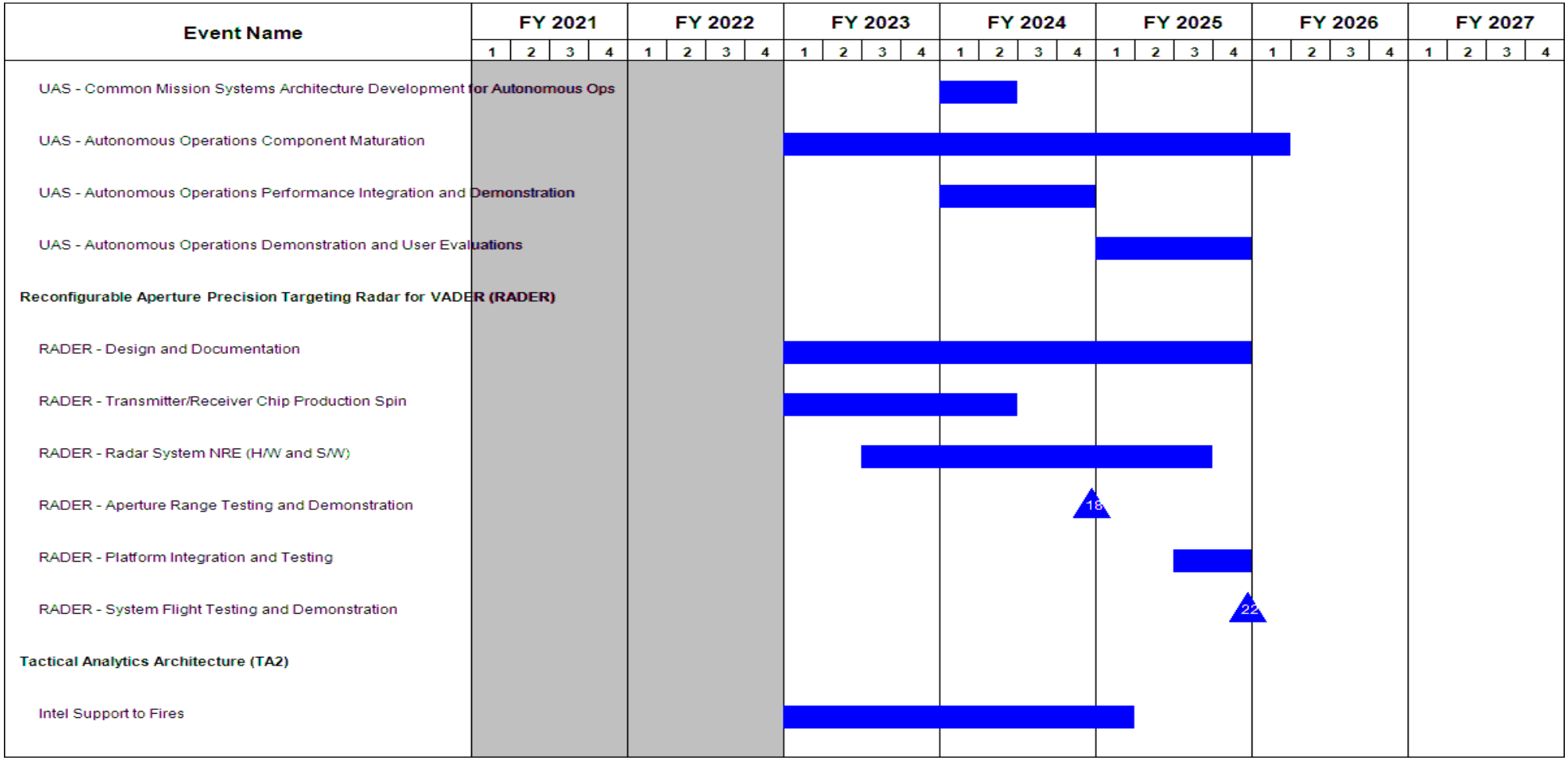

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

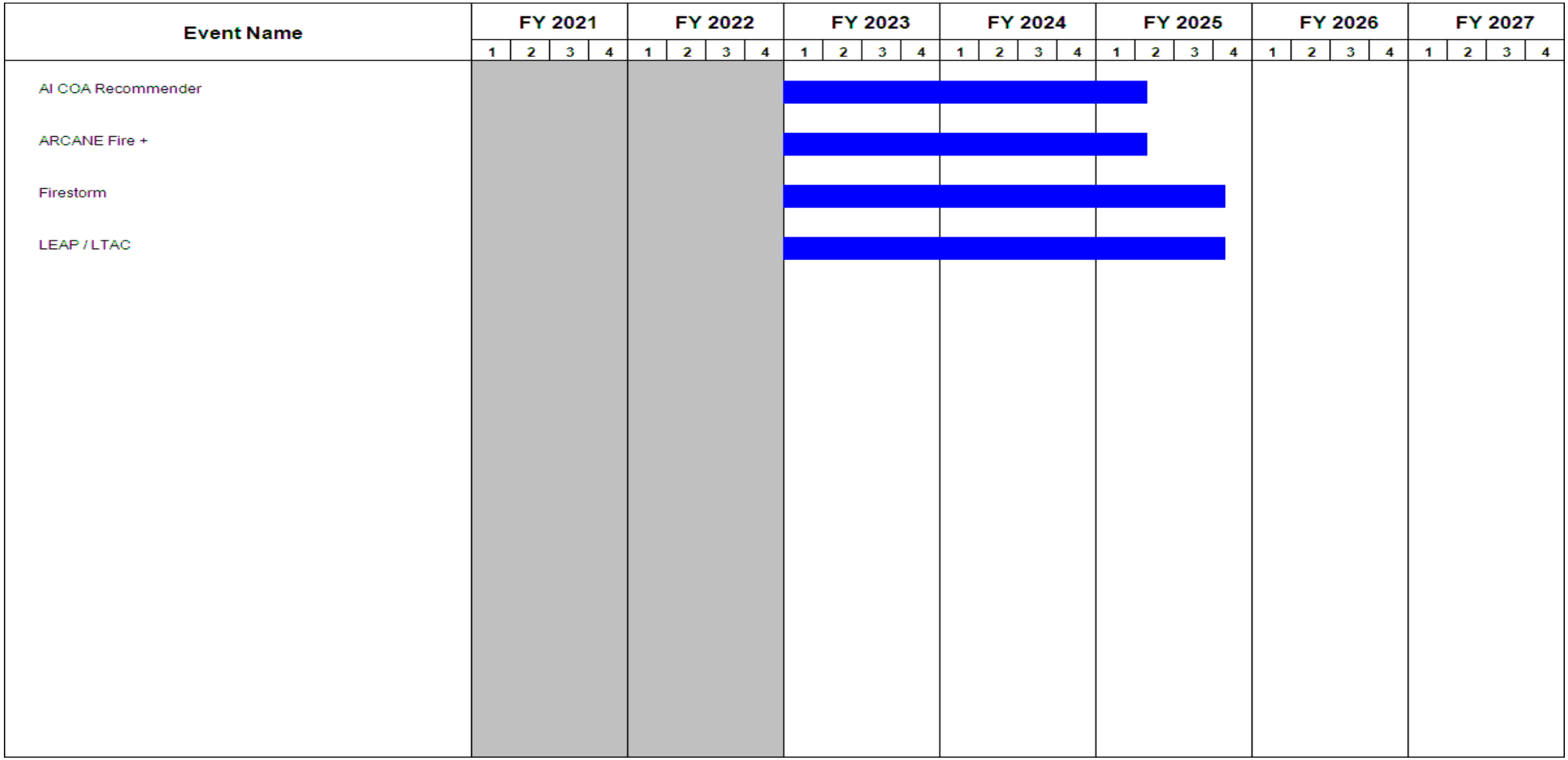

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Large Caliber Armament System Prototype	1	2021	4	2021
Fabricate Turret	1	2021	4	2021
Fabricate Ammunition Handling System	1	2021	4	2021
Characterize munitions	4	2021	4	2021
Integration of Weapon System Components	4	2021	4	2021
FVL Helmet Mounted Display	1	2021	4	2021
Display System Design	1	2021	3	2021
Head Tracker Design	2	2021	4	2021
AIR IVAS Mid-Point Prototype with Soldier Touch Point 1	1	2023	1	2023
Ground IVAS Mid-Point Vehicle Prototype for crew with Soldier Touch Point 1	1	2023	1	2023
Fabricate wireless crew sensor/data share prototype for Soldier Touchpoint 1.	1	2022	4	2022
Wireless crew sensor/data share prototype - Soldier Touchpoint 1.	1	2023	1	2023
Fabricate full IVAS for Air system for vehicle	1	2023	4	2023
Optimize IVAS Air Architecture post Soldier Touch Point#1	1	2023	4	2023
Optimize IVAS Ground Architecture post Soldier Touch Point#1	1	2023	4	2023
Fabricate full IVAS for Ground system for vehicle	1	2023	4	2023
Demo/Evaluation: 4QFY23 Full prototype/Soldier Touch Point#2	4	2023	4	2023
Universal 360 MDO Fire Control and SA Systems	2	2022	4	2024
U360 Sensor Maturation	2	2022	1	2024
U360 Architecture	3	2022	2	2024
Aided Target Recognition	4	2022	2	2024
Vehicle Integration	4	2022	4	2024

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Vehicle Excursion ? Demonstrate Baseline U360	4	2022	4	2022
U360 Soldier Touch Point -Virtual Prototype #1	1	2023	2	2023
U360 Soldier Touch Point -Virtual Prototype and U360 Demonstration on Stryker	4	2023	4	2023
U360 Soldier Touch Point -Virtual Prototype #2	1	2024	1	2024
U360: Vehicle Excursion-Demonstrate Full 360	4	2024	4	2024
Common Hypersonic Glide Body (CHGB) Seeker Integration	1	2023	4	2023
Flight Software Development	1	2023	4	2023
Hardware Integration	1	2023	4	2023
Weapon Control and Mission Planning Integration	1	2023	4	2023
Target Seeking - Extended Range (ER) Seeker (TS-ER)	1	2023	4	2023
AUR HWIL Synthetic Scene Generation Maturation	1	2023	4	2023
RF Convergence Technology Maturation	1	2023	4	2023
RF Convergence Technology Maturation Demonstration	4	2023	4	2023
Integrated Flight M&S Evaluation	4	2023	4	2023
Seeker Hardware and Aperture Integration	1	2023	1	2024
Captive Carry Test	2	2024	2	2024
Electronics Gun Hardening Maturation	1	2023	2	2024
AUR Gun Hardness Test	2	2024	2	2024
Seeker Performance Improvements	4	2023	4	2024
AUR GFT w/ Open Loop Seeker Test	3	2024	3	2024
AUR GFT w/ Closed Loop Seeker Demonstration	4	2024	4	2024
Anubis Software Defined Chipset for M-Code and Advanced PNT Applications	3	2022	4	2025
M-Code Functionality and Software Implementation:	3	2022	4	2025
Security Certification	1	2023	3	2025
CMOSS Card Reference Design	2	2023	3	2024

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CMOSS Card Demonstration	1	2024	1	2024
IVAS Module Reference Design	3	2023	4	2024
NavWar Module Reference Design	3	2023	4	2024
NavWar Module Benchtop Demonstration	4	2024	4	2024
NavWar Module Live Fire Demonstration	4	2025	4	2025
Air Launched Effects (ALE) Off-board Survivability	1	2023	3	2024
ALE Off-Board Survivability (OBS) Payload Maturation	2	2023	3	2024
OBS System Architecture Definition	2	2023	3	2023
OBS Integration and Flight Tests and Demonstrations	4	2023	3	2024
OBS HW Integration on ALE Demo Platforms	1	2024	2	2025
OBS Capability Demonstration and Flight Tests	2	2024	3	2024
Tactical Navigation Warfare (NAVWAR) Plexus	1	2023	4	2025
EWPMT NAVWAR COP	1	2023	2	2024
Sensor/Client Interface Modernization	3	2023	2	2025
PLASMA-X Integration	1	2024	4	2025
Fires Command and Control	3	2023	2	2025
NAVWAR COP Demonstration	1	2024	1	2024
Multi Domain Sensor Fusion Demo	2	2025	2	2025
Integrated NAVWAR Situational Awareness Demo	3	2025	3	2025
Assured Navigation (NAV) for Future Tactical Unmanned Aerial Systems (FTUAS)	1	2023	4	2025
Develop Low Altitude SW	1	2023	1	2024
Conduct Sensor Trade Study	2	2023	2	2024
Build Prototype	2	2023	1	2025
Test Prototype	1	2025	4	2025
IVAS - AR Architecture Definition and Integration	3	2021	4	2023

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Identify Processing Approach(es)	3	2021	4	2021
Hardware/Software Architecture Definition (SysML digital model-based)	1	2022	4	2022
Partial Platform Architecture Integration (w/ Baseline User Experiences)	3	2022	4	2022
Final Platform Architecture Integration (w/ Optimized User Experiences)	1	2023	4	2023
IVAS - AR Processing Ruggedization, SWAP reduction and Platform Integration	1	2023	4	2023
AR Processing Ruggedization, SWAP reduction and Platform Integration Spiral #1	3	2021	3	2022
AR Processing Ruggedization, SWAP reduction and Platform Integration Spiral #2	3	2022	4	2023
IVAS - AR User Experience Development	3	2021	4	2023
Extensions to IVAS API/SDKs	1	2022	3	2023
Baseline ?SEE? and ?Worldview? Visualizations and Rendering	3	2021	4	2021
Optimized ?SEE? and ?Worldview? Visualizations and Rendering	1	2022	4	2022
Enhanced ?SEE? and ?Worldview? Visualizations and Rendering	1	2023	4	2023
Air/Ground Vehicle Tailored User Experience Development and Demo	3	2022	4	2023
IVAS - Line-of-Sight (LOS) Tracking and Helmet Mounted Display (HMD) Maturation	4	2021	4	2023
Initial Hybrid Optical Inertial LOS Tracker Maturation and Demo	4	2021	4	2022
Integration/Demo of Hybrid LOS Tracker w/ WFOV Aviation HMD	1	2023	4	2023
Helmet Display and Tracking System (HDTS) Integration/Demo w/ AR Architecture	4	2021	4	2022
Enhanced HDTS Integration/Demo	1	2023	3	2023
Autonomous Operations for Unmanned Aircraft Systems Sys Demo	1	2023	4	2025
UAS - Common Mission Systems Architecture Development for Autonomous Ops	1	2024	2	2024
UAS - Autonomous Operations Component Maturation	1	2023	1	2026
UAS - Autonomous Operations Performance Integration and Demonstration	1	2024	4	2024
UAS - Autonomous Operations Demonstration and User Evaluations	1	2025	4	2025
Reconfigurable Aperture Precision Targeting Radar for VADER (RADER)	1	2023	4	2025
RADER - Design and Documentation	1	2023	4	2025

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX3 / *Technology Maturation Initiatives*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
RADER - Transmitter/Receiver Chip Production Spin	1	2023	2	2024
RADER - Radar System NRE (H/W and S/W)	3	2023	3	2025
RADER - Aperture Range Testing and Demonstration	4	2024	4	2024
RADER - Platform Integration and Testing	3	2025	4	2025
RADER - System Flight Testing and Demonstration	4	2025	4	2025
Tactical Analytics Architecture (TA2)	1	2023	4	2025
Intel Support to Fires	1	2023	1	2025
AI COA Recommender	1	2023	2	2025
ARCANE Fire +	1	2023	2	2025
Firestorm	1	2023	4	2025
LEAP / LTAC	1	2023	4	2025

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX5 / *Next Generation Close Combat Missile*	

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
AX5: *Next Generation Close Combat Missile*	-	4.813	3.000	-	-	-	-	-	-	-	0.000	7.813
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This effort completes in Fiscal Year (FY) 2022

A. Mission Description and Budget Item Justification

This Project demonstrates a prototype close combat missile with a multi-pulse, boost-sustain flight propulsion system providing extended range and decreased time of flight. Activities mature proof-of-principle hardware into an integrated tactical-representative design, and demonstrate a prototype missile with lethality overmatch of emerging threats.

Work in this PE complements PE 0603462A (Next Generation Combat Vehicle Advanced Technology).

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

Work in this Project is performed by Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Next Generation Close Combat Missile	4.813	2.891	-
Description: This effort demonstrates a prototype close combat missile with a multi-pulse, boost-sustain flight propulsion system providing extended range and decreased time of flight. ***FY 2022 Plans:*** Will complete fabrication of prototype missile system using the advanced propulsion system components and conduct flight evaluation of the final missile prototype with participation with the transition partner - Program Executive Office Missiles and Space. Funding is being used to support AX3 Universal MDO Fire Control and SA Systems efforts. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Effort ends in FY 2022.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR)	-	0.109	-
FY 2022 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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX5 / *Next Generation Close Combat Missile*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
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			
Accomplishments/Planned Programs Subtotals	4.813	3.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX5 / *Next Generation Close Combat Missile*	

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
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.109		-		-		-	0.000	0.109	-
		Subtotal	-	-		0.109		-		-		-	0.000	0.109	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
Universal MDO Fire Control and SA Systems	TBD	DEVCOM-ARL : TBD	-	-		2.409		-		-		-	0.000	2.409	-
		Subtotal	-	-		2.409		-		-		-	0.000	2.409	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
Next Generation Close Combat Missile	Various	AvMC : Huntsville, AL	5.630	4.813		0.482		-		-		-	0.000	10.925	-
		Subtotal	5.630	4.813		0.482		-		-		-	0.000	10.925	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	5.630	4.813		3.000		-		-		-	0.000	13.443	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX5 / *Next Generation Close Combat Missile*

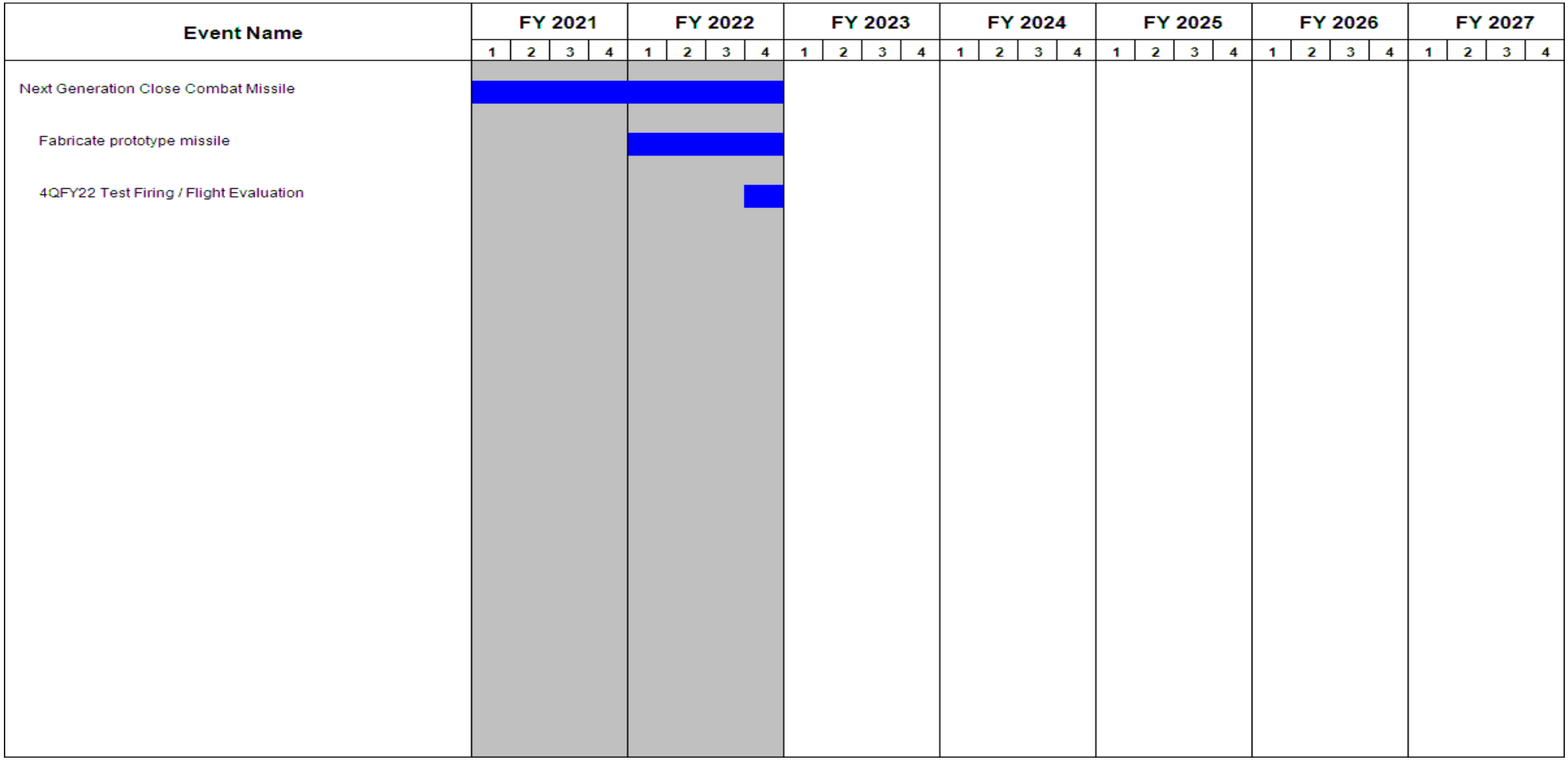

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX5 / *Next Generation Close Combat Missile*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Next Generation Close Combat Missile	1	2019	4	2022
Fabricate prototype missile	1	2022	4	2022
4QFY22 Test Firing / Flight Evaluation	4	2022	4	2022

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX6 / *Active Protection Systems Integration*	

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
AX6: *Active Protection Systems Integration*	-	3.000	-	-	-	-	-	-	-	-	0.000	3.000
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures, integrates, and demonstrates protection and survivability technologies as part of active protection systems (APS) prototyping for the Army's combat vehicles. Activities integrate complimentary survivability technologies to enable layers of enhanced protection capability, providing greater survivability against current and emerging advanced threats. This Project demonstrates a suite of technologies on a fielded combat vehicle platform using an APS common architecture, and defines component interface standards and specifications that enable adaptive APS solutions. Activities support the Army's APS strategy to maintain or reduce vehicle weight by reducing reliance on armor with other means such as sensing, warning, hostile fire detection, and active countermeasures.

Work in this Project is coordinated with PE 0603462A (Next Generation Combat Vehicle Advanced Technology) and transitions to PE 0604852A (Suite of Vehicle Protection Systems - EMD).

Funding has been realigned to reflect the FY20 financial restructure and Army Modernization Priorities.

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

Work in this Project is performed by Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Agile Layered Protection: APS Integration Advanced Technology Demonstrator	3.000	-	-
Description: Activities integrate and demonstrate mature APS technologies layered through a common architecture on an Army ground combat vehicle platform, addressing technical and integration challenges for a system designed to address both current and emerging advanced threats. Selects and integrates mature component technologies that are best suited to optimize added capability for the Active Technology Demonstrator platform. Demonstrates a suite of APS technologies and effects that optimize performance levels for survivability and protection through advanced threat detection, multiple threat defeat systems, and improved situational awareness.			
Accomplishments/Planned Programs Subtotals	3.000	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX6 / *Active Protection Systems Integration*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX6 / *Active Protection Systems Integration*

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
Engineer Integration of APS Layered Protection	C/Various	Various : Various	4.219	-		-		-		-		-	0.000	4.219	-
Validation of APS Layered Protection	Various	Various : Various	1.918	-		-		-		-		-	0.000	1.918	-
Integration of added APS Layered Protection	C/Various	Various : Various	0.959	0.600		-		-		-		-	0.000	1.559	-
Validation of added APS Layered Protection	C/Various	AFC : Warren, MI	-	2.400		-		-		-		-	0.000	2.400	-
		Subtotal	7.096	3.000		-		-		-		-	0.000	10.096	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	7.096	3.000		-		-		-		-	0.000	10.096	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX6 / *Active Protection Systems Integration*

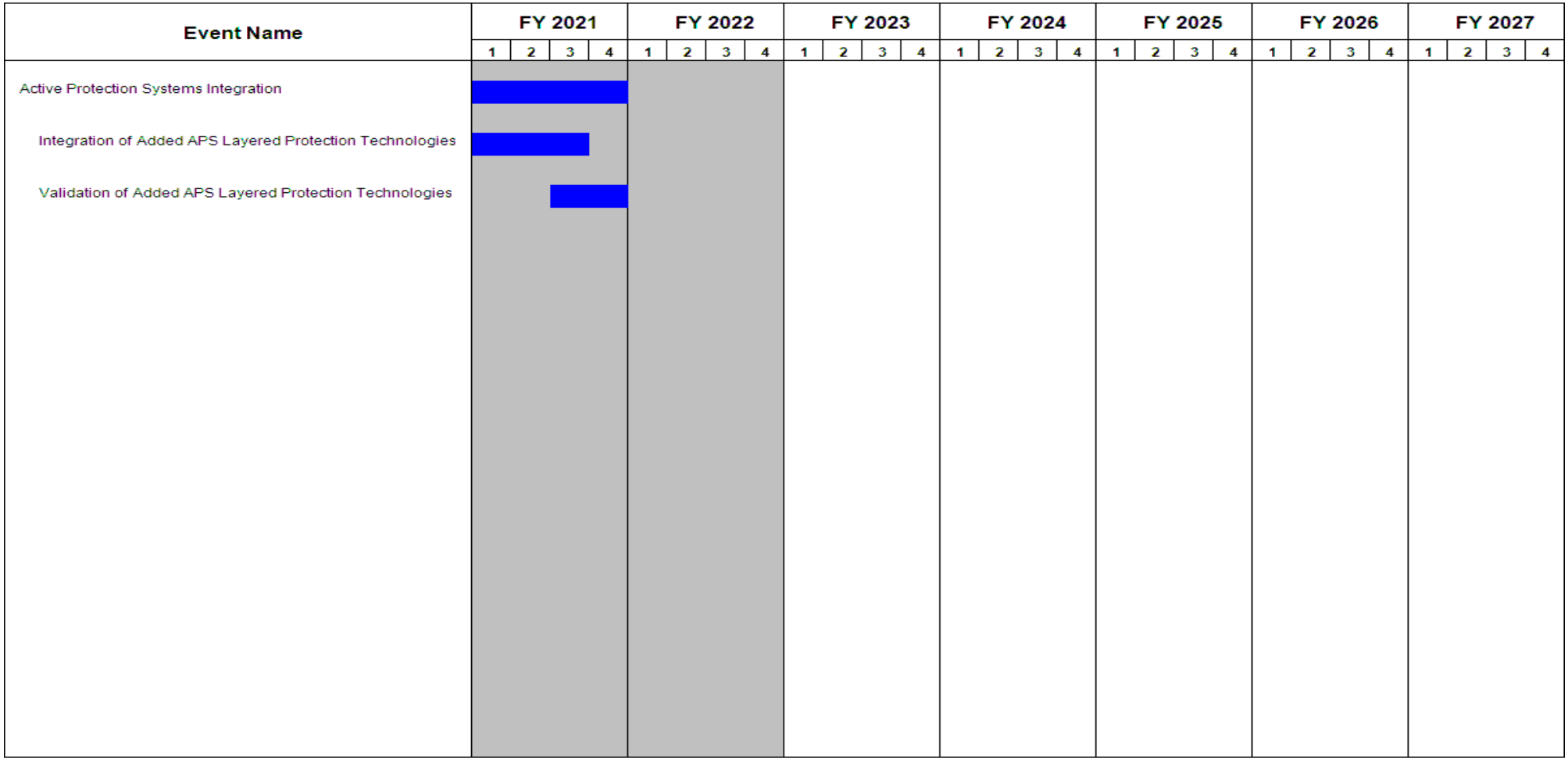

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX6 / *Active Protection Systems Integration*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Active Protection Systems Integration	1	2019	4	2021
Integration of Added APS Layered Protection Technologies	1	2021	3	2021
Validation of Added APS Layered Protection Technologies	3	2021	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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX7 / *Multi-Mission High Energy Laser (MMHEL) Sys Demo*	

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
AX7: *Multi-Mission High Energy Laser (MMHEL) Sys Demo*	-	7.844	-	-	-	-	-	-	-	-	0.000	7.844
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates an integrated a 50 kilowatt (kW)-class laser weapon system into a Stryker platform, providing a system-level, High Energy Laser (HEL) experimental prototype for demonstration in realistic operating environments. These demonstrations will inform requirements, decrease risk for future Army HEL acquisition programs, and support the future development of warfighter Tactics/Techniques/Procedures and Concept of Operations. HEL weapon systems are expected to complement conventional offensive and defensive weapons at a lower cost-per-shot than current systems and without the need to stockpile ordnance. A 50 kW-class laser weapon system has the potential to engage and defeat rockets, artillery, mortars (RAM); unmanned aerial vehicles (UAVs); sensors; and optics for maneuvering. Demonstrations will also inform potential future capability to defeat both fixed and rotary wing manned aircraft. Leveraging Government investments and Industry technology advancements, will review and select existing HEL subsystem designs for integration into a Stryker combat vehicle; will conduct integration and demonstration of a system-level HEL experimental prototype; and will provide assessment of technical performance in an operational environment. This effort informs application of laser weapons to other combat platforms and rapid prototyping to units-of-action to meet emerging threats expressed in the National Defense Strategy.

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

Work in this Project is performed by the Rapid Capabilities and Critical Technologies Office (RCCTO).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Multi-Mission High Energy Laser (MMHEL) Integration and Demonstration	7.844	-	-
Description: This effort matures, integrates, and demonstrates HEL technologies on Army Stryker vehicles to inform Maneuver-Short Range Air Defense (M-SHORAD) requirements and reduce risk for M-SHORAD. The goal is to protect maneuvering forces from RAM and Unmanned Aerial System (UAS) threats.			
Accomplishments/Planned Programs Subtotals	7.844	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX7 / *Multi-Mission High Energy Laser (MMHEL) Sys Demo*

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX7 / *Multi-Mission High Energy Laser (MMHEL) Sys Demo*

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
Multi-Mission High Energy Laser (MMHEL) Integration and Demonstration	C/Various	SMDTC : Huntsville, AL	17.882	7.844		-		-		-		-	0.000	25.726	-
		Subtotal	17.882	7.844		-		-		-		-	0.000	25.726	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	17.882	7.844		-		-		-		-	0.000	25.726	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX7 / *Multi-Mission High Energy Laser (MMHEL) Sys Demo*

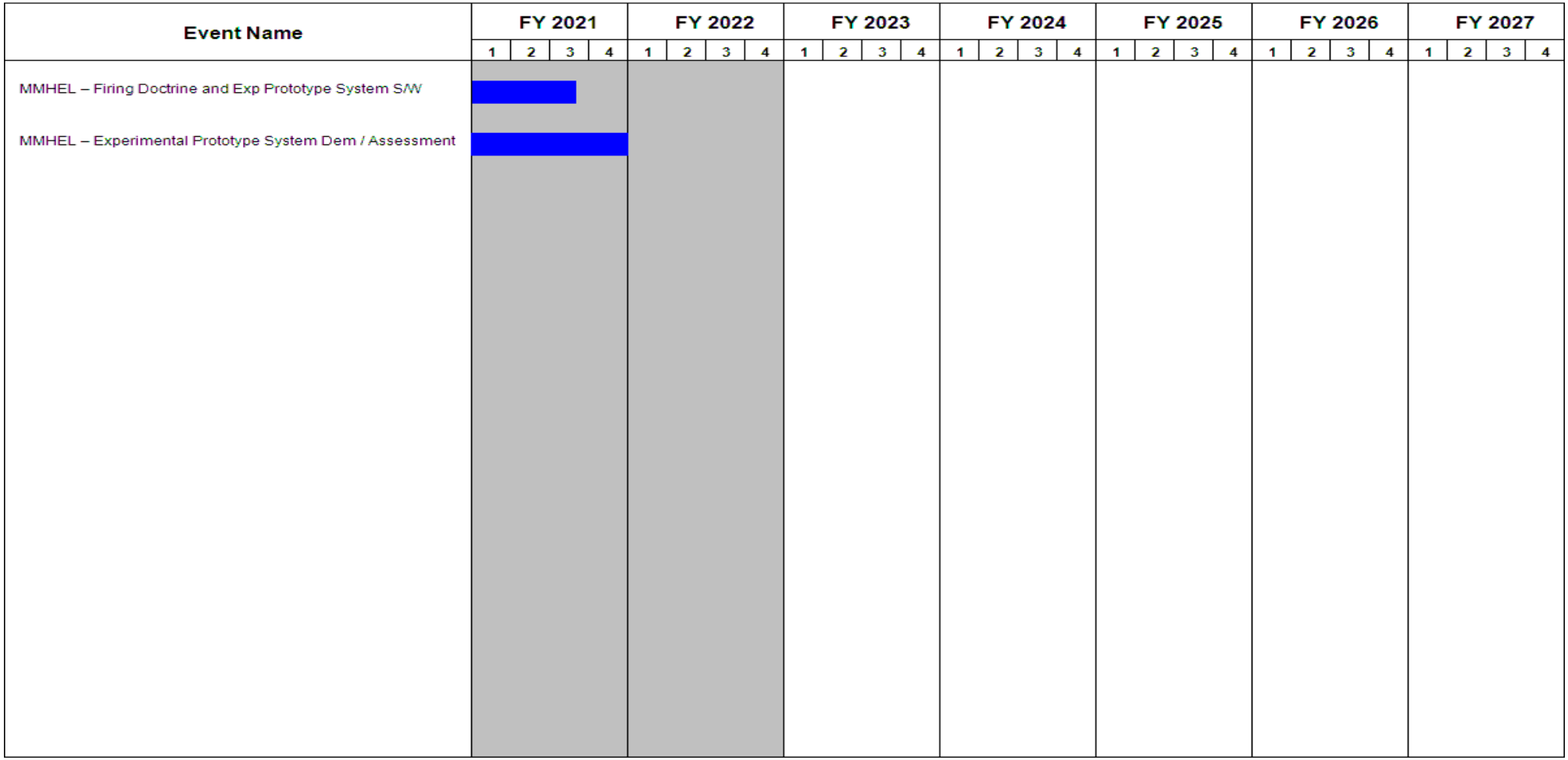

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX7 / *Multi-Mission High Energy Laser (MMHEL) Sys Demo*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MMHEL ? Firing Doctrine and Exp Prototype System S/W	1	2019	3	2021
MMHEL ? Experimental Prototype System Dem / Assessment	4	2020	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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX8 / *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)*	

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
AX8: *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)*	-	14.500	24.700	23.421	-	23.421	-	-	-	-	0.000	62.621
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under the Advanced Targeting and Lethality Automated System (ATLAS) effort, this Project matures and integrates advanced Artificial Intelligence/Machine Learning (AI/ML) algorithms to enable aided target detection/recognition capability for NGCV using next generation, multi-spectral electro-optical and infrared (EO/IR) targeting sensors. AI/ML algorithms are integrated with real-time intelligent fire control and mission planning interfaces to demonstrate automated turret capabilities, and provide overmatch via reduced target acquisition and engagement timelines.

Work in this Project is related to and fully integrated with the efforts funded in PE 0603462A (Next Generation Combat Vehicle Advanced Technology) / Project BF5 (Adv Lethality & Accuracy Sys for Med Cal Adv Tech); and Project BG1 (Sensors for Auto Oper and Survivability Adv Tech).

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

Work in this Project is performed by Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Advanced Targeting and Lethality Automated System (ATLAS)	14.500	23.799	23.421
Description: The ATLAS effort matures, integrates, and demonstrates novel algorithms and sensor enhancements for Next Generation Combat Vehicle (NGCV) manned or unmanned vehicle platforms. It integrates autonomous, wide-area search sensors and gimballed targeting sensors with real-time computer aided detection, recognition, and identification of threats for significantly decreased time to engagement. It integrates target acquisition with intelligent fire control systems to demonstrate an end-to-end engagement system on NGCV platforms, and enable experimentation and soldier touch-points for manned, unmanned, or optionally manned platforms.			
FY 2022 Plans: Will integrate on the move target ID capability into the ATLAS system and perform data collection of the prototype system. Will begin interfacing the ATLAS system to the IVAS for Ground and vehicle video/data architecture systems.			
FY 2023 Plans: Integrate and demonstrate ATLAS aided target acquisition capabilities from a ground vehicle while on-the-move in complex scenarios. Mature aided target acquisition algorithms and threat training data sets to improve target detection and recognition			

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX8 / *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
performance against real targets. Embed real-time algorithms into integrated, ruggedized processing approaches optimized for next generation digital sensors and integration on to ground combat platforms. Finalize interface control documentation updates for the sensor and aided targeting algorithm modules. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding represents planned lifecycle of effort.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) ***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	-	0.901	-
Accomplishments/Planned Programs Subtotals	14.500	24.700	23.421

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX8 / *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)*	

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
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.901		-		-		-	0.000	0.901	-
		Subtotal	-	-		0.901		-		-		-	0.000	0.901	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
ALAS-MC: Procure Ammo Rounds H/W	C/Various	ARDEC : Picatinny, NJ	3.524	-		-		-		-		-	0.000	3.524	-
ALAS-MC: Control Unit	C/Various	ARDEC : Picatinny, NJ	0.286	-		-		-		-		-	0.000	0.286	-
ALAS-MC: Test Hardware	TBD	ARDEC : Picatinny, NJ	0.191	-		-		-		-		-	0.000	0.191	-
ATLAS: System Design	TBD	CERDEC : Fort Belvoir, VA	4.762	4.900		-		-		-		-	0.000	9.662	-
ATLAS: Artificial Intelligence/Machine Learning Development	TBD	CERDEC : Fort Belvoir, VA	6.191	-		23.799		-		-		-	0.000	29.990	-
ATLAS: Data Collection and Synthetic Data	TBD	CERDEC : Fort Belvoir, VA	7.682	-		-		-		-		-	0.000	7.682	-
ATLAS: Vehicle Integration and Test	TBD	C5ISR Ft. Belvoir : TBD	1.333	1.600		-		1.355		-		1.355	0.000	4.288	-
ATLAS: System Design	TBD	C5ISR Ft. Belvoir VA : TBD	-	-		-		5.853		-		5.853	0.000	5.853	-
ATLAS: Artificial Intelligence/Machine Learning Development	TBD	C5ISR Ft. Belvoir VA : TBD	-	4.400		-		7.463		-		7.463	0.000	11.863	-
ATLAS: Data Collection and Labeling	TBD	C5ISR Ft. Belvoir VA : TBD	-	1.100		-		2.455		-		2.455	0.000	3.555	-
ATLAS: Synthetic Imagery Development and Perception Studies	TBD	C5ISR Ft. Belvoir VA : TBD	-	0.600		-		1.465		-		1.465	0.000	2.065	-

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX8 / *Adv Leth and Accuracy Sys for Med Caliber (ALAS-MC)*	

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
ATLAS: Processor Integration and Test	TBD	C5ISR Ft. Belvoir VA : TBD	-	1.900		-		4.830		-		4.830	0.000	6.730	-
		Subtotal	23.969	14.500		23.799		23.421		-		23.421	0.000	85.689	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
ALAS-MC	TBD	ARDEC : Picatinny, NJ	0.762	-		-		-		-		-	0.000	0.762	-
		Subtotal	0.762	-		-		-		-		-	0.000	0.762	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	24.731	14.500		24.700		23.421		-		23.421	0.000	87.352	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX8 / *Adv Leth and Accuracy Sys for Med Caliber (ALAS-MC)*

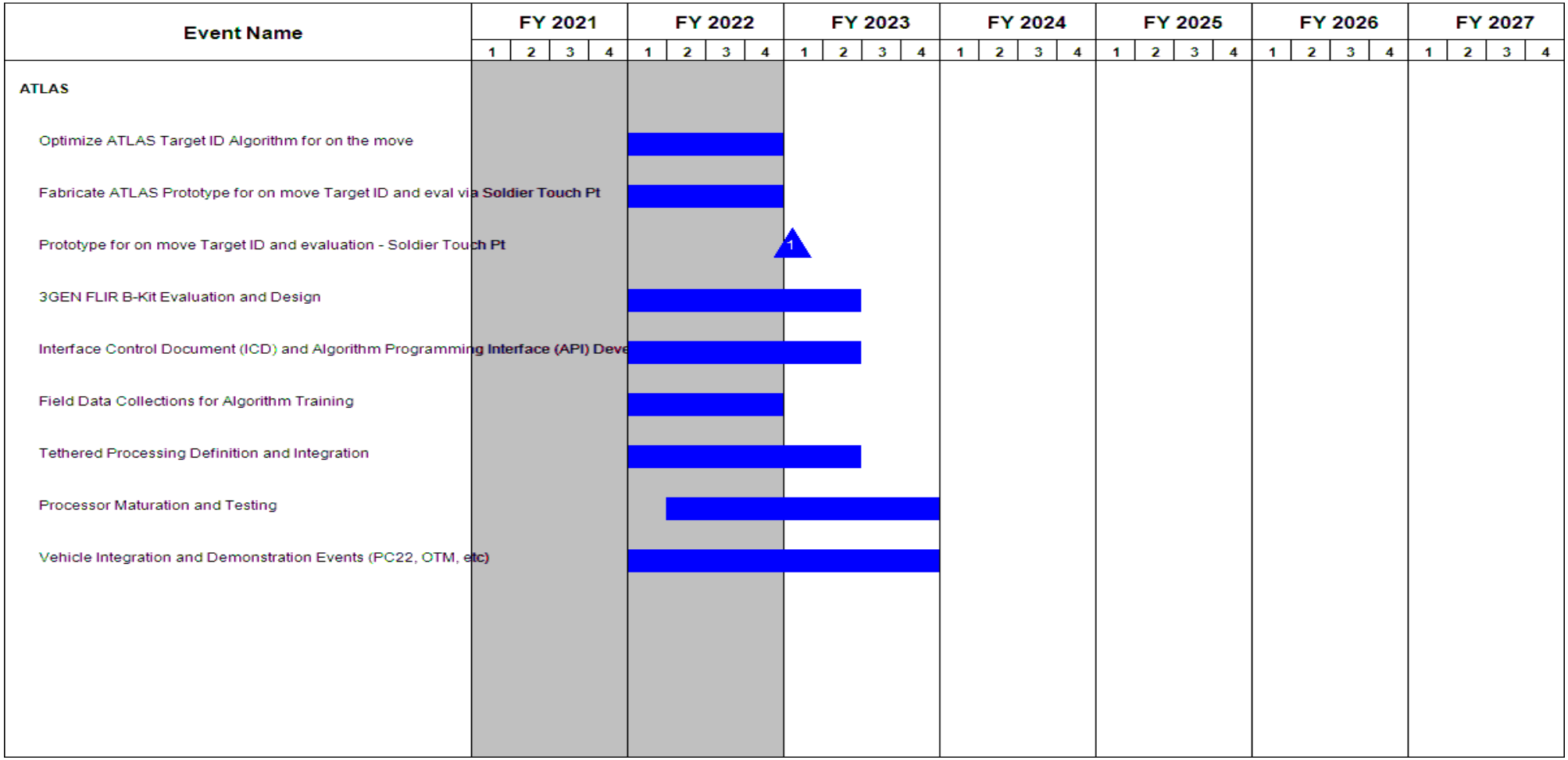

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX8 / *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ATLAS	1	2020	4	2022
System Design	1	2020	4	2020
Optimize ATLAS Target ID Algorithm for on the move	1	2022	4	2022
Fabricate ATLAS Prototype for on move Target ID and eval via Soldier Touch Pt	1	2022	4	2022
Prototype for on move Target ID and evaluation - Soldier Touch Pt	1	2023	1	2023
3GEN FLIR B-Kit Evaluation and Design	1	2022	2	2023
Interface Control Document (ICD) and Algorithm Programming Interface (API) Devel	1	2022	2	2023
Field Data Collections for Algorithm Training	1	2022	4	2022
Tethered Processing Definition and Integration	1	2022	2	2023
Processor Maturation and Testing	2	2022	4	2023
Vehicle Integration and Demonstration Events (PC22, OTM, etc)	1	2022	4	2023

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX9 / *Adv Mobility Experimental Prototype Adv Tech*	

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
AX9: *Adv Mobility Experimental Prototype Adv Tech*	-	15.209	12.500	15.234	-	15.234	-	-	-	-	0.000	42.943
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project integrates and demonstrates advanced powertrain, power generation, and running gear technologies into a prototype ground combat vehicle. Advanced Mobility Experimental Prototype (AMEP) activities will demonstrate increased mobility, increased maneuver speeds, reduced fuel demands, and onboard power generation available for advanced lethality and protection technologies. The experimental prototype will be evaluated in realistic operating environment to validate performance and capability enhancements to inform ground combat vehicle programs of record.

This work is coordinated with PE 0603462A (Next Generation Combat Vehicle Advanced Technology) / BG4 (Adv Mobility Experimental Prototype Adv Tech Demo).

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

Work in this Project is performed by Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Advanced Mobility Experimental Prototype	15.209	12.044	15.234
Description: Efforts integrate advanced powertrain and onboard electrical power generation into a ground combat vehicle to demonstrate reduced percentage of no-go terrain, increased acceleration and maneuver speeds across all traversable terrain, increased electrical payload capabilities and, reduced fuel consumption. These technologies improve operational capabilities by extending time between resupply, improving operational range and tactical maneuver options and, increase onboard electrical power generation for electrical subsystems and payloads. This effort provides advanced powertrain technology mitigating performance and maneuver limitations imposed by legacy powertrains, providing drive-by-wire engine, transmission, generator and thermal management systems enabling multi-domain operational maneuver capabilities for current and future ground combat vehicles. Effort will integrate, mature, and demonstrate an automated main gun and ammunition handling system to reduce time to engage, increase speed of battle, and increase platform lethality.			
FY 2022 Plans: Will test the 1000hp AMEP powertrain and enhancements of the turret system. Will install AMEP powertrain on a Bradley Fighting Vehicle and perform extended Soldier trials/evaluations (1,000+hrs of driving) to evaluate performance, endurance, and			

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX9 / *Adv Mobility Experimental Prototype Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
compliance to environmental requirements (temperature range, dust/dirt, vibration, etc). Will prototype and evaluate the enhanced turret system with advanced munition loading capability and improved crew performance. ***FY 2023 Plans:*** Develop, mature and integrate control systems, air induction and filtration, exhaust system, cooling, final drives, and controls into the AMEP experimental prototype. Integrate higher-capacity Advanced Combat Engine and Advanced Combat Transmission into a medium weight-class combat vehicle for performance demonstration. Integrate breech automation, autoloader magazine, and transfer mechanism with fire control. Mature and optimize both hardware and software. Integrate and demonstrate advances in ammunition handling systems and armament automation to evaluate system performance for transition of materiel solutions to Abrams upgrade, next generation main battle tank, and robotic combat vehicle programs of record. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Normal progression of the effort. Funding supports testing and evaluation of the prototype system.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) ***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	-	0.456	-
Accomplishments/Planned Programs Subtotals	15.209	12.500	15.234

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AX9 / *Adv Mobility Experimental Prototype Adv Tech*	

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
SBIR/STTR Transfer	TBD	Various : Various	-	-		0.456		-		-		-	0.000	0.456	-
		Subtotal	-	-		0.456		-		-		-	0.000	0.456	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
Design and Integration of Components	C/Various	GVSC : Warren, MI	0.909	6.100		4.818		-		-		-	5.000	16.827	-
Develop air handling, cooling system, final drives & controls	C/Various	GVSC : Warren, MI	2.909	-		-		-		-		-	0.000	2.909	-
Fabricate Powertrain Technologies	C/Various	GVSC : Warren, MI	3.409	-		-		1.134		-		1.134	0.000	4.543	-
Fabricate Advanced Running Gear	C/Various	GVSC : Warren, MI	2.409	-		-		-		-		-	0.000	2.409	-
Design Integration for Surrogate Platform	C/Various	GVSC : Warren, MI	0.432	-		-		-		-		-	0.000	0.432	-
Component Fabrication	TBD	GVSC : Warren, MI	-	6.729		-		-		-		-	7.700	14.429	-
Capability Demonstration	TBD	GVSC : Warren, MI	-	2.380		-		3.600		-		3.600	5.000	10.980	-
Turret Enhancements	TBD	GVSC : Warren, MI	-	-		7.226		10.500		-		10.500	0.000	17.726	-
		Subtotal	10.068	15.209		12.044		15.234		-		15.234	17.700	70.255	N/A

	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	10.068	15.209		12.500		15.234		-		15.234	17.700	70.711	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX9 / *Adv Mobility Experimental Prototype Adv Tech*

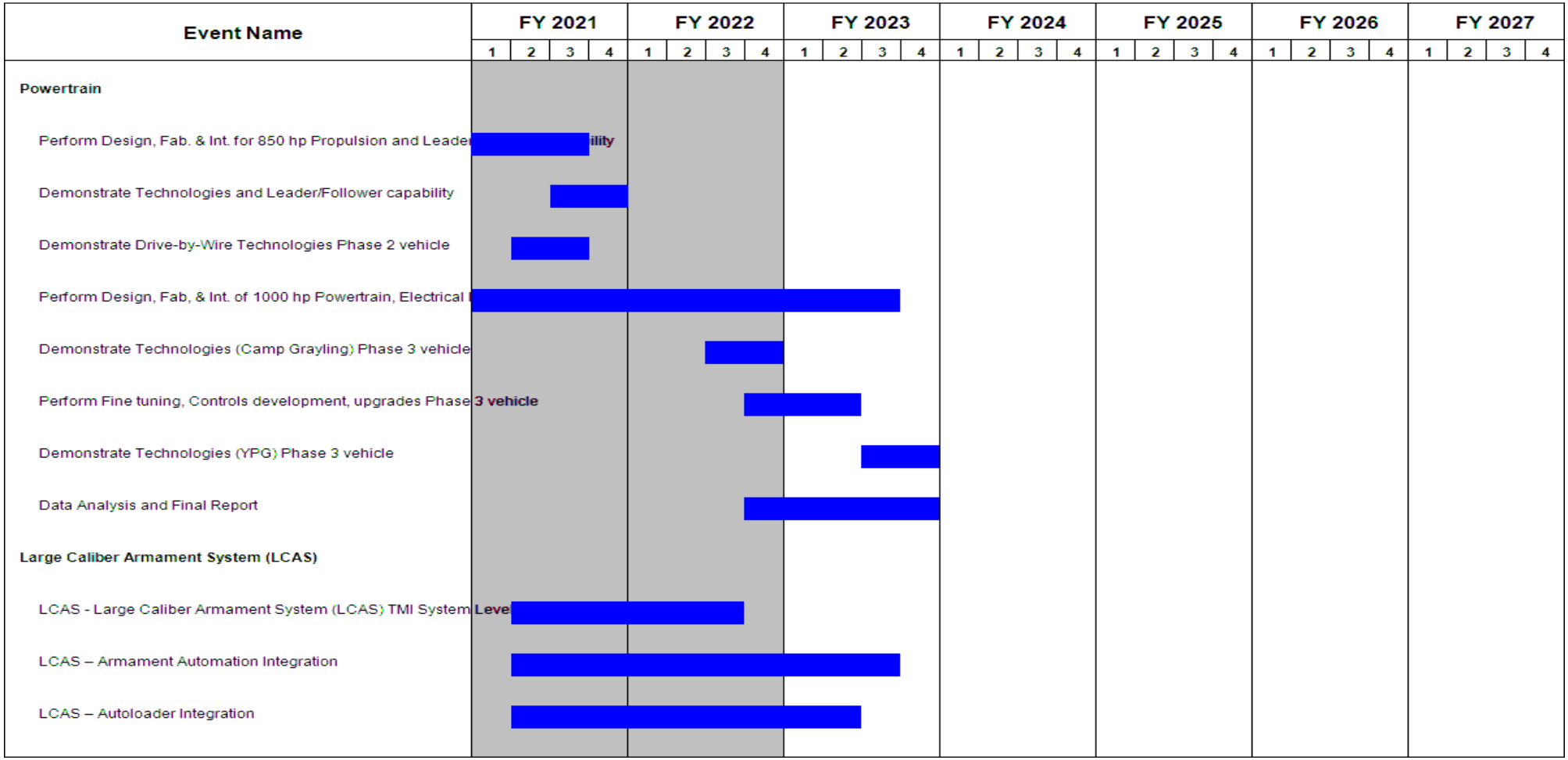

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX9 / *Adv Mobility Experimental Prototype Adv Tech*

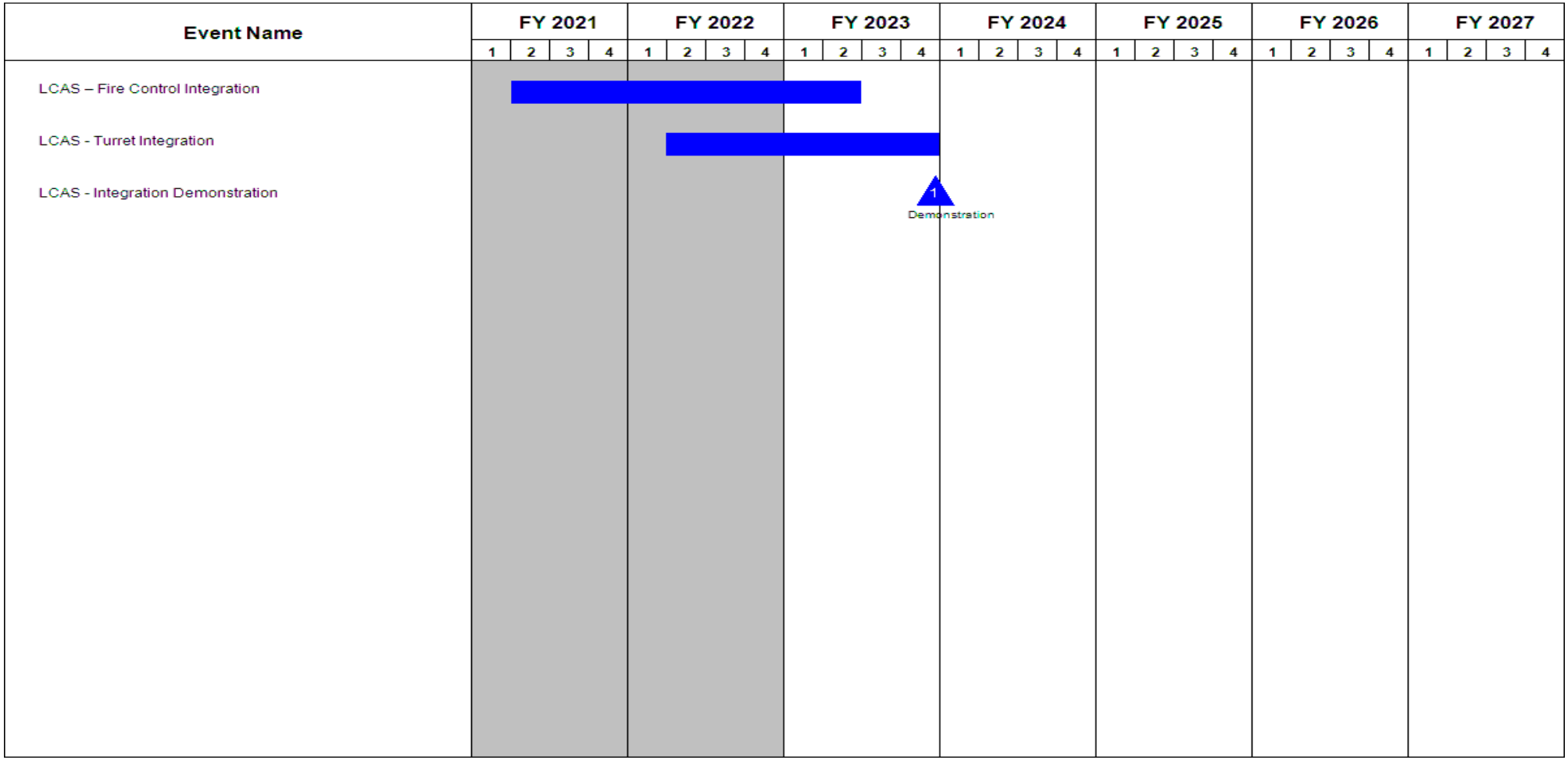

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AX9 / *Adv Mobility Experimental Prototype Adv Tech*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Powertrain	1	2020	4	2023
Perform Design, Fab. & Int. for 850 hp Propulsion and Leader/Follower Capability	2	2020	3	2021
Demonstrate Technologies and Leader/Follower capability	3	2021	4	2021
Demonstrate Drive-by-Wire Technologies Phase 2 vehicle	2	2021	3	2021
Perform Design, Fab, & Int. of 1000 hp Powertrain, Electrical Power Phase 3	1	2021	3	2023
Demonstrate Technologies (Camp Grayling) Phase 3 vehicle	3	2022	4	2022
Perform Fine tuning, Controls development, upgrades Phase 3 vehicle	4	2022	2	2023
Demonstrate Technologies (YPG) Phase 3 vehicle	3	2023	4	2023
Data Analysis and Final Report	4	2022	4	2023
Large Caliber Armament System (LCAS)	1	2023	4	2023
LCAS - Large Caliber Armament System (LCAS) TMI System Level Design	2	2021	3	2022
LCAS ? Armament Automation Integration	2	2021	3	2023
LCAS ? Autoloader Integration	2	2021	2	2023
LCAS ? Fire Control Integration	2	2021	2	2023
LCAS - Turret Integration	2	2022	4	2023
LCAS - Integration Demonstration	4	2023	4	2023

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AY2 / *Army Operational Fires*	

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
AY2: *Army Operational Fires*	-	17.336	37.832	11.051	-	11.051	-	-	-	-	0.000	66.219
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and demonstrates a ground-launched, treaty-compliant weapon system capable of destroying critical relocatable, time critical targets in contested Anti-Access/Area Denial (A2/AD) environments. Activities include system-level prototyping to extend the range of Army fires well beyond 499km to complement other fires developments.

Work in this Project complements PE 0604182A (Hypersonics).

Army senior leadership approves Technology Maturation Initiative projects prior to budget year programming based on priority and opportunity, ensuring that demonstrations have a high potential for filling capability gaps and transitioning.

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

Work in this Project is performed by the Rapid Capabilities and Critical Technologies Office (RCCTO).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Army Operational Fires	17.336	36.451	11.051
Description: This Project matures and demonstrates a ground-launched, treaty-compliant weapon system capable of destroying critical relocatable, time critical targets in contested Anti-Access/Area Denial (A2/AD) environments. Activities include system-level prototyping to extend the range of Army fires well beyond 499km to complement other fires developments.			
FY 2022 Plans: Mature Hypersonic Missile All-Up-Round (AUR) Hardware-in-the-Loop (HWIL) technology improvements. Integrate AUR hardware with launch platform simulation, simulators, and actual equipment. Demonstrate and update Rapid Trajectory Generator (RTG) fire control software for the hypersonic weapon system. Mature AUR missile booster stack for increased missile performance through weight reduction. Achieve Short Hot Launch (SHOTL) test objectives through conduct of a series of canister egress missile and solid rocket booster tests. Continue maturation of ruggedized All Up Round (AUR) Electronic Ground Support Equipment (EGSE).			
FY 2023 Plans: Complete and transition ruggedized All Up Round (AUR) Electronic Ground Support Equipment (EGSE). Implement updates and demonstrate Command and Control (C2) algorithms for the Rapid Trajectory Generation (RTG). Transition and field improved			

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AY2 / *Army Operational Fires*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
capability concurrent with the fielding of LRHW in FY23. Demonstrate Performance Improvements through Modeling and Simulation. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Decrease in funding is due to the completion of SHOTL test development, SHOTL test series and Missile Booster Thermal Protection Manufacturing Tech Maturation.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) ***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	-	1.381	-
Accomplishments/Planned Programs Subtotals	17.336	37.832	11.051

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AY2 / *Army Operational Fires*	

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
SBIR/STTR Transfer	TBD	Various : Various	-	-		1.381		-		-		-	0.000	1.381	-
		Subtotal	-	-		1.381		-		-		-	0.000	1.381	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
Army Operational Fires	C/CPIF	Lockheed-Martin - Denver : Denver	18.122	17.336		36.451		11.051		-		11.051	52.700	135.660	-
		Subtotal	18.122	17.336		36.451		11.051		-		11.051	52.700	135.660	N/A

	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	18.122	17.336		37.832		11.051		-		11.051	52.700	137.041	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AY2 / *Army Operational Fires*

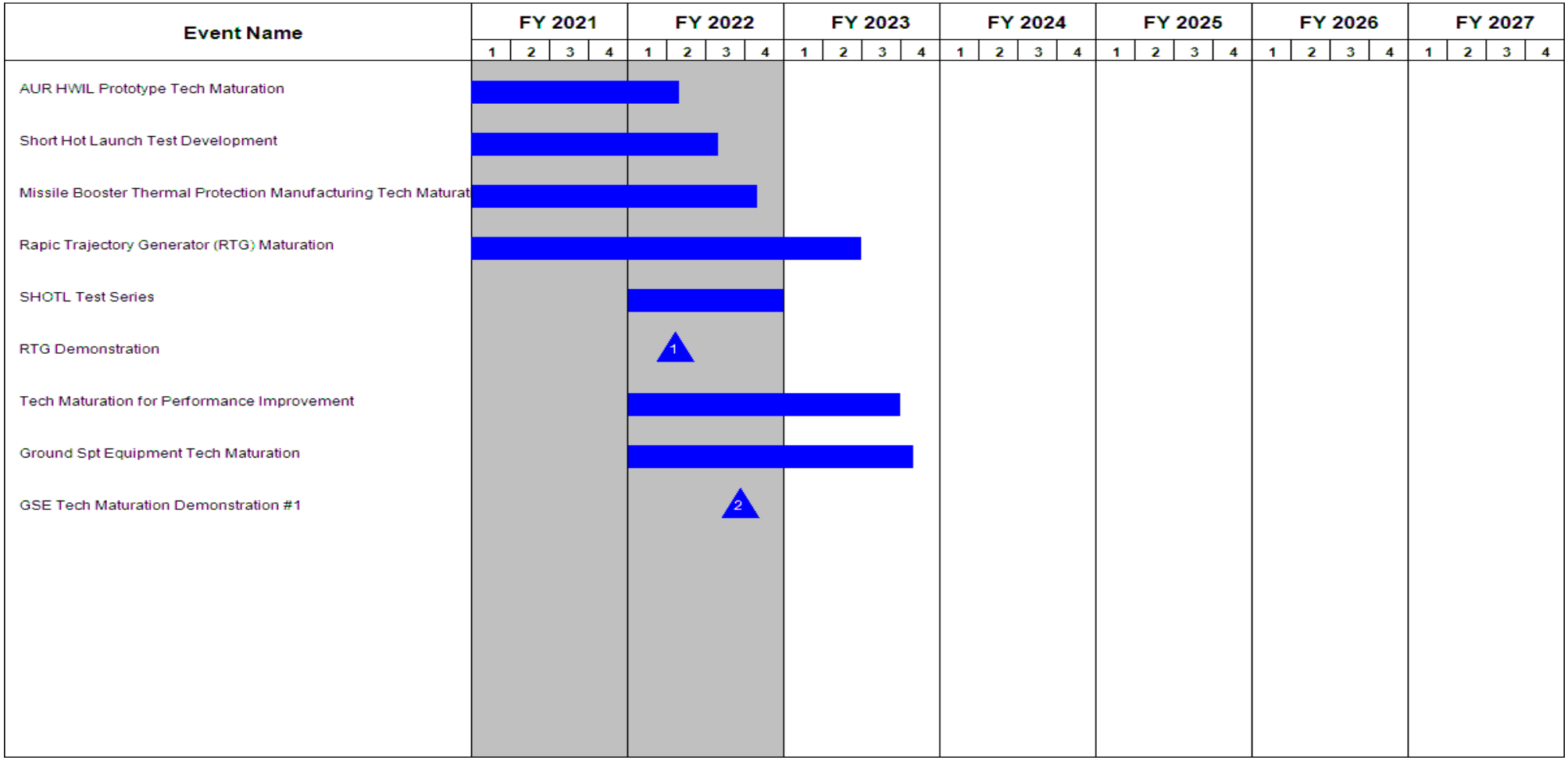

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AY2 / *Army Operational Fires*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AUR HWIL Prototype Tech Maturation	3	2020	2	2022
Short Hot Launch Test Development	4	2020	3	2022
Missile Booster Thermal Protection Manufacturing Tech Maturation	1	2021	4	2022
Rapic Trajectory Generator (RTG) Maturation	4	2020	2	2023
SHOTL Test Series	1	2022	4	2022
RTG Demonstration	2	2022	2	2022
Tech Maturation for Performance Improvement	1	2022	3	2023
Ground Spt Equipment Tech Maturation	1	2022	4	2023
GSE Tech Maturation Demonstration #1	3	2022	3	2022

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AY3 / *Strategic Long Range Cannon*	

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
AY3: *Strategic Long Range Cannon*	-	62.769	-	-	-	-	-	-	-	-	0.000	62.769
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project matures and integrates long-range armament technologies for both weapons and munitions to demonstrate potential deep strike objective capabilities from future cannon artillery systems. It will demonstrate revolutionary performance to support Long Range Fires by further developing, integrating, and demonstrating enhanced lethality and range extension solutions for cannon system performance with maximum effects. Strategic Long Range Cannon (SLRC) activities include integrating component technologies into sub-system and system-level experimental prototypes for novel cannon, munition, and fire control, including guidance and propulsion.

Extended Range Cannon Artillery (ERCA) activities mature, integrate, and demonstrate a novel sub-system for ammunition handling and a long-range artillery projectile to support prototyping and experimentation of a next-generation, extended range armaments system that will provide significantly increased range and accuracy without an increase in platform weight.
The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by Army Research, Development, Test and Evaluation (RDT&E) Enterprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Strategic Long Range Cannon ***Description:*** This effort will integrate and prototype subsystem technologies to further enhance range, lethality, and precision enablers for extended range cannon and munition systems.	62.769	-	-
Accomplishments/Planned Programs Subtotals	62.769	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) AY3 / *Strategic Long Range Cannon*	

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
Strategic Long Range Cannon	C/Various	ARDEC : Picatinny, NJ	61.806	62.769		-		-		-		-	0.000	124.575	-
Extended Range Cannon Artillery (ERCA) Autoloader	C/Various	ARDEC : Picatinny, NJ	10.946	-		-		-		-		-	0.000	10.946	-
Extended Range Cannon Artillery (ERCA) Projectile	C/Various	ARDEC : Picatinny, NJ	3.946	-		-		-		-		-	0.000	3.946	-
		Subtotal	76.698	62.769		-		-		-		-	0.000	139.467	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	76.698	62.769		-		-		-		-	0.000	139.467	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AY3 / *Strategic Long Range Cannon*

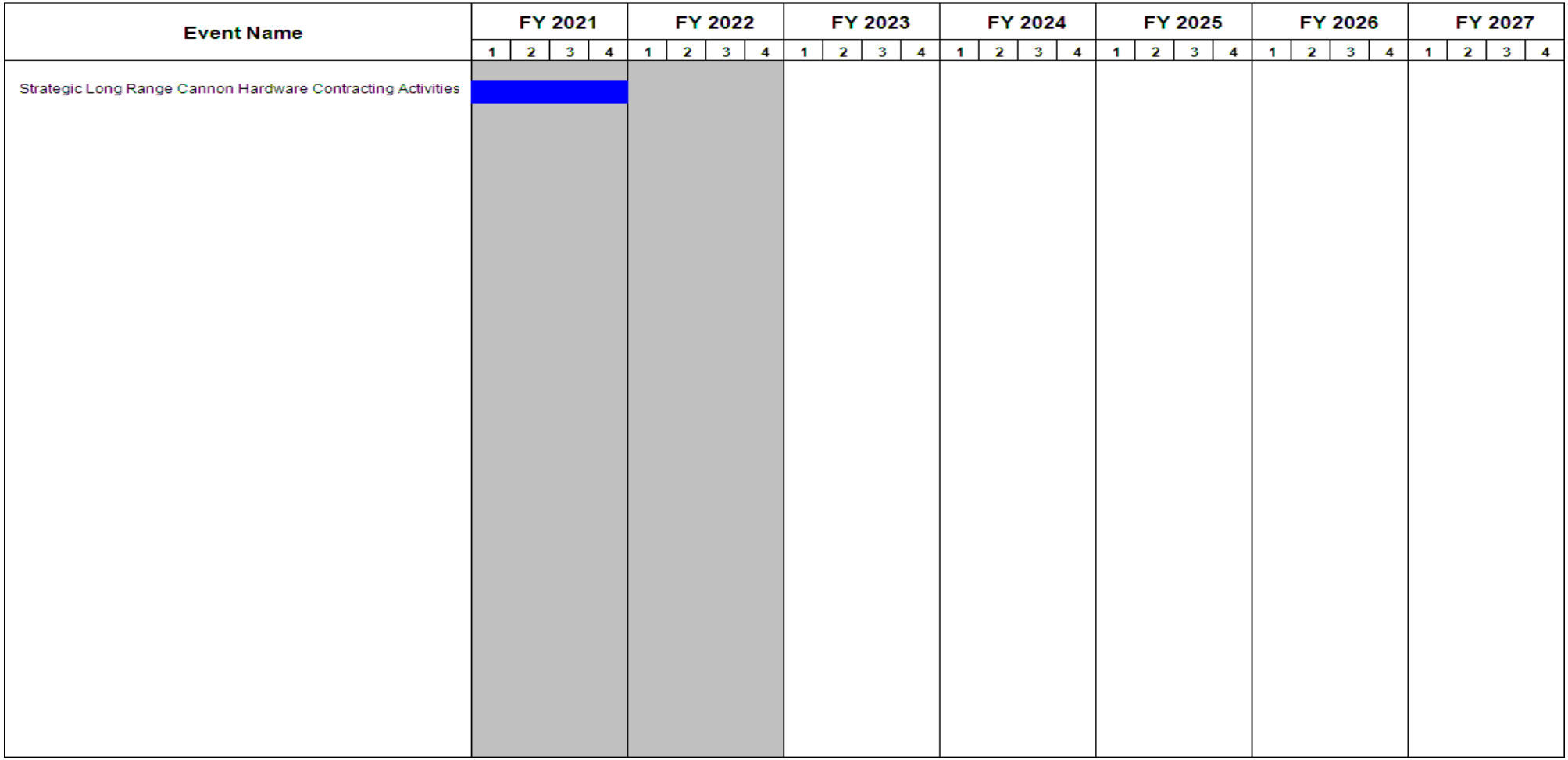

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** AY3 / *Strategic Long Range Cannon*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Strategic Long Range Cannon Hardware Contracting Activities	2	2020	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 0604115A / *Technology Maturation Initiatives*	Project (Number/Name) CE4 / *Emerging Technology Initiatives 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
CE4: *Emerging Technology Initiatives Development*	-	-	42.420	-	-	-	-	-	-	-	0.000	42.420
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This effort completes in Fiscal Year (FY) 2022

A. Mission Description and Budget Item Justification

Emerging Technology Initiative Development projects address out-of-cycle advanced technologies that have emerged from DoD labs and centers, industry partners, Program Executive Offices, and non-traditional vendors that potentially address existing Programs of Record requirements and require funding to expedite their transition for operational use. Funding will rapidly and efficiently prototype and demonstrate emerging technologies such as machine learning, human machine teaming, directed energy, hypersonics, advanced weapon systems, detection systems, and energy generation and storage.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Emerging Technology Initiatives Development	-	33.646	-
Description: Emerging technologies from the DoD enterprise or non-traditional vendors that require funding to expedite their transition to Programs of Record (PoRs) that are directed by the Army Technology Maturation Board could include machine learning, human machine teaming, directed energy, hypersonics, advanced weapon systems, detection systems, and energy generation and storage. Effort will evaluate and confirm component and subsystem maturation for integration in major systems to provide a strategic effect that addresses near-term and mid-term threats ***FY 2022 Plans:*** Funds will support 3-Star Technology Maturation Board approved Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms, and Anubis Software Defined Chipset for M-Code and Advanced PNT Applications efforts within PE0604115A / AX3. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding is being realigned to PE0604115A / AX3 Technology Maturation Initiatives efforts.			
Title: Rapid Capabilities and Critical Technology Office (RCCTO) Innovation Funding	-	7.226	-
Description: Projects approved by the Army Rapid Capabilities and Critical Technology Office (RCCTO) Army Senior Leadership Board of Directors that address Army needs by integrating nontraditional innovators with the Army's research and development ecosystem and accelerating transition to rapid fielding of their technology. Innovative Funding will fund technical scouting,			

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** CE4 / *Emerging Technology Initiatives Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
concept incubation, staged pilot evaluations, and prototype development in Army-wide disciplines through rigorous technical assessment, Soldier feedback, and mentorship. Technology focus areas include machine learning, artificial intelligence, human-machine teaming, directed energy, hypersonics, advanced weapon systems, detection systems, weapon systems cyber resiliency, advanced offensive and defensive cyber, multi-domain command and control, edge processing technologies, electronic warfare, sensor to shooter capabilities, autonomy & robotics, unmanned aerial and terrestrial sensors, resilient and open standard communications, advanced network operation tools, counter unmanned aerial systems, quantum computing, quantum sensing, advanced manned/unmanned aerial systems, and energy generation and storage. These efforts will provide strategic effects that address near-term and mid-term threats. ***FY 2022 Plans:*** Will conduct RCCTO sponsored Innovation Outreach Days and prize competitions with academia, small/non-traditional companies and the Defense Industrial Base seeking to apply their technology to prescribed Army capability gaps; execute pilot evaluations and/or prototype development for selected technology concepts. ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding is being realigned to PE0604115A / AX3 Technology Maturation Initiatives efforts.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) ***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	-	1.548	-
Accomplishments/Planned Programs Subtotals	-	42.420	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Based on projects selected and approved, efforts leverage a variety of contract vehicles, including Other Transaction Authority Agreements to complete the projects.

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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** CE4 / *Emerging Technology Initiatives 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
SBIR/STTR Transfer	TBD	Various : Various	-	-		1.548		-		-		-	0.000	1.548	-
		Subtotal	-	-		1.548		-		-		-	0.000	1.548	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
RCCTO Innovation Funding	TBD	Various Activities : Various Locations	-	-		7.226		-		-		-	0.000	7.226	-
Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms	C/Various	Various : Various	-	-		23.047		-		-		-	0.000	23.047	-
Universal MDO Fire Control and SA Systems	C/Various	Various : Various	-	-		10.599		-		-		-	0.000	10.599	-
		Subtotal	-	-		40.872		-		-		-	0.000	40.872	N/A

	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	-	-		42.420		-		-		-	0.000	42.420	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 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** CE4 / *Emerging Technology Initiatives Development*

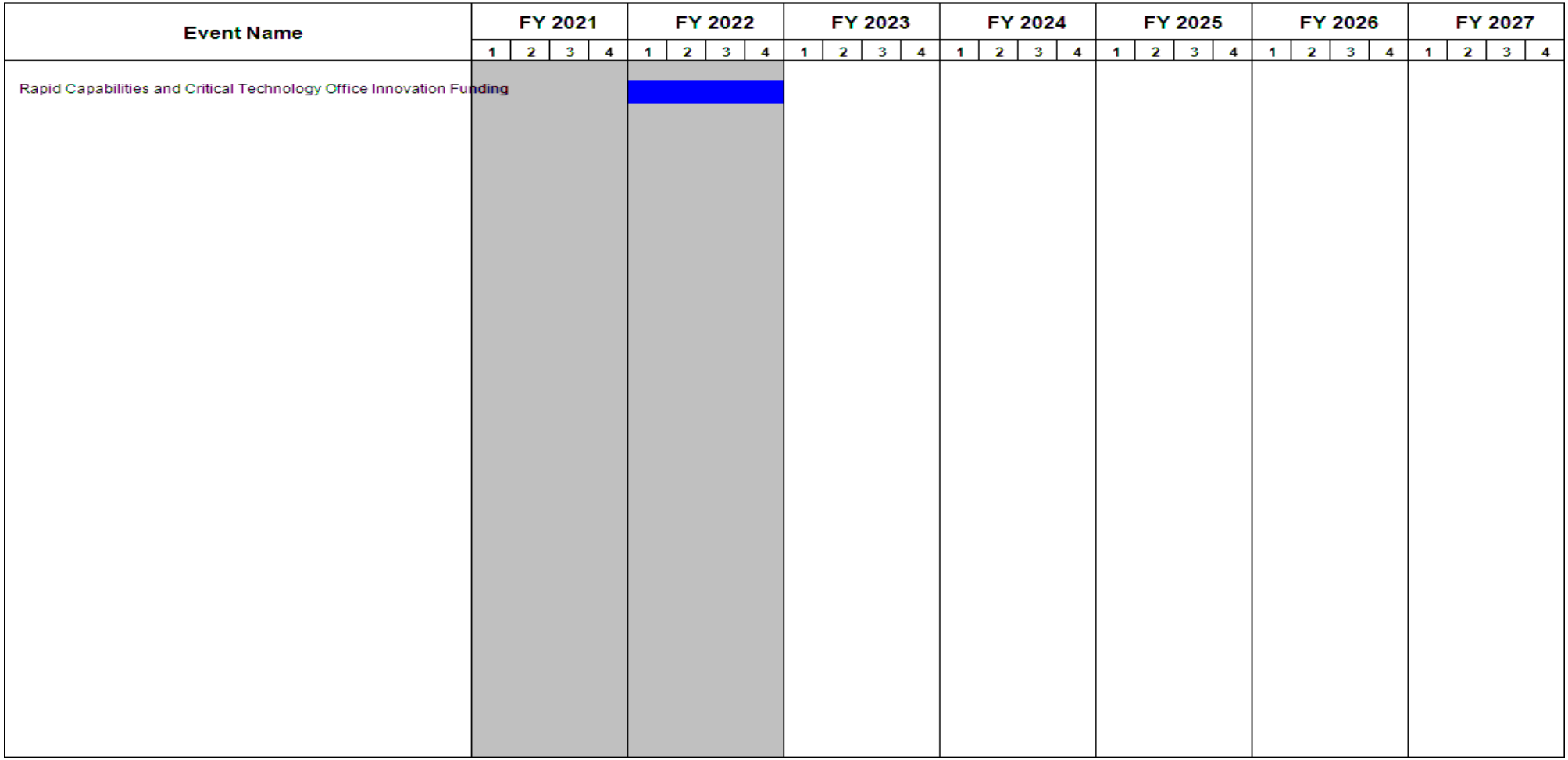

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Army		Date: April 2022
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 0604115A / *Technology Maturation Initiatives*	**Project (Number/Name)** CE4 / *Emerging Technology Initiatives Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Rapid Capabilities and Critical Technology Office Innovation Funding	1	2022	4	2022