| Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army | | | | | | | | | | | Date: March 2023 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Appropriation/Budget Activity<br>2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)* | | | | | R-1 Program Element (Number/Name)<br>PE 0604115A *I Technology Maturation Initiatives* | | | | | | | |
| **COST ($ in Millions)** | **Prior Years** | **FY 2022** | **FY 2023** | **FY 2024 Base** | **FY 2024 OCO** | **FY 2024 Total** | **FY 2025** | **FY 2026** | **FY 2027** | **FY 2028** | **Cost To Complete** | **Total Cost** |
| Total Program Element | - | 127.725 | 219.742 | 281.314 | - | 281.314 | 256.495 | 256.806 | 259.545 | 262.374 | 0.000 | 1,664.001 |
| AX3: *Technology Maturation Initiatives* | - | 47.723 | 170.050 | 281.314 | - | 281.314 | 256.495 | 256.806 | 259.545 | 262.374 | 0.000 | 1,534.307 |
| AX5: *Next Generation Close Combat Missile* | - | 0.482 | - | - | - | - | - | - | - | - | 0.000 | 0.482 |
| AX8: *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)* | - | 23.799 | 23.407 | - | - | - | - | - | - | - | 0.000 | 47.206 |
| AX9: *Adv Mobility Experimental Prototype Adv Tech* | - | 12.044 | 15.234 | - | - | - | - | - | - | - | 0.000 | 27.278 |
| AY2: *Army Operational Fires* | - | 36.451 | 11.051 | - | - | - | - | - | - | - | 0.000 | 47.502 |
| CE4: *Emerging Technology Initiatives Development* | - | 7.226 | - | - | - | - | - | - | - | - | 0.000 | 7.226 |

**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.

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 comprised 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.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army | Date: March 2023 |
|---|---|
| **Appropriation/Budget Activity**<br>2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)* | **R-1 Program Element (Number/Name)**<br>PE 0604115A *I Technology Maturation Initiatives* |

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 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 132.561 | 269.756 | 255.077 | - | 255.077 |
| Current President's Budget | 127.725 | 219.742 | 281.314 | - | 281.314 |
| Total Adjustments | -4.836 | -50.014 | 26.237 | - | 26.237 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | -50.000 | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | -4.836 | - | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Adjustments to Budget Years | - | - | 26.237 | - | 26.237 |
| • FFRDC Transfer | - | -0.014 | - | - | - |

**Change Summary Explanation**

Increase in FY24 funding from PB23 to PB24 in Technology Maturation Initiatives to support new efforts approved by the Technology Maturation Board.

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX3 / *Technology Maturation Initiatives* | |

| COST ($ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AX3: *Technology Maturation Initiatives* | - | 47.723 | 170.050 | 281.314 | - | 281.314 | 256.495 | 256.806 | 259.545 | 262.374 | 0.000 | 1,534.307 |
| 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 (PoR) supporting 3 categories of projects: (1) Super system 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 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***Title:*** Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms | 26.044 | 14.770 | 7.851 |
| ***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 | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| sensors, driver, commander, and targeting sensors, blue/red force tracking data, communications, mission data, and vehicle data. The system will interface to the Advanced Targeting and Lethality Aided System (ground system) and other architecture systems.<br><br>***FY 2023 Plans:***<br>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<br><br>***FY 2024 Plans:***<br>Evaluate system readiness for operational testing and fielding for legacy air and ground platforms and soldier end users. Finalize and deliver B-kit advanced processing components, artificial reality software applications for user experiences, supporting Interface Control Documents, and A-kit and B-kit baseline architecture to transition partners. Demonstrate IVAS platform integration, computing, and control features, and enhanced crew situational awareness, pilotage, targeting, and mission features for soldiers wearing the IVAS and helmet mounted displays.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Decrease in funding in FY 2024 represents finalization of required integration to complete transition of technology and architecture to a Program of Record and includes multiple user evaluations and touch points. | | | |
| ***Title:*** Universal MDO Fire Control and SA Systems<br><br>***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.<br><br>***FY 2023 Plans:***<br>Mature and assess Universal 360 multi-spectral sensing system prototypes including day, low-light, and thermal technologies with on-sensor Aided Target Recognition (AiTR) capabilities on Main Battle Tank (MBT) prototype. Mature and document the | 11.080 | 20.041 | 32.650 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| 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.<br>***FY 2024 Plans:***<br>Build upon the FY 2023 sub-system and algorithm prototyping and integrate/fabricate full Universal 360 vision and data systems and architecture with an iterated prototype on Main Battle Tank (MBT) and on a second Ground Combat Systems platform to evaluate scalability of the Universal 360 architecture. Incorporate the Integrated Visual Augmentation System (IVAS) Ground hardware, software, and architecture/interface baseline, the vehicle crew helmet mounted display, and the Advanced Targeting and Lethality Aided System algorithms into the vehicle targeting systems, and the full 360 degree multi-spectral sensors and the vehicle data systems to the Universal 360 system. Complete Universal 360 system assessment on two PEO-GCS platforms (including MBT) and complete the technical data package on the scalable data/sensor architecture for transition to PEO-GCS platforms.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding represents planned lifecycle of effort. | | | |
| ***Title:*** Anubis Software Defined Chipset for M-Code and Advanced PNT Applications | 10.599 | 20.908 | 16.490 |
| ***Description:*** This effort supports experimental prototypes to demonstrate M-Code Global Positioning System (GPS) receiver capability on a commercially available System on Chip (SoC). This effort will prototype mounted, dismounted, and munition GPS receiver reference designs to be used for testing and evaluation and then insertion into Army Programs of Record. This effort will also include security certification through Space Force to handle the required encryption keys. The cited work is consistent with the Army Modernization Strategy.<br>***FY 2023 Plans:*** | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| 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).<br><br>***FY 2024 Plans:***<br>Continue the security certification process with Space Force and enable M-Code capability on core SoC components. Complete fabrication of prototypes. Complete integration testing of GPS receivers for selected form factor (mounted, dismounted, or munition) and complete user evaluations.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding decrease in FY 2024 funding is due to change in focus from design, purchase of long lead items, and beginning fabrication of prototypes to completing fabrication and testing of prototypes. | | | |
| ***Title:*** Target Seeking (TS) - Extended Range (ER) Seeker (TS-ER)<br><br>***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 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 (C-DAEM) draft Capabilities Development Document). Enhanced seeker technologies will be critical in enabling munition performance at these ranges with high target location error.<br><br>***FY 2023 Plans:***<br>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.<br><br>***FY 2024 Plans:***<br>Complete integration of algorithms and software into the electronics architecture, along with system integration into the chosen test vehicle platform. Complete modeling and simulation, and hardware-in-the-loop activities to validate the performance of the system against a range of use cases and inform the test events. Complete a succession of range tests, with increasing | - | 17.170 | 20.087 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| complexity and culminating with a closed loop demonstration to ensure the various design aspects achieve the program requirements for transition C-DAEM Program of Record in FY 2025.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding represents planned lifecycle of effort | | | |
| ***Title:*** Autonomous Operations for Unmanned Aerial Systems (UAS)<br><br>***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).<br><br>***FY 2023 Plans:***<br>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 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.<br><br>***FY 2024 Plans:***<br>Continue to transition products to enable autonomous operations for RSTA missions using 5 or more ALE collaborating under a single human supervisor while operating in contested environments. Down-select candidate technologies and complete integration to the PM UAS Family of Systems Architecture and Requirements Specification for various Programs of Record. Refine autonomy software, message sets, and platform integration, and demonstrate in laboratory and live-fly test events. Perform testing to optimize communications waveforms, link budgets and other requirements for operationally relevant environments and mature all software and hardware components for Airworthiness Release.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:*** | - | 12.236 | 33.167 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| Funding increase in FY 2024 due to completing first prototype builds and performing first live air testing including all required safety releases and flight requirements. | | | |
| ***Title:*** Air Launched Effects (ALE) Off-board Survivability<br><br>***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.<br><br>***FY 2023 Plans:***<br>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.<br><br>***FY 2024 Plans:***<br>Continue to implement multiple survivability and targeting payloads using off-board ALE platforms to relay critical information to manned systems for battlespace situation awareness and tactics execution. Will focus on maturation for the chosen payloads. Will focus on payload SWaP optimization and aircraft integration, including Hardware and Software in the Loop testing with the digital twin as well as live-fly testing.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>FY 2024 funding represents planned lifecycle of effort and increased flight testing to reduce risk on payload performance. | - | 27.489 | 32.307 |
| ***Title:*** Tactical Analytics Architecture (TA2)<br><br>***Description:*** This effort will prototype Artificial Intelligence (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.<br><br>***FY 2023 Plans:***<br>Develop prototype software services that integrates COP data, information and knowledge-sharing across echelons and warfighting functions including Maneuver, Integrated Air and Missile Defense, Fires, Intel, Logistics, etc. Using emerging data | - | 21.582 | 27.156 |

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| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| 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 services, and AI-enabled decision support tools being developed under Project Convergence. Incorporate 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 of data services across warfighting functions, AI-enabled electronic warfare for assured interoperability between mission command and intelligence systems, to include tactical server and cloud hosted capability, with a focus on sensor to shooter and sustainment integration.<br>***FY 2024 Plans:***<br>Continue the development of SW prototype COP services that integrate data, information and knowledge-sharing across echelon and function including Maneuver, Integrated Air and Missile Defense, Fires, Intel, Logistics, etc. Unify secure data persistence with tactical data fabric in an initial operational capability to ingest multitudes of other Warfighter functional data sources across the network to facilitate increased speed and accuracy of decision making. Introduce common DevSecOps and AI machine learning operations to influence design and obtain operational data in the environment.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>FY 2024 funding increase due to the need to conduct initial prototype testing of initial systems. | | | |
| ***Title:*** Tactical Navigation Warfare (NAVWAR) Plexus<br>***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.<br>***FY 2023 Plans:***<br>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.<br>***FY 2024 Plans:*** | - | 8.267 | 13.402 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| Complete Electronic Warfare Planning Management Tool (EWPMT) NAVWAR algorithm work, prototype, evaluation and transition to EWPMT Program of Record (PoR). Begin PLASMA-X sensor/Position, Navigation and Timing data fusion processor work. Start integration of the NAVWAR algorithm to Advanced Field Artillery Tactical Data System (AFATDS). Modernize and transition sensor/client interface to the Mounted Mission Command PoR.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding increase in FY 2024 due to increase in scope of work and testing with transitions to PoRs. | | | |
| ***Title:*** Assured Navigation for Future Tactical Unmanned Aerial Systems (FTUAS)<br>***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 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 (SWaP) 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 (APNT) solution that will enable the use of FTUAS and Air Launched Effects in Global Positioning System (GPS) denied environments.<br>***FY 2023 Plans:***<br>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.<br>***FY 2024 Plans:***<br>Mature and complete final optimization of low altitude VBN algorithms and software. Evaluate progress of prototype sensor package and processing module and finalize miniaturized prototype design. Integrate vision based navigation software with the sensor package and processing module for the ruggedized prototype. Demonstrate low altitude VBN prototype providing APNT at below 1000 ft. and assess progress for prototype design and testing activities.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>FY 2023 increase is due to inclusion of first system prototype builds and flight testing. | - | 5.492 | 7.774 |
| ***Title:*** Common Hypersonic Glide Body (CHGB) Seeker Integration<br>***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 Science and Technology (S&T) funding, | - | 5.000 | - |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| supporting Seeker Component Development. The 6.3 S&T CHGB Seeker Component Development will continue through FY 2027, 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 FY 2023. Starting in FY 2024, 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.<br><br>***FY 2023 Plans:***<br>Will integrate sensor hardware, update flight software, and integrate capability into weapon control and mission planning software and tools.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>CHGB Seeker Integration TMI funding provided for FY23 only. | | | |
| ***Title:*** Reconfigurable Aperture Precision Targeting Radar (RAPTR) for Vehicle and Dismount Exploitation Radar (VADER) (RADER)<br><br>***Description:*** The current RADAR sensor (VADER) 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 to the High Accuracy Detection and Exploitation System (HADES) program. This effort will integrate an advanced payload into a digital radar with an open architecture radar backend to facilitate integration of advanced algorithms and advanced operational modes to the HADES system.<br><br>***FY 2023 Plans:***<br>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.<br><br>***FY 2024 Plans:***<br>Complete maturation of advanced radar modes for Common Open Architecture-compliant back-end. Continue maturation of Common Open Architecture-compliant back-end in preparation for integration of advanced modes and dual-band Active Electronically Scanned Array for FY 2025 Airborne Radar Testbed for evaluations.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:*** | - | 10.888 | 13.267 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| FY2024 program cost is consistent with project life cycle costs. Scope includes testing on FY23 prototype, iteration to the FY23 prototype and adding new radar modes. | | | |
| ***Title:*** Lethality Smart Systems (LSS)<br><br>***Description:*** The Lethality Smart Systems (LSS) is the next generation weapon targeting sensor for use on the Next Generation Squad Weapon (NGSW) which provides additional situational awareness and lethality by wirelessly interfacing to other Soldier devices. This effort will mature and prototype the LSS weapon sight system to evaluate improved reliability, achieving weapon shock requirements of the NGSW and implement interoperability between the latest version of the Intra Soldier Wireless (ISW) protocol to both the Enhanced Night Vision Goggle -Binocular (ENVG-B) and Integrated Visual Augmentation System (IVAS). Additionally, LSS will provide improved system interfacing and capabilities at a reduced Size, Weight and Power (SWaP).<br><br>***FY 2024 Plans:***<br>Conduct Soldier Touch Points and developmental test activities to collect Soldier feedback and engineering data to further refine the LSS design and maturation/risk reduction opportunities. Integrate and test LSS prototypes with fielded IVAS and ENVG-B to inform ISW Interface Control Documents (ICD). Integrate and test LSS prototypes on NGSW systems to evaluate power/data rail interface and weapon shock survivability performance. Begin building prototype of LSS for integration and testing of improved LSS weapon sight.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Begins effort in FY 2024 to conduct Soldier touch points and developmental test activities and early prototype development. | - | - | 6.012 |
| ***Title:*** Lightweight Polymers for Modern Small Caliber Apps - Ammo Casing Only<br><br>***Description:*** The Army currently relies on metal for small caliber cartridge casings. Polymer-based casings offer the potential to achieve significant weight reductions that can be applied to future and legacy systems. This effort will mature and prototype lightweight polymers and casing design solutions for use in extreme military operational environments. The polymer-based casings will reduce the tactical weight burden on the warfighter, reduce transit costs, and increase lethality across all operational environments.<br><br>***FY 2024 Plans:***<br>Survey, formulate, and refine commercial lightweight polymers for initial cartridge prototyping and iterate polymer-based casing design. Mature and evaluate the adhesives and bonding protocols for joining metallic and polymers components.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Begins effort in FY 2024 to survey, formulate and refine commercial polymers. | - | - | 5.701 |
| ***Title:*** Optical Threat Detection | - | - | 9.743 |

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|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***Description:*** Optical Threat Detection builds on Army Research Development Technology & Experimentation investments in Pre-Shot technologies to prototype detecting threats beyond their effective weapons range. The effort will mature and prototype an automated operation of the system to utilize onboard sensors and provide cues of potential targets to users for evaluation of the threat. The Optical Threat Detection system will provide a multi-band solution to rapidly locate enemy optical targeting or surveillance systems in support of On-The-Move operations. This effort will incorporate adaptable architecture for integration of future technology (i.e., sensors and algorithms) as new capabilities emerge.<br><br>***FY 2024 Plans:***<br>Initiate the design, fabrication and assembly of the baseline prototype sensor system. Perform a Preliminary Design Review and a Critical Design Review to evaluate baseline sensor design in preparation for platform integration to ensure the design will meet mission performance requirements.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Begins effort in FY 2024 for design initiation, fabrication and assembly of prototype sensor system. . | | | |
| ***Title:*** Solid State High Power Microwave System (SS-HPM)<br><br>***Description:*** Solid State-High Powered Microwave (SS-HPM) will mature and prototype a mission kit consisting of source and emitter for technical insertion into the Indirect Fire Protection Capability-High Power Microwave (IFPC-HPM) program's prototype system. SS-HPM System will mature solid state technologies intended for Counter-Unmanned Aerial System applications (focusing on groups and swarms) and provide indirect fire protection capabilities with increased range, reliability, and lower costs.<br><br>***FY 2024 Plans:***<br>Design, develop, and deliver a solid state HPM source and emitter (mission kit) for technical insertion that is compatible with the IFPC-HPM prototype.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>New start effort in FY 2024 approved by the Technology Maturation Board. | - | - | 9.329 |
| ***Title:*** Collaborative Links for Integrated Fires (CLIF)<br><br>***Description:*** Complex terrain, clutter, and countermeasures can challenge Cannon Delivered Area Effects Munition (C-DAEM) Armor and supporting Fires System-of-Systems (SoS) solutions, and reduce munition effectiveness. Collaborative Links for Integrated Fires (CLIF) leverages prior algorithm and software efforts to prototype image-based navigation, multi-agent autonomous target recognition (ATR) and optimized munition-target assignment in a Fires SoS solution. This effort will enable more efficient volley fires reducing shoot and move time, rounds to defeat, and the logistics burden while improving fire team | - | - | 9.474 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
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| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| capacity. The CLIF approach is modular and enables the rapid integration of new seeker and collaborative modalities to outpace emerging threats.<br><br>***FY 2024 Plans:***<br>Conduct design trade studies of technology integration using the Excalibur hit to kill (HTK) modeling simulation environment. Modify and integrate technology solutions into Hardware in the Loop (HWIL) and test subsystems. Complete preliminary design of the collaborative links system and projectiles.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Begins effort in FY 2024 to conduct design trade studies of technology integration. | | | |
| ***Title:*** Multi-Network, Multi-Waveform Software Defined Radio<br><br>***Description:*** This effort leverages commercial 5G radio / data System on a Chip (SoC) technologies to prototype a common software defined radio capable of supporting multiple military waveforms. This replaces multiple radios with a single low Size, Weight, and Power (SWaP) radio for communications across multiple secure military communication networks and systems and provides hardware commonality across platforms. Prototypes will be evaluated supporting Army ground and air applications. The cited work is consistent with the Army Modernization Strategy.<br><br>***FY 2024 Plans:***<br>Initiate porting of multiple military communication waveforms to the SoC architecture. Design initial prototype multi-waveform / multi-communication system prototype radios for air and ground applications.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Begins effort in FY 2024 for porting of multiple military communication waveforms. | - | - | 10.667 |
| ***Title:*** Consolidated prototype platform for Joint Common Artificial Intelligence / Autonomous Operations, Data architectures, and Power systems<br><br>***Description:*** This effort will prototype integration of emerging data fabrics across Service, Combatant Commands (CCMD) and sub-organizational commands to allow interchangeable<br>command and control (C2) of remote operations across echelons (allow echelon tasking and ISR sensor data collection/data share) of autonomously operated ground and<br>air system platforms. The system will also expand hybrid power source alternatives that support the platform, mission, and autonomous system power requirements.<br><br>***FY 2024 Plans:*** | - | - | 26.237 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| Compare Army, USMC and USAF data needs and data fabrics to determine requirements to develop a common data fabric and communications system for remote platform ISR data share and platform tasking. Using emerging Service data fabrics and processing frameworks, develop necessary application programming interfaces to integrate the sharing of data, algorithms, and Machine learning tools; and translate across different architectures and standards for the operation of remotely controlled / autonomous ground systems to seamlessly execute tactical and operational mission sets interchangeably between Army and non-Army organizations within CCMDs. Optimize platform autonomous systems for command and control of the platform and autonomous operations and optimize hybrid power systems designs meeting platform, communications, and autonomous operations, and mission needs.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Begins effort in FY 2024 for development of a common data fabric and communication system for remote platform ISR data | | | |
| ***Title:*** SBIR & STTR Adjustment<br>***FY 2023 Plans:***<br>Funding transferred in accordance with Title 15 USC §638<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding transferred in accordance with Title 15 USC §638 | - | 6.207 | - |
| **Accomplishments/Planned Programs Subtotals** | 47.723 | 170.050 | 281.314 |

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX3 / *Technology Maturation Initiatives* | |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBIR & STTR Adjustment | TBD | Various : Various | - | - | | 6.207 | | - | | - | | - | 0.000 | 6.207 | - |
| | | **Subtotal** | - | - | | 6.207 | | - | | - | | - | 0.000 | 6.207 | N/A |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms | TBD | DEVCOM C5ISR : Fort. Belvoir, VA | - | - | | - | | 7.851 | | - | | 7.851 | 0.000 | 7.851 | - |
| IVAS - Design Platform Augmented Reality (AR) Architecture | TBD | C5ISR Fort Belvoir, VA; : TBD | 1.473 | 3.548 | | 0.403 | | - | | - | | - | 0.000 | 5.424 | - |
| IVAS - AR Architecture Implementation, Integration, and Fabrication | TBD | C5ISR Fort Belvoir, VA; : TBD | 4.895 | 6.554 | | 4.527 | | - | | - | | - | 0.000 | 15.976 | - |
| IVAS - Systems Engineering - Interfaces, Head Pose Tracking, Position, Navigation, Timing, Power | TBD | C5ISR Fort Belvoir, VA; : TBD | 4.276 | 6.183 | | 3.628 | | - | | - | | - | 0.000 | 14.087 | - |
| IVAS - Software Engineering - AR User Experiences | TBD | C5ISR Fort Belvoir, VA; : TBD | 3.841 | 2.451 | | 1.445 | | - | | - | | - | 0.000 | 7.737 | - |
| IVAS - Capability Demonstration | TBD | C5ISR Fort Belvoir, VA; : TBD | 0.357 | 3.812 | | 0.494 | | - | | - | | - | 0.000 | 4.663 | - |
| IVAS - Software/Hardware Integration - IVAS and Pilot / Crew Helmet Mounted Displays | TBD | C5ISR Fort Belvoir, VA; : TBD | 0.758 | 3.496 | | 4.273 | | - | | - | | - | 0.000 | 8.527 | - |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* | |

**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Universal 360 MDO Fire Control and SA Systems | TBD | DEVCOM C5ISR : Ft. Belvoir, VA | - | - | | - | | 32.650 | | - | | 32.650 | 0.000 | 32.650 | - |
| Universal 360 MDO Sensor Prototypes | TBD | C5ISR Ft. Belvoir : TBD | - | 0.758 | | 2.474 | | - | | - | | - | 0.000 | 3.232 | - |
| Universal 360 MDO Common Architecture & Data Framework | TBD | C5ISR Ft. Belvoir : TBD | - | 2.602 | | 1.440 | | - | | - | | - | 0.000 | 4.042 | - |
| Mature AI software architecture & prototype ATR | TBD | C5ISR Ft. Belvoir : TBD | - | 1.305 | | 2.317 | | - | | - | | - | 0.000 | 3.622 | - |
| Mature & Demonstrate Crew Station, Crew HMD, Troop HMD, and Fire Control | TBD | C5ISR Ft. Belvoir : TBD | - | 4.055 | | 5.073 | | - | | - | | - | 0.000 | 9.128 | - |
| Platform Prototyping, Integration & Demonstration | TBD | C5ISR Ft. Belvoir : TBD | - | 2.360 | | 8.737 | | - | | - | | - | 0.000 | 11.097 | - |
| Anubis: COTS-based M-Code GPS Receiver | TBD | DEVCOM-ARL : TBD | - | 10.599 | | 20.908 | | 16.490 | | - | | 16.490 | 0.000 | 47.997 | - |
| Target Seeking - Extended Range (ER) Seeker (TS-ER) | TBD | PEO Ammo : Picatinny Arsenal, NJ | - | - | | 17.170 | | 20.087 | | - | | 20.087 | 0.000 | 37.257 | - |
| Autonomous Operations for Unmanned Aerial Systems (UAS) | TBD | DEVCOM AvMC : TBD | - | - | | 12.236 | | 33.167 | | - | | 33.167 | 0.000 | 45.403 | - |
| Air Launched Effects (ALE) Off-board Survivability | TBD | DEVCOM AvMC : TBD | - | - | | 27.489 | | 32.307 | | - | | 32.307 | 0.000 | 59.796 | - |
| Artificial Intelligence (AI) Enabled Operations / TA2 | TBD | AFC : TBD | - | - | | 21.582 | | 27.156 | | - | | 27.156 | 0.000 | 48.738 | - |
| Tactical NAVWAR Plexus | TBD | DEVCOM C5ISRC : TBD | - | - | | 8.267 | | 13.402 | | - | | 13.402 | 0.000 | 21.669 | - |
| Assured NAV for FTUAS | TBD | TBD : TBD | - | - | | 5.492 | | 7.774 | | - | | 7.774 | 0.000 | 13.266 | - |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

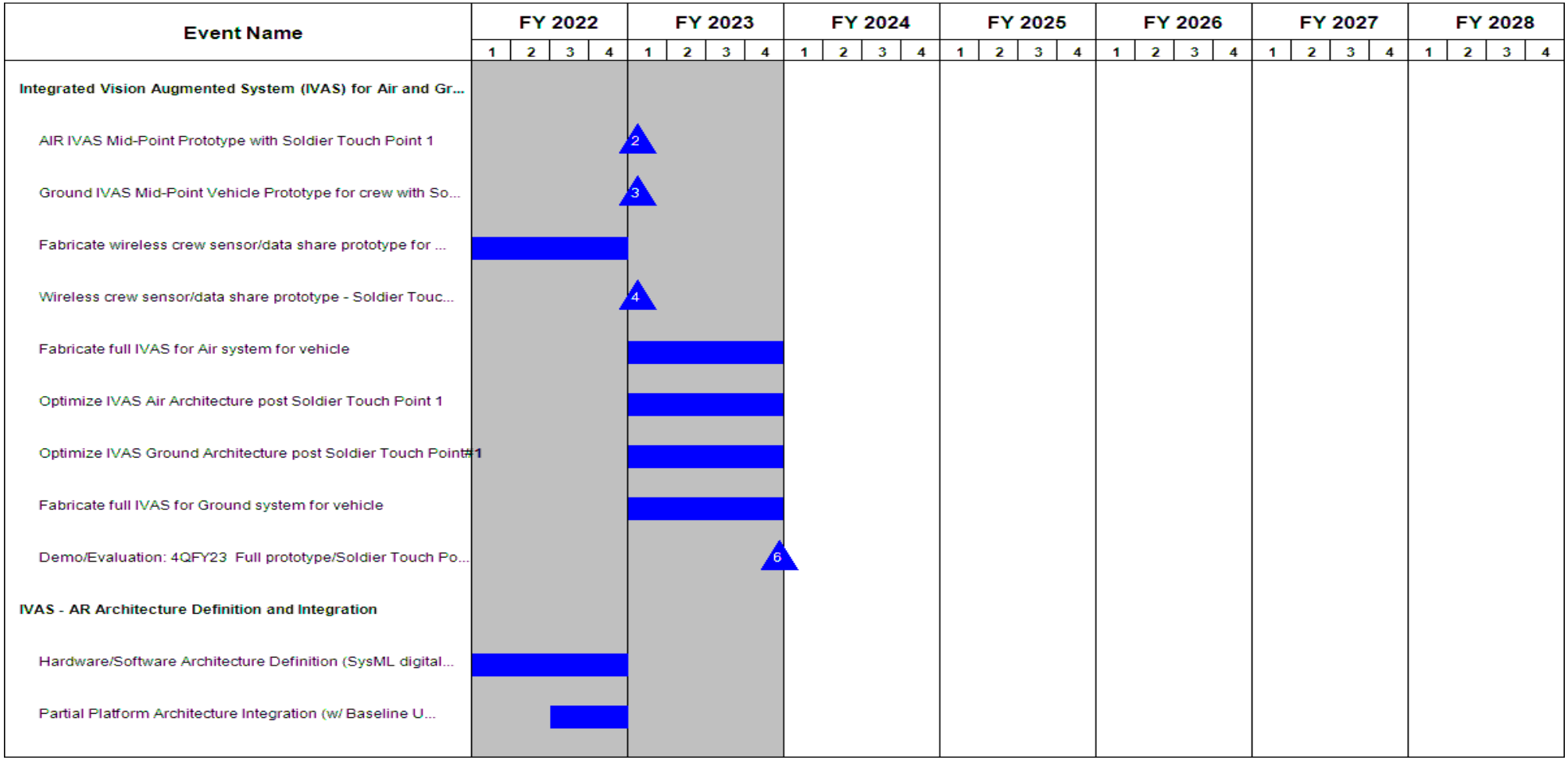
**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Hypersonic Glide Body (CHGB) Seeker Integration | C/Various | RCCTO : Various : Various | - | - | | 5.000 | | - | | - | | - | 0.000 | 5.000 | - |
| Reconfigurable Aperture Precision Targeting Radar (RAPTR) for Vehicle and Dismount Exploitation Rada | TBD | DEVCOM C5ISR : TBD | - | - | | 10.888 | | 13.267 | | - | | 13.267 | 0.000 | 24.155 | - |
| Lethality Smart System (LSS) | TBD | DEVCOM C5ISR : Fort Belvoir, VA | - | - | | - | | 6.012 | | - | | 6.012 | 0.000 | 6.012 | - |
| Lightweight Polymers for Modern Small Caliber Apps | TBD | DEVCOM ARL : TBD | - | - | | - | | 5.701 | | - | | 5.701 | 0.000 | 5.701 | - |
| Optical Threat Detection | TBD | DEVCOM C5ISR : Fort Belvoir, VA | - | - | | - | | 9.743 | | - | | 9.743 | 0.000 | 9.743 | - |
| Solid State High Power Microwave System | TBD | RCCTO : Various | - | - | | - | | 9.329 | | - | | 9.329 | 0.000 | 9.329 | - |
| Collaborative Links for Integrated Fires | TBD | PEO Ammo : Picatinny Arsenal, NJ | - | - | | - | | 9.474 | | - | | 9.474 | 0.000 | 9.474 | - |
| Multinetwork - 5G Capability | TBD | DEVCOM C5ISR : Fort Belvoir, VA | - | - | | - | | 10.667 | | - | | 10.667 | 0.000 | 10.667 | - |
| Prototype Platform for Common Data architectures, and Power Systems | TBD | TBD : TBD | - | - | | - | | 26.237 | | - | | 26.237 | 0.000 | 26.237 | - |
| | | **Subtotal** | 15.600 | 47.723 | | 163.843 | | 281.314 | | - | | 281.314 | 0.000 | 508.480 | N/A |

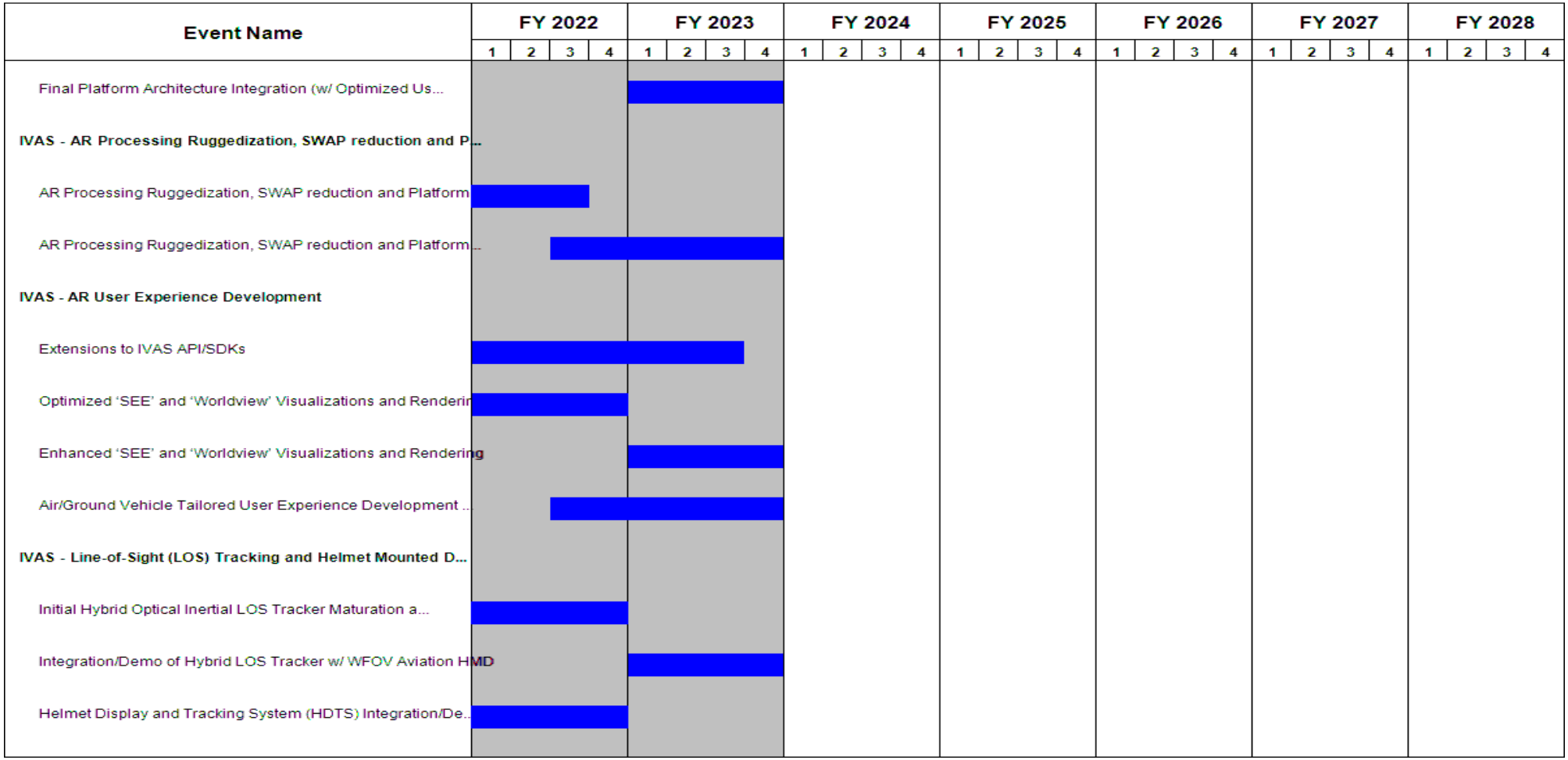
| | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 15.600 | 47.723 | | 170.050 | | 281.314 | | - | | 281.314 | 0.000 | 514.687 | N/A |

**Remarks**

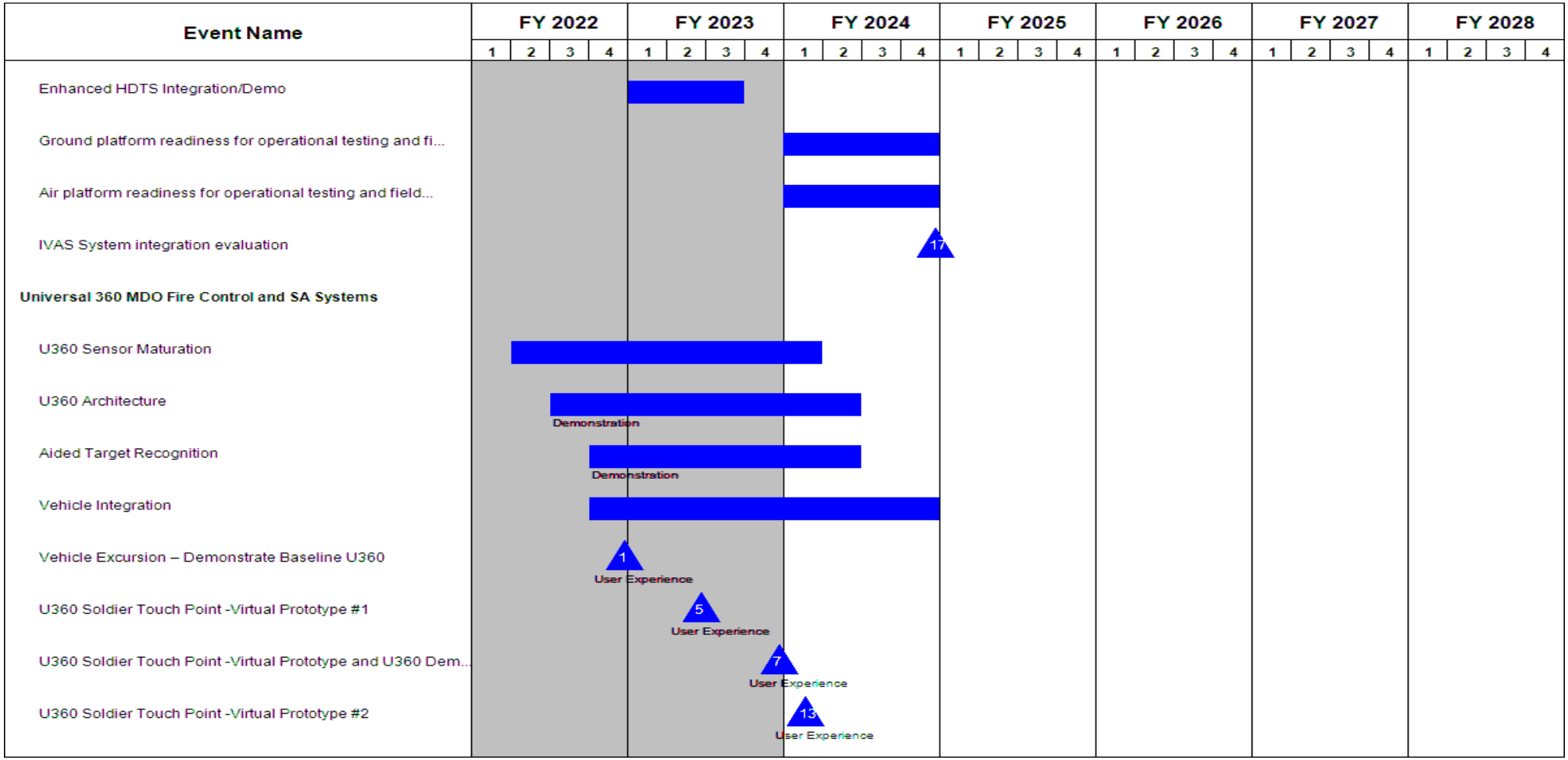
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



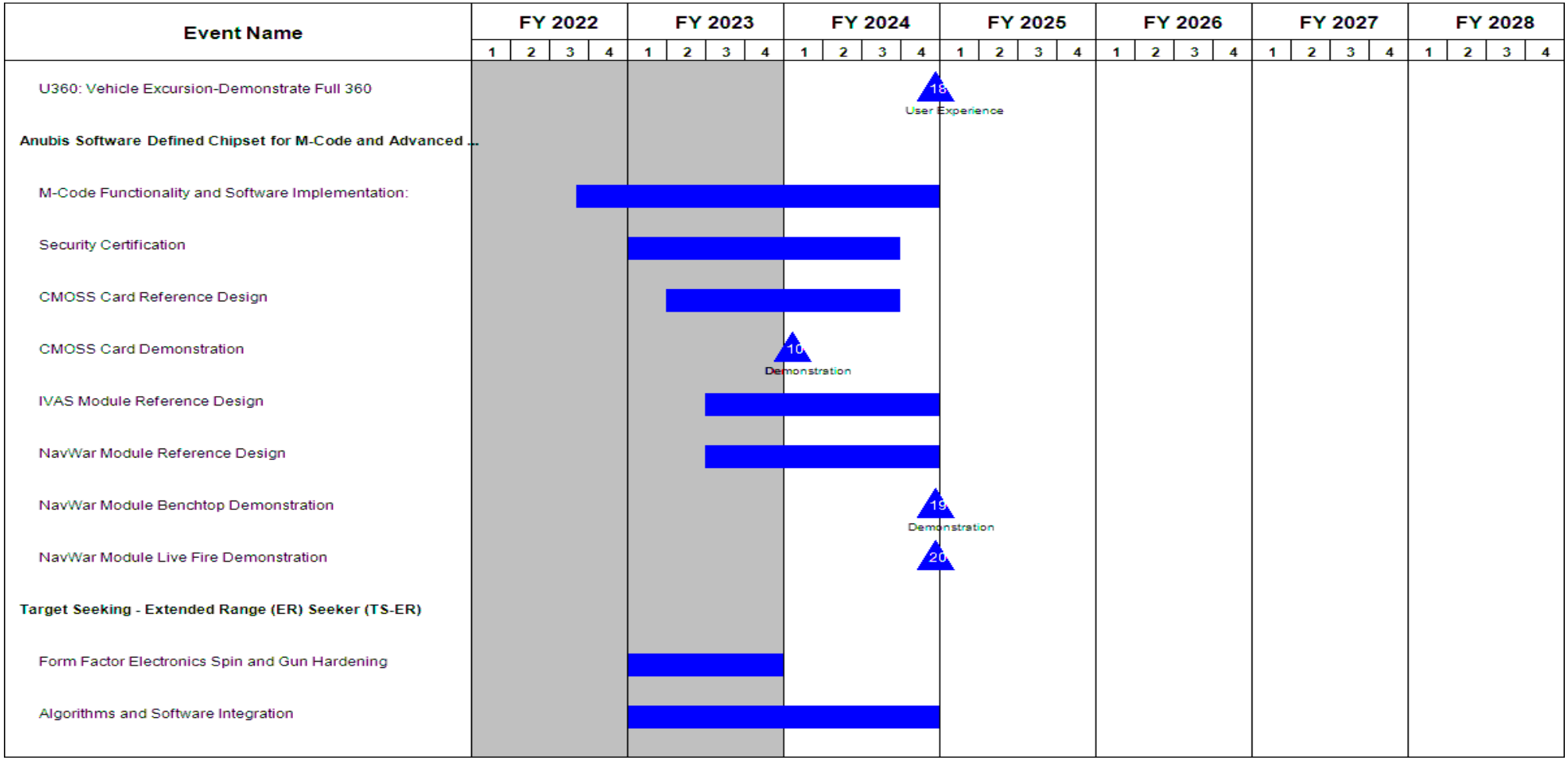
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



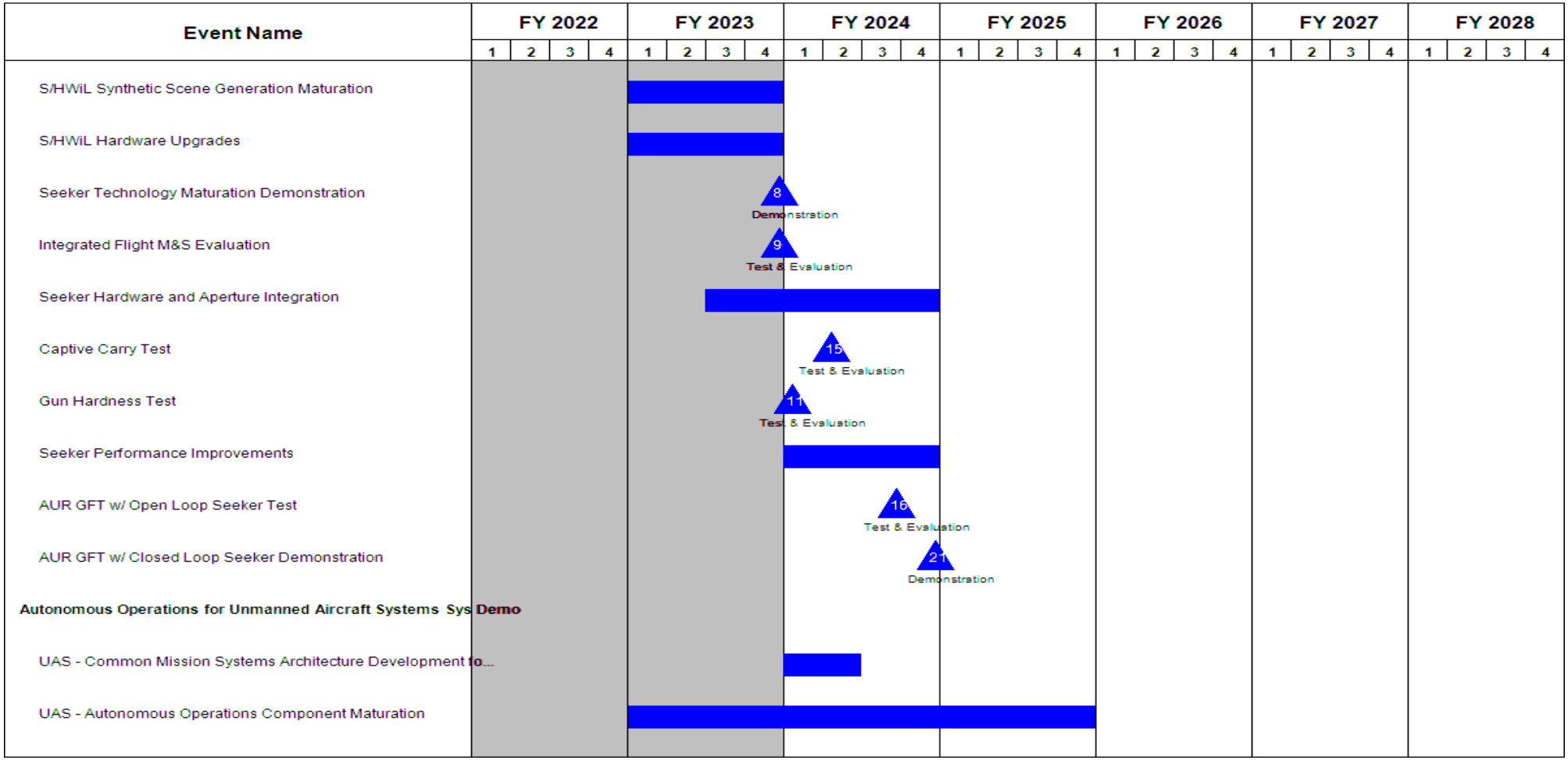
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



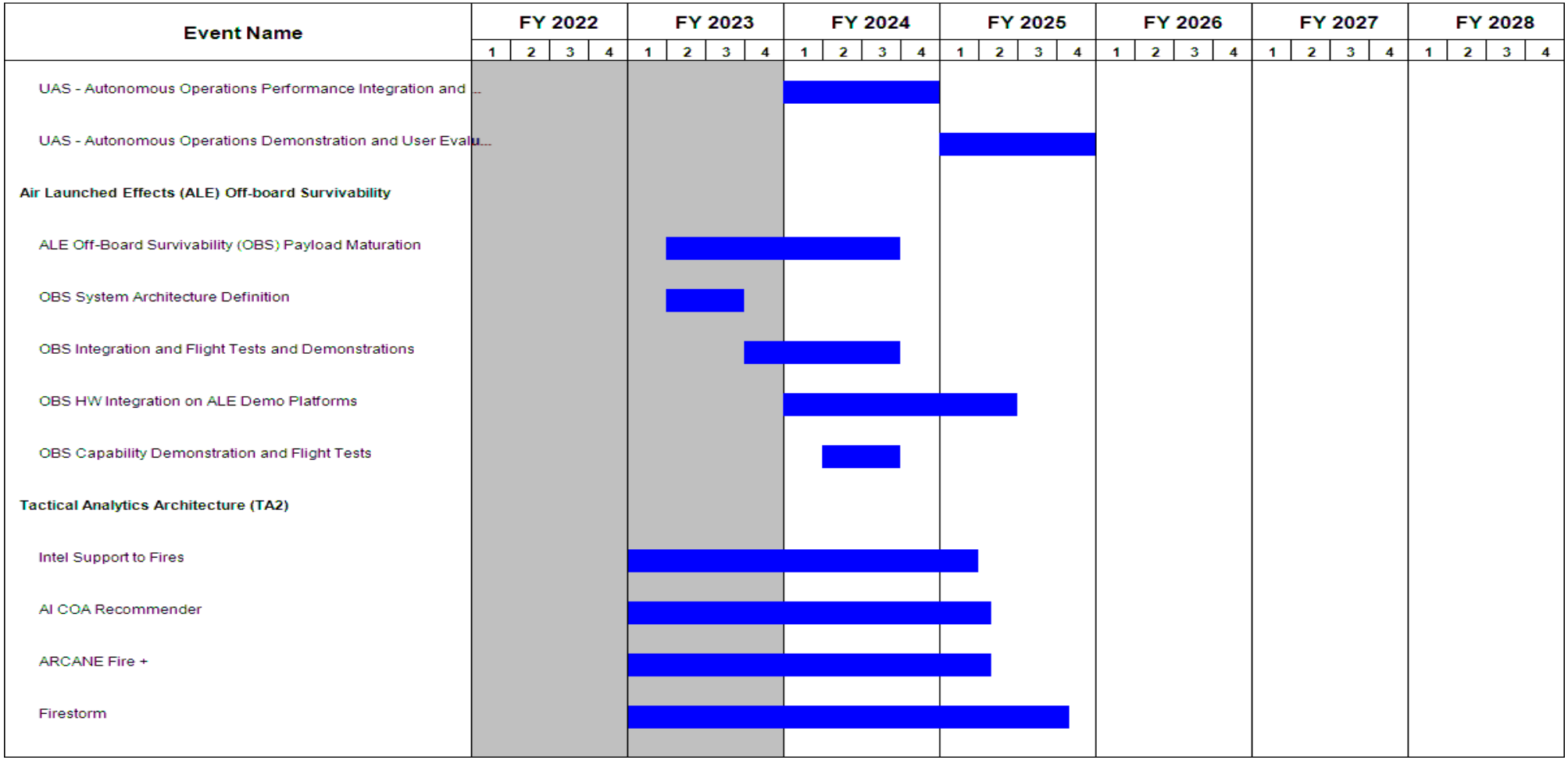
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



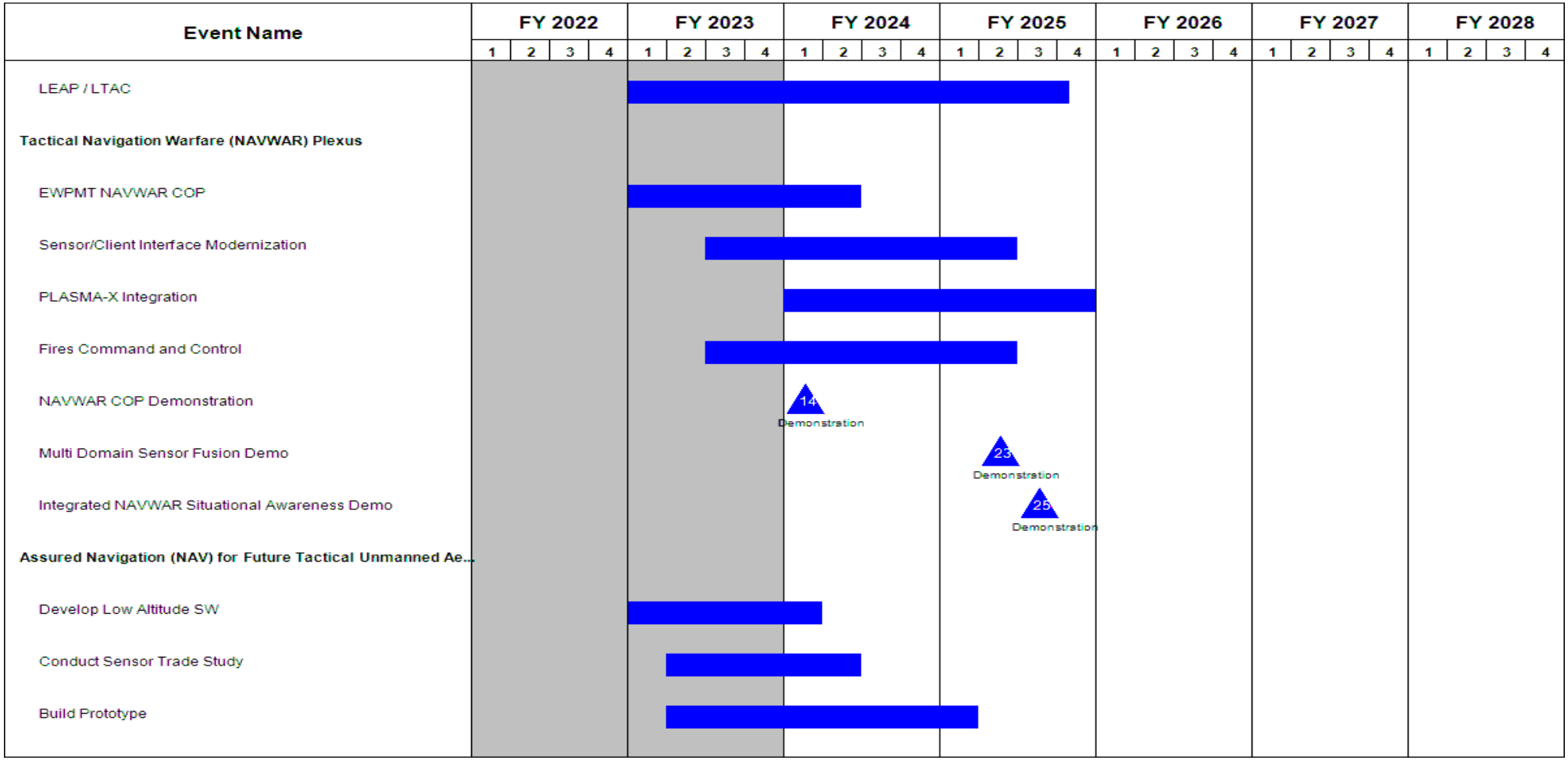
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



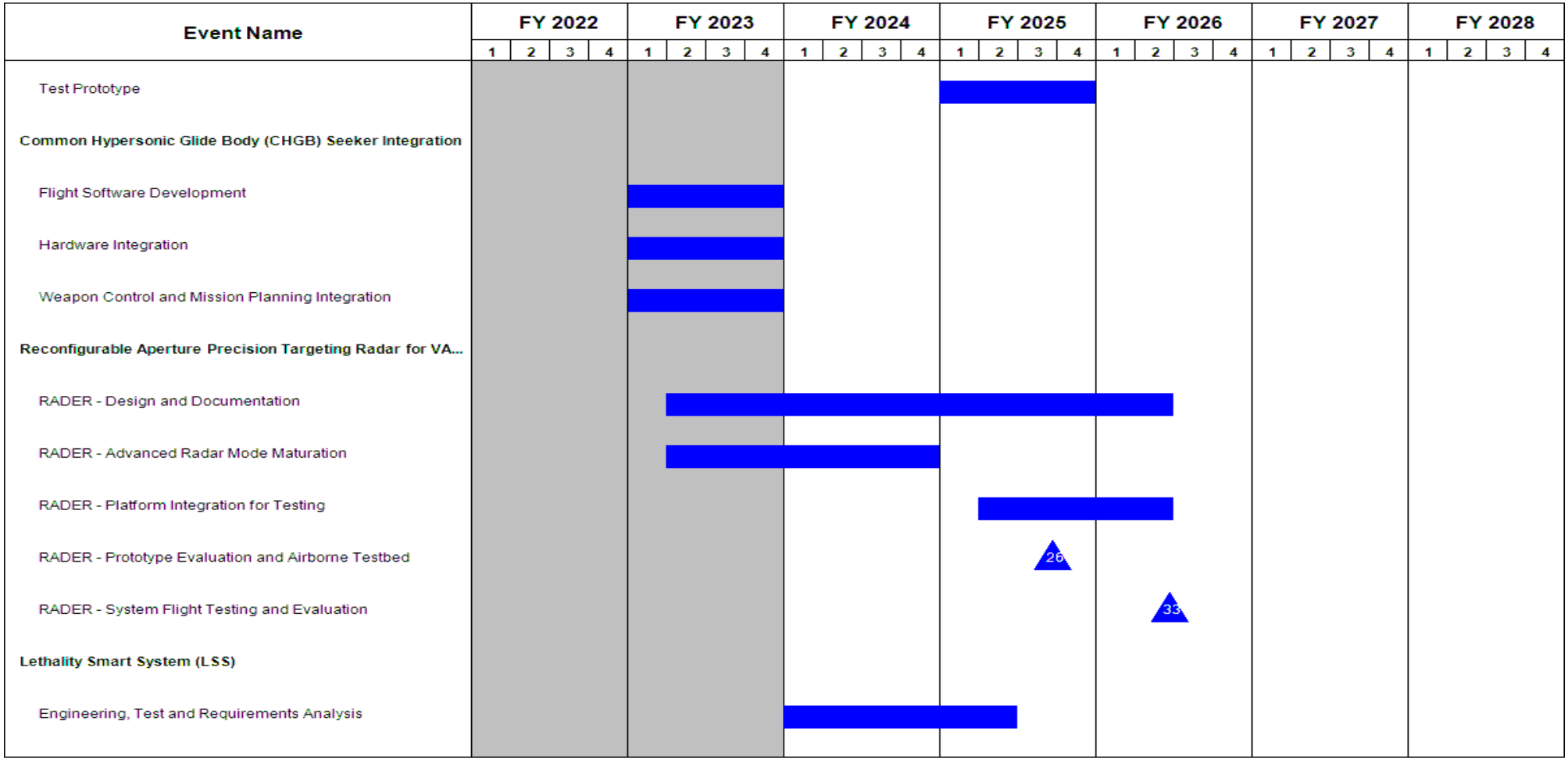
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



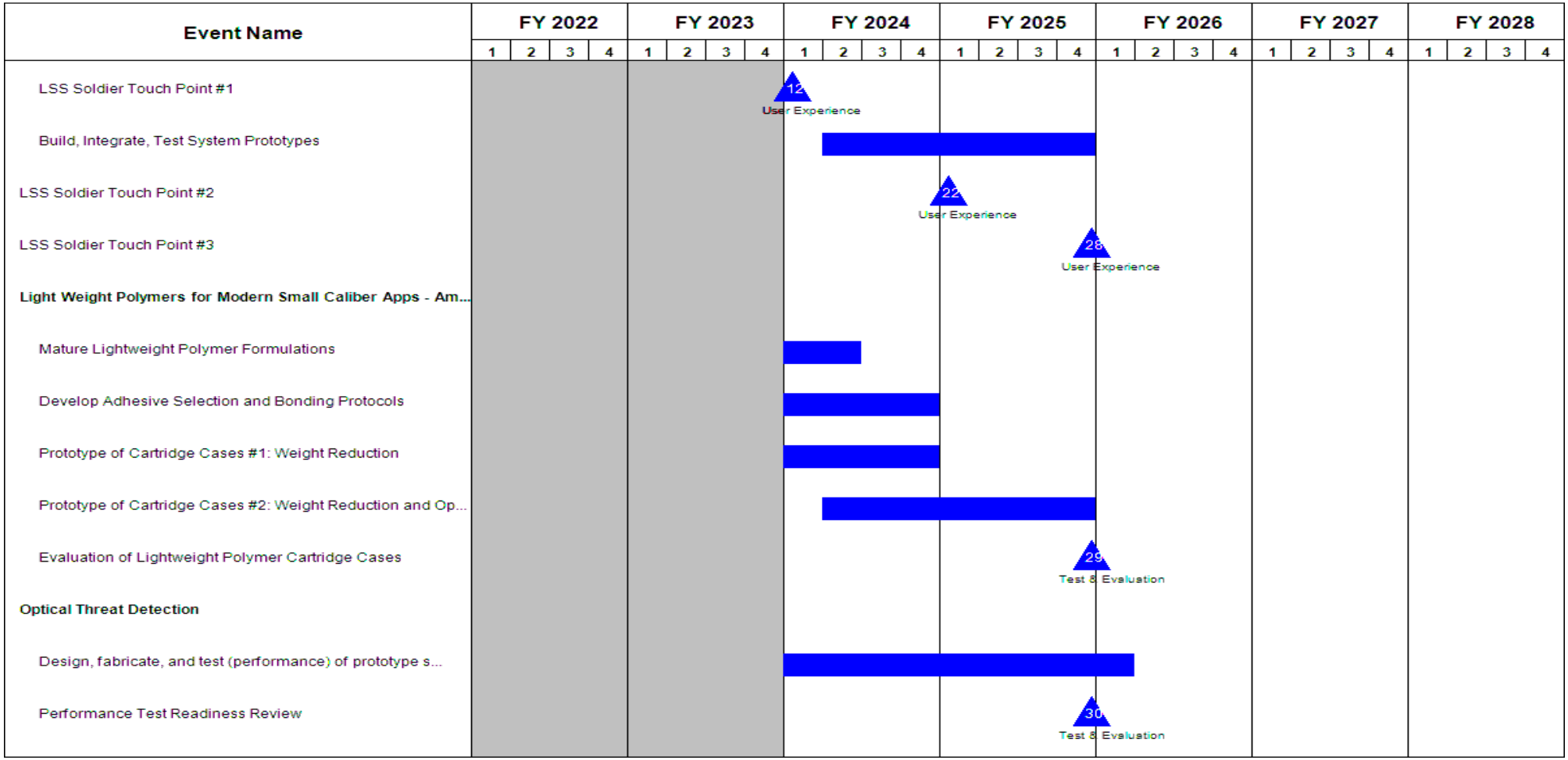
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



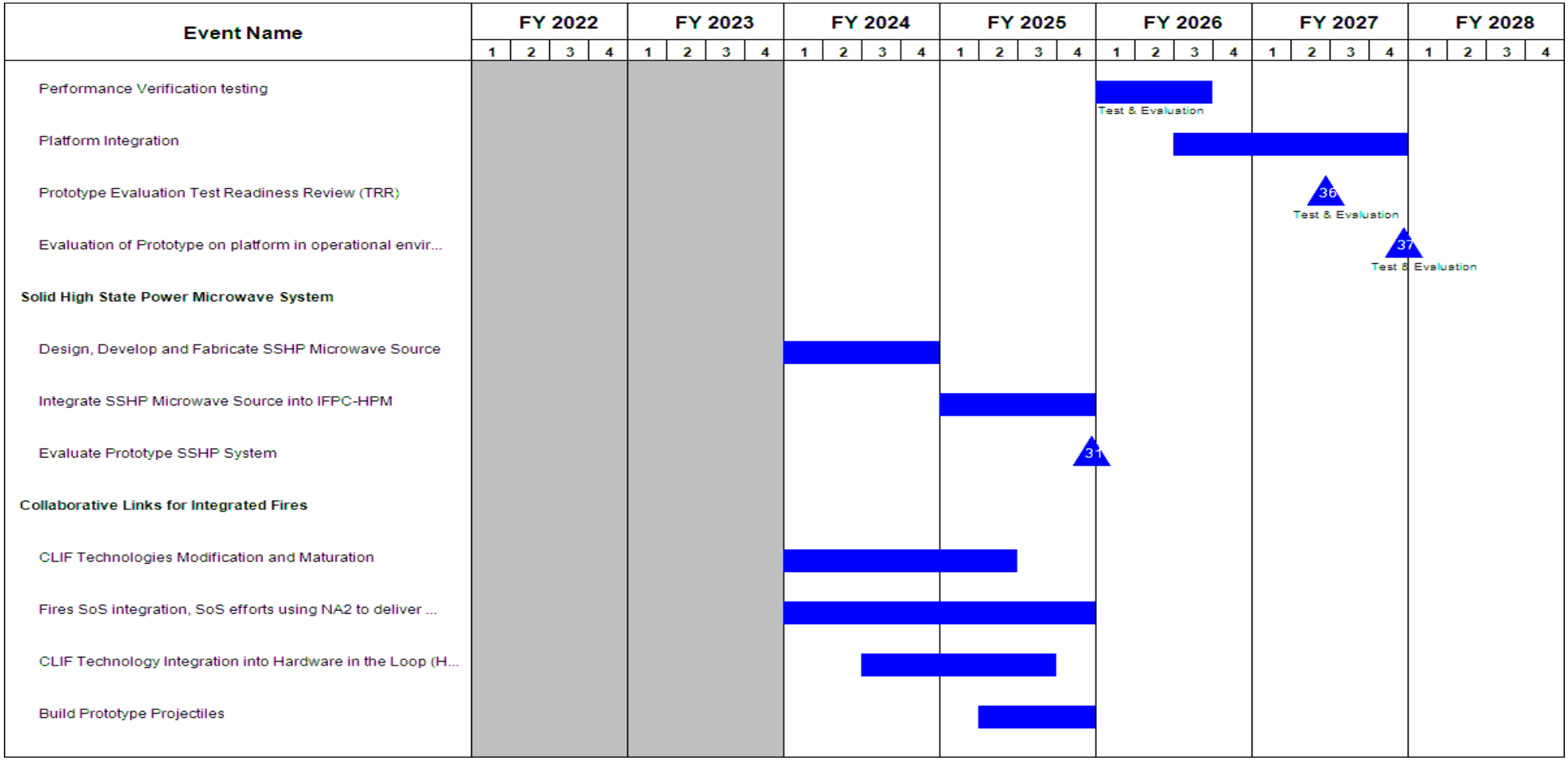
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



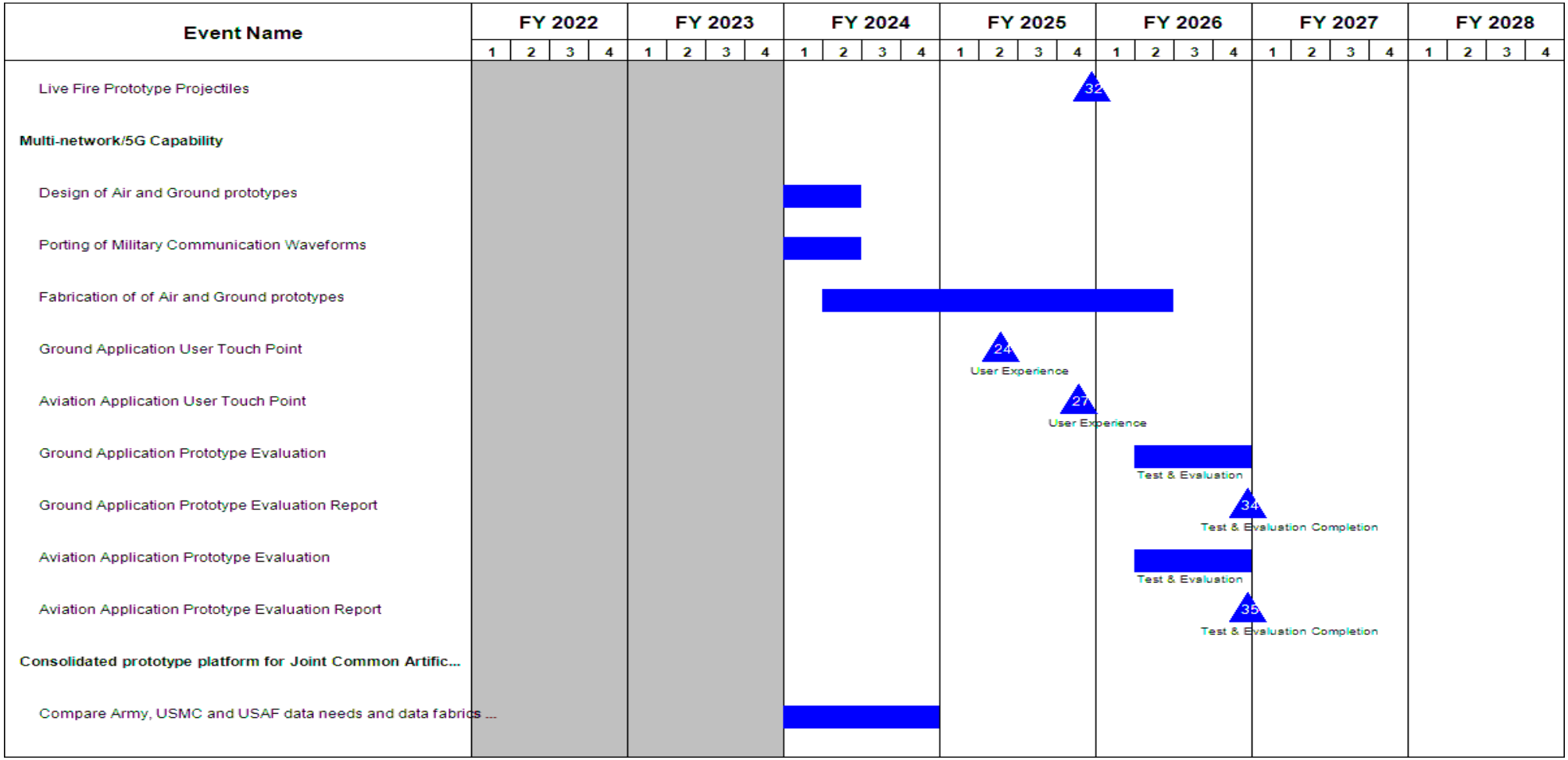
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



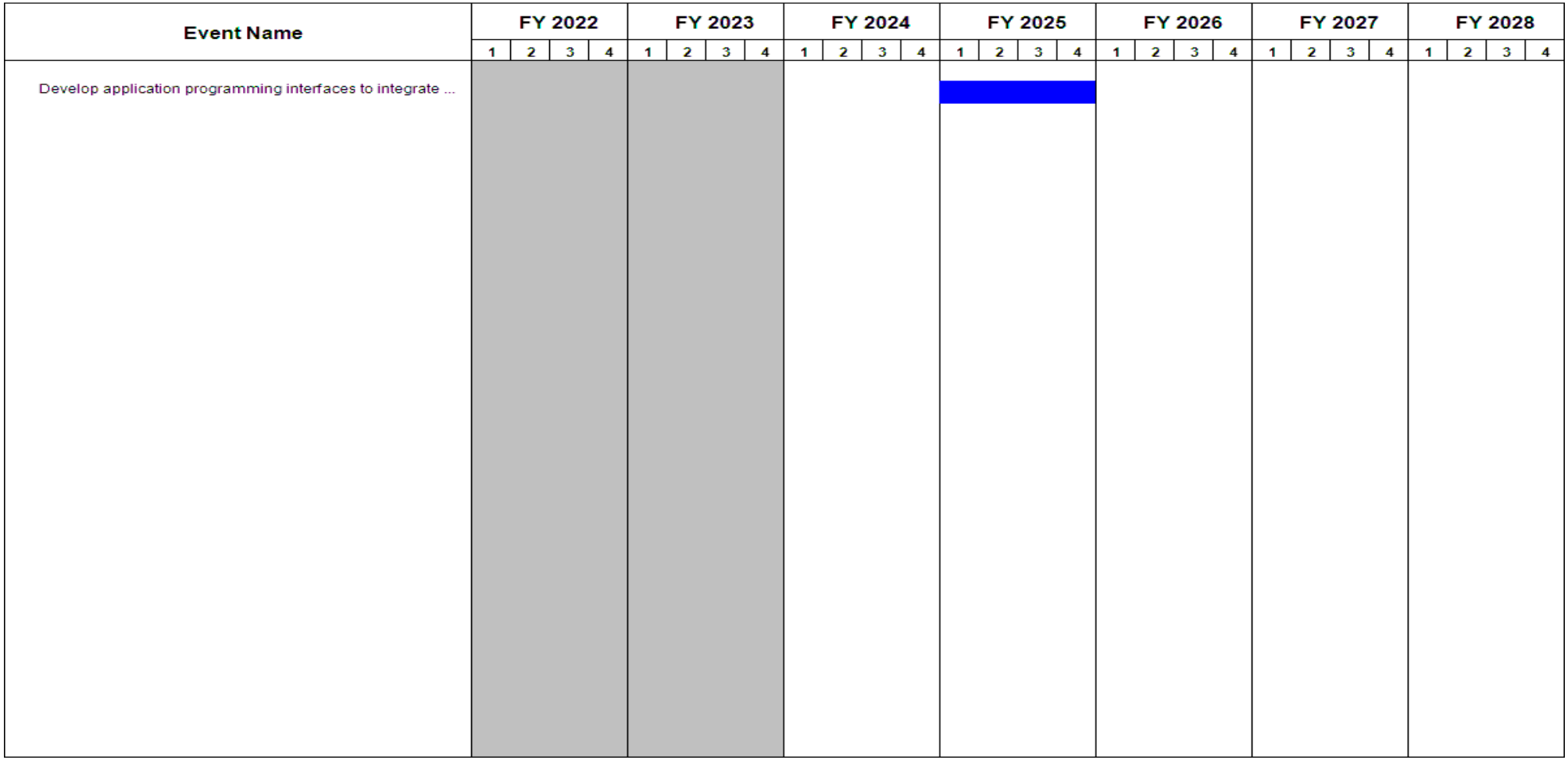
| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| Integrated Vision Augmented System (IVAS) for Air and Ground Vehicle Platforms | 1 | 2023 | 4 | 2024 |
| 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 Touch Point 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 |
| IVAS - AR Architecture Definition and Integration | 3 | 2021 | 4 | 2023 |
| 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 |
| 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 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| 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 |
| Ground platform readiness for operational testing and fielding evaluation | 1 | 2024 | 4 | 2024 |
| Air platform readiness for operational testing and fielding evaluation | 1 | 2024 | 4 | 2024 |
| IVAS System integration evaluation | 4 | 2024 | 4 | 2024 |
| 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 |
| Vehicle Excursion - Demonstrate Baseline U360 | 4 | 2022 | 4 | 2022 |
| U360 Soldier Touch Point -Virtual Prototype #1 | 2 | 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 |
| Anubis Software Defined Chipset for M-Code and Advanced PNT Applications | 3 | 2022 | 4 | 2024 |
| M-Code Functionality and Software Implementation: | 3 | 2022 | 4 | 2024 |
| Security Certification | 1 | 2023 | 3 | 2024 |
| CMOSS Card Reference Design | 2 | 2023 | 3 | 2024 |
| CMOSS Card Demonstration | 1 | 2024 | 1 | 2024 |
| IVAS Module Reference Design | 3 | 2023 | 4 | 2024 |
| NavWar Module Reference Design | 3 | 2023 | 4 | 2024 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| NavWar Module Benchtop Demonstration | 4 | 2024 | 4 | 2024 |
| NavWar Module Live Fire Demonstration | 4 | 2024 | 4 | 2024 |
| Target Seeking - Extended Range (ER) Seeker (TS-ER) | 1 | 2023 | 4 | 2023 |
| Form Factor Electronics Spin and Gun Hardening | 1 | 2023 | 4 | 2023 |
| Algorithms and Software Integration | 1 | 2023 | 4 | 2024 |
| S/HWiL Synthetic Scene Generation Maturation | 1 | 2023 | 4 | 2023 |
| S/HWiL Hardware Upgrades | 1 | 2023 | 4 | 2023 |
| Seeker Technology Maturation Demonstration | 4 | 2023 | 4 | 2023 |
| Integrated Flight M&S Evaluation | 4 | 2023 | 4 | 2023 |
| Seeker Hardware and Aperture Integration | 3 | 2023 | 4 | 2024 |
| Captive Carry Test | 2 | 2024 | 2 | 2024 |
| Gun Hardness Test | 1 | 2024 | 1 | 2024 |
| Seeker Performance Improvements | 1 | 2024 | 4 | 2024 |
| AUR GFT w/ Open Loop Seeker Test | 3 | 2024 | 3 | 2024 |
| AUR GFT w/ Closed Loop Seeker Demonstration | 4 | 2024 | 4 | 2024 |
| 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 | 4 | 2025 |
| UAS - Autonomous Operations Performance Integration and Demonstration | 1 | 2024 | 4 | 2024 |
| UAS - Autonomous Operations Demonstration and User Evaluations | 1 | 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 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| OBS Capability Demonstration and Flight Tests | 2 | 2024 | 3 | 2024 |
| 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 |
| 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 |
| 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 |
| Reconfigurable Aperture Precision Targeting Radar for VADER (RADER) | 1 | 2023 | 4 | 2025 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| RADER - Design and Documentation | 2 | 2023 | 2 | 2026 |
| RADER - Advanced Radar Mode Maturation | 2 | 2023 | 4 | 2024 |
| RADER - Platform Integration for Testing | 2 | 2025 | 2 | 2026 |
| RADER - Prototype Evaluation and Airborne Testbed | 3 | 2025 | 3 | 2025 |
| RADER - System Flight Testing and Evaluation | 2 | 2026 | 2 | 2026 |
| Lethality Smart System (LSS) | 1 | 2024 | 4 | 2025 |
| Engineering, Test and Requirements Analysis | 1 | 2024 | 2 | 2025 |
| LSS Soldier Touch Point #1 | 1 | 2024 | 1 | 2024 |
| Build, Integrate, Test System Prototypes | 2 | 2024 | 4 | 2025 |
| LSS Soldier Touch Point #2 | 1 | 2025 | 1 | 2025 |
| LSS Soldier Touch Point #3 | 4 | 2025 | 4 | 2025 |
| Light Weight Polymers for Modern Small Caliber Apps - Ammo Casing Only | 1 | 2024 | 4 | 2025 |
| Mature Lightweight Polymer Formulations | 1 | 2024 | 2 | 2024 |
| Develop Adhesive Selection and Bonding Protocols | 1 | 2024 | 4 | 2024 |
| Prototype of Cartridge Cases #1: Weight Reduction | 1 | 2024 | 4 | 2024 |
| Prototype of Cartridge Cases #2: Weight Reduction and Operational Environments | 2 | 2024 | 4 | 2025 |
| Evaluation of Lightweight Polymer Cartridge Cases | 4 | 2025 | 4 | 2025 |
| Optical Threat Detection | 1 | 2024 | 4 | 2027 |
| Design, fabricate, and test (performance) of prototype system | 1 | 2024 | 1 | 2026 |
| Performance Test Readiness Review | 4 | 2025 | 4 | 2025 |
| Performance Verification testing | 1 | 2026 | 3 | 2026 |
| Platform Integration | 3 | 2026 | 4 | 2027 |
| Prototype Evaluation Test Readiness Review (TRR) | 2 | 2027 | 2 | 2027 |
| Evaluation of Prototype on platform in operational environment | 4 | 2027 | 4 | 2027 |
| Solid High State Power Microwave System | 1 | 2024 | 4 | 2025 |

| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX3 / *Technology Maturation Initiatives* |

| | Start | | End | |
|---|---|---|---|---|
| **Events** | **Quarter** | **Year** | **Quarter** | **Year** |
| Design, Develop and Fabricate SSHP Microwave Source | 1 | 2024 | 4 | 2024 |
| Integrate SSHP Microwave Source into IFPC-HPM | 1 | 2025 | 4 | 2025 |
| Evaluate Prototype SSHP System | 4 | 2025 | 4 | 2025 |
| Collaborative Links for Integrated Fires | 1 | 2024 | 4 | 2025 |
| CLIF Technologies Modification and Maturation | 1 | 2024 | 2 | 2025 |
| Fires SoS integration, SoS efforts using NA2 to deliver reference imagery and other intelligence data to platform | 1 | 2024 | 4 | 2025 |
| CLIF Technology Integration into Hardware in the Loop (HWIL) and Subsystem Testing | 3 | 2024 | 3 | 2025 |
| Build Prototype Projectiles | 2 | 2025 | 4 | 2025 |
| Live Fire Prototype Projectiles | 4 | 2025 | 4 | 2025 |
| Multi-network/5G Capability | 1 | 2024 | 4 | 2026 |
| Design of Air and Ground prototypes | 1 | 2024 | 2 | 2024 |
| Porting of Military Communication Waveforms | 1 | 2024 | 2 | 2024 |
| Fabrication of of Air and Ground prototypes | 2 | 2024 | 2 | 2026 |
| Ground Application User Touch Point | 2 | 2025 | 2 | 2025 |
| Aviation Application User Touch Point | 4 | 2025 | 4 | 2025 |
| Ground Application Prototype Evaluation | 2 | 2026 | 4 | 2026 |
| Ground Application Prototype Evaluation Report | 4 | 2026 | 4 | 2026 |
| Aviation Application Prototype Evaluation | 2 | 2026 | 4 | 2026 |
| Aviation Application Prototype Evaluation Report | 4 | 2026 | 4 | 2026 |
| Consolidated prototype platform for Joint Common Artificial Intelligence / Autonomous Operations, Data architectures, and Power systems | 1 | 2024 | 4 | 2025 |
| Compare Army, USMC and USAF data needs and data fabrics to determine requirements to develop a common data fabric and comm system | 1 | 2024 | 4 | 2024 |
| Develop application programming interfaces to integrate the sharing of data, algorithms, and Machine learning tools; | 1 | 2025 | 4 | 2025 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX5 / *Next Generation Close Combat Missile* | |

| COST ($ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AX5: *Next Generation Close Combat Missile* | - | 0.482 | - | - | - | - | - | - | - | - | 0.000 | 0.482 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**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 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***Title:*** Next Generation Close Combat Missile | 0.482 | - | - |
| ***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. | | | |
| **Accomplishments/Planned Programs Subtotals** | 0.482 | - | - |

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX5 / *Next Generation Close Combat Missile* | |

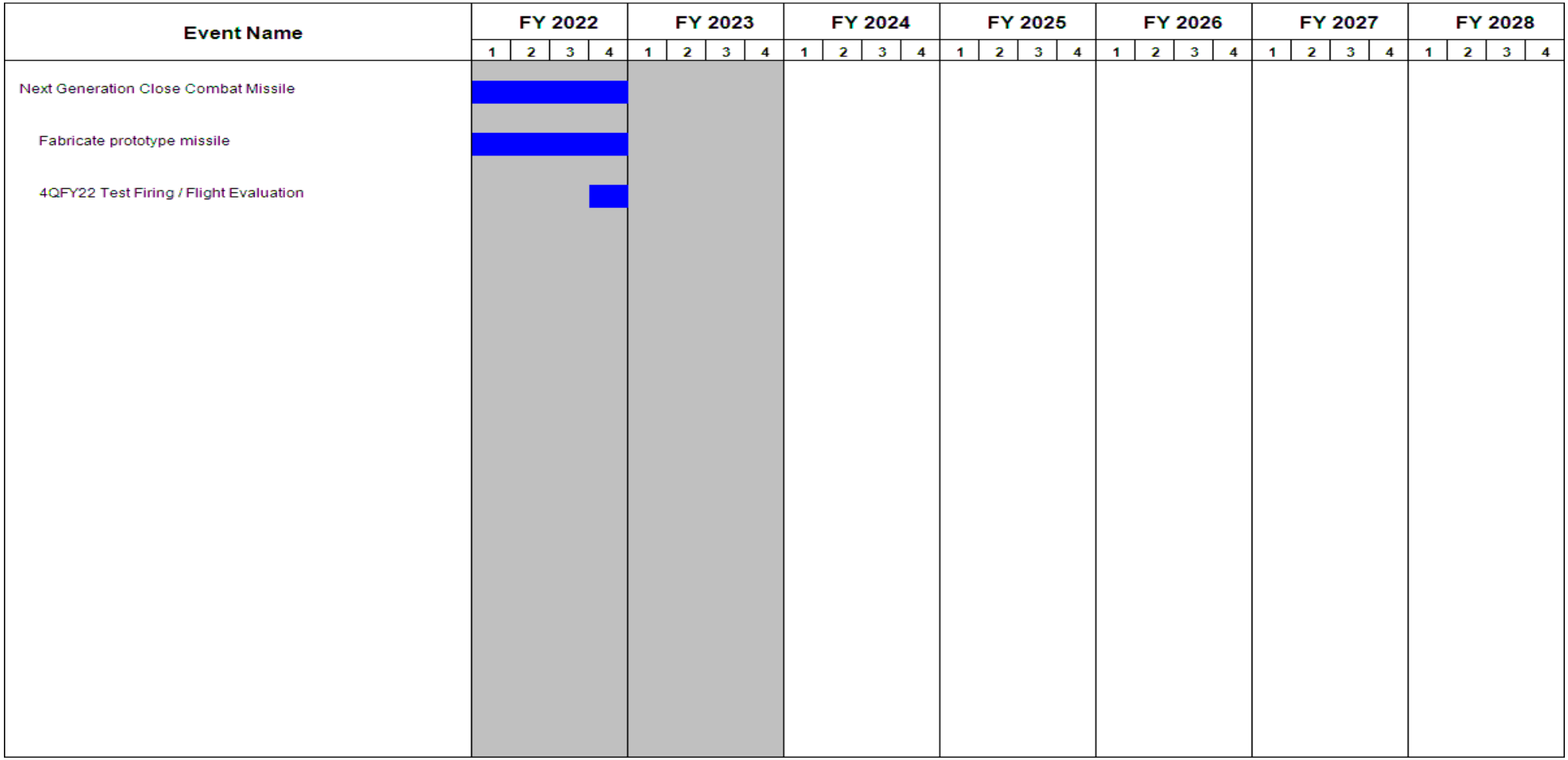
**Support ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Next Generation Close Combat Missile | Various | AvMC : Huntsville, AL | 10.443 | 0.482 | | - | | - | | - | | - | 0.000 | 10.925 | - |
| | | **Subtotal** | 10.443 | 0.482 | | - | | - | | - | | - | 0.000 | 10.925 | N/A |

| | Prior Years | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 10.443 | 0.482 | | - | | - | | - | | - | 0.000 | 10.925 | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX5 / *Next Generation Close Combat Missile* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>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 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX8 / *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)* | |

| COST ($ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AX8: *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)* | - | 23.799 | 23.407 | - | - | - | - | - | - | - | 0.000 | 47.206 |
| 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 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***Title:*** Advanced Targeting and Lethality Automated System (ATLAS) | 23.799 | 22.553 | - |
| ***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 2023 Plans:***<br>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 performance against real targets. Embed real-time algorithms into integrated, ruggedized processing approaches optimized for | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX8 / *Adv Leth and Accuracy Sys for Med Calber (ALAS-MC)* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| next generation digital sensors and integration on to ground combat platforms. Finalize interface control documentation updates for the sensor and aided targeting algorithm modules.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Effort ends in FY 2023. | | | |
| ***Title:*** SBIR & STTR Adjustment<br>***FY 2023 Plans:***<br>Funding transferred in accordance with Title 15 USC §638<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding transferred in accordance with Title 15 USC §638 | - | 0.854 | - |
| **Accomplishments/Planned Programs Subtotals** | 23.799 | 23.407 | - |

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>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 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBIR & STTR Adjustment | TBD | Various : Various | - | - | | 0.854 | | - | | - | | - | 0.000 | 0.854 | - |
| | | **Subtotal** | - | - | | 0.854 | | - | | - | | - | 0.000 | 0.854 | N/A |

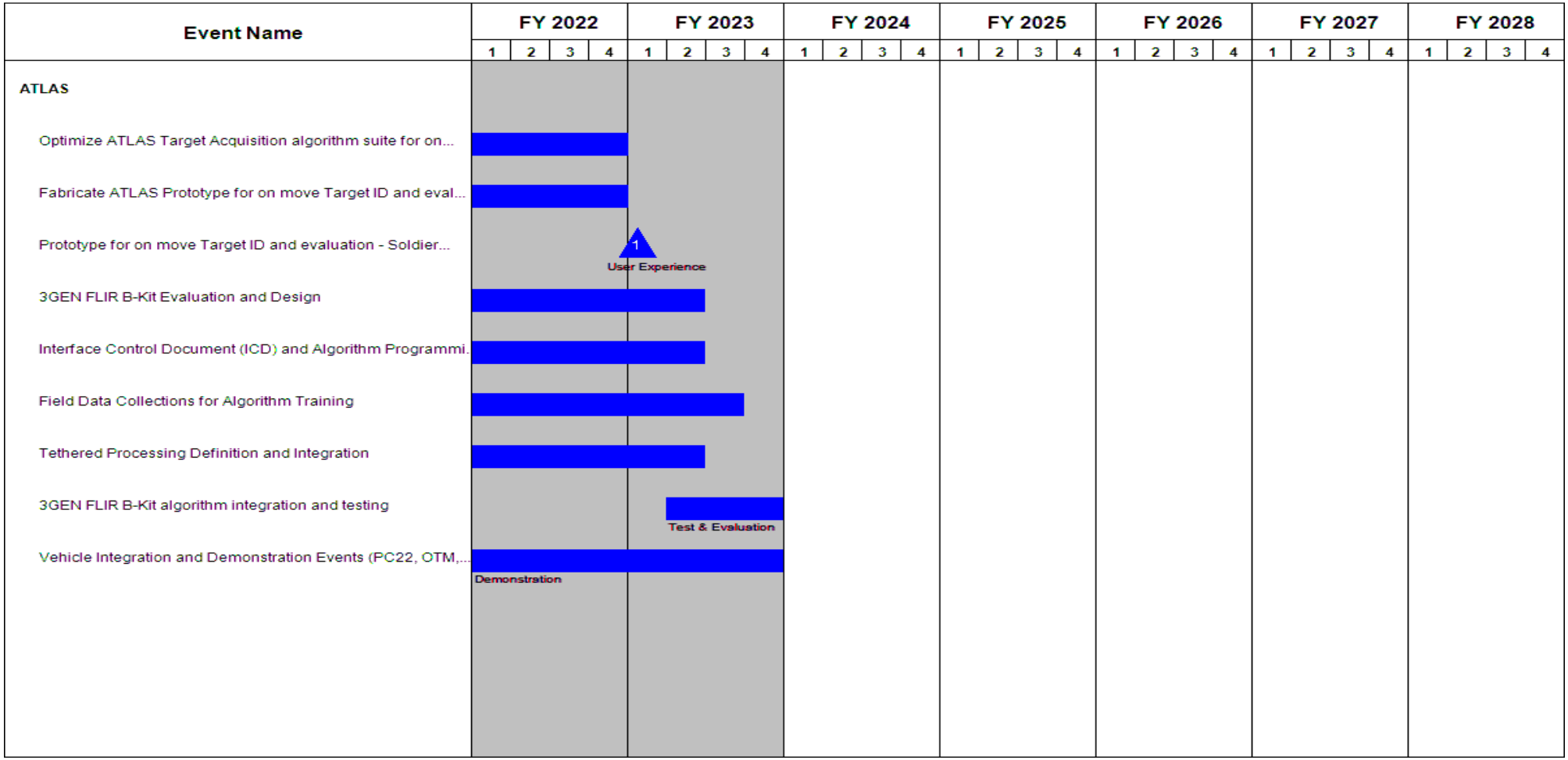
**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ATLAS: Artificial Intelligence/Machine Learning Development | TBD | CERDEC : Fort Belvoir, VA | 6.191 | 23.799 | | - | | - | | - | | - | 0.000 | 29.990 | - |
| ATLAS: Vehicle Integration and Test | TBD | C5ISR Ft. Belvoir : TBD | 2.933 | - | | 1.305 | | - | | - | | - | 0.000 | 4.238 | - |
| ATLAS: System Design | TBD | C5ISR Ft. Belvoir VA : TBD | - | - | | 5.635 | | - | | - | | - | 0.000 | 5.635 | - |
| ATLAS: Artificial Intelligence/Machine Learning Development | TBD | C5ISR Ft. Belvoir VA : TBD | 4.400 | - | | 7.187 | | - | | - | | - | 0.000 | 11.587 | - |
| ATLAS: Data Collection and Labeling | TBD | C5ISR Ft. Belvoir VA : TBD | 1.100 | - | | 2.364 | | - | | - | | - | 0.000 | 3.464 | - |
| ATLAS: Synthetic Imagery Development and Perception Studies | TBD | C5ISR Ft. Belvoir VA : TBD | 0.600 | - | | 1.411 | | - | | - | | - | 0.000 | 2.011 | - |
| ATLAS: Processor Integration and Test | TBD | C5ISR Ft. Belvoir VA : TBD | 1.900 | - | | 4.651 | | - | | - | | - | 0.000 | 6.551 | - |
| | | **Subtotal** | 17.124 | 23.799 | | 22.553 | | - | | - | | - | 0.000 | 63.476 | N/A |

| | Prior Years | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 17.124 | 23.799 | | 23.407 | | - | | - | | - | 0.000 | 64.330 | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX8 / *Adv Leth and Accuracy Sys for Med Caliber (ALAS-MC)* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>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 |
| Optimize ATLAS Target Acquisition algorithm suite for on the move | 1 | 2022 | 4 | 2022 |
| Fabricate ATLAS Prototype for on move Target ID and evaluation via Soldier Touch Point (PC22) | 1 | 2022 | 4 | 2022 |
| Prototype for on move Target ID and evaluation - Soldier Touch Point (PC22) | 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 | 3 | 2023 |
| Tethered Processing Definition and Integration | 1 | 2022 | 2 | 2023 |
| 3GEN FLIR B-Kit algorithm integration and testing | 2 | 2023 | 4 | 2023 |
| Vehicle Integration and Demonstration Events (PC22, OTM, etc) | 1 | 2022 | 4 | 2023 |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX9 / *Adv Mobility Experimental Prototype Adv Tech* | |

| COST ($ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AX9: *Adv Mobility Experimental Prototype Adv Tech* | - | 12.044 | 15.234 | - | - | - | - | - | - | - | 0.000 | 27.278 |
| 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 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***Title:*** Advanced Mobility Experimental Prototype | 12.044 | 14.678 | - |
| ***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 2023 Plans:***<br>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 | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX9 / *Adv Mobility Experimental Prototype Adv Tech* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| 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.<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Effort ends in FY 2023. | | | |
| ***Title:*** SBIR & STTR Adjustment<br>***FY 2023 Plans:***<br>Funding transferred in accordance with Title 15 USC §638<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding transferred in accordance with Title 15 USC §638 | - | 0.556 | - |
| **Accomplishments/Planned Programs Subtotals** | 12.044 | 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 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AX9 / *Adv Mobility Experimental Prototype Adv Tech* | |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBIR & STTR Adjustment | TBD | Various : Various | - | - | | 0.556 | | - | | - | | - | 0.000 | 0.556 | - |
| | | **Subtotal** | - | - | | 0.556 | | - | | - | | - | 0.000 | 0.556 | N/A |

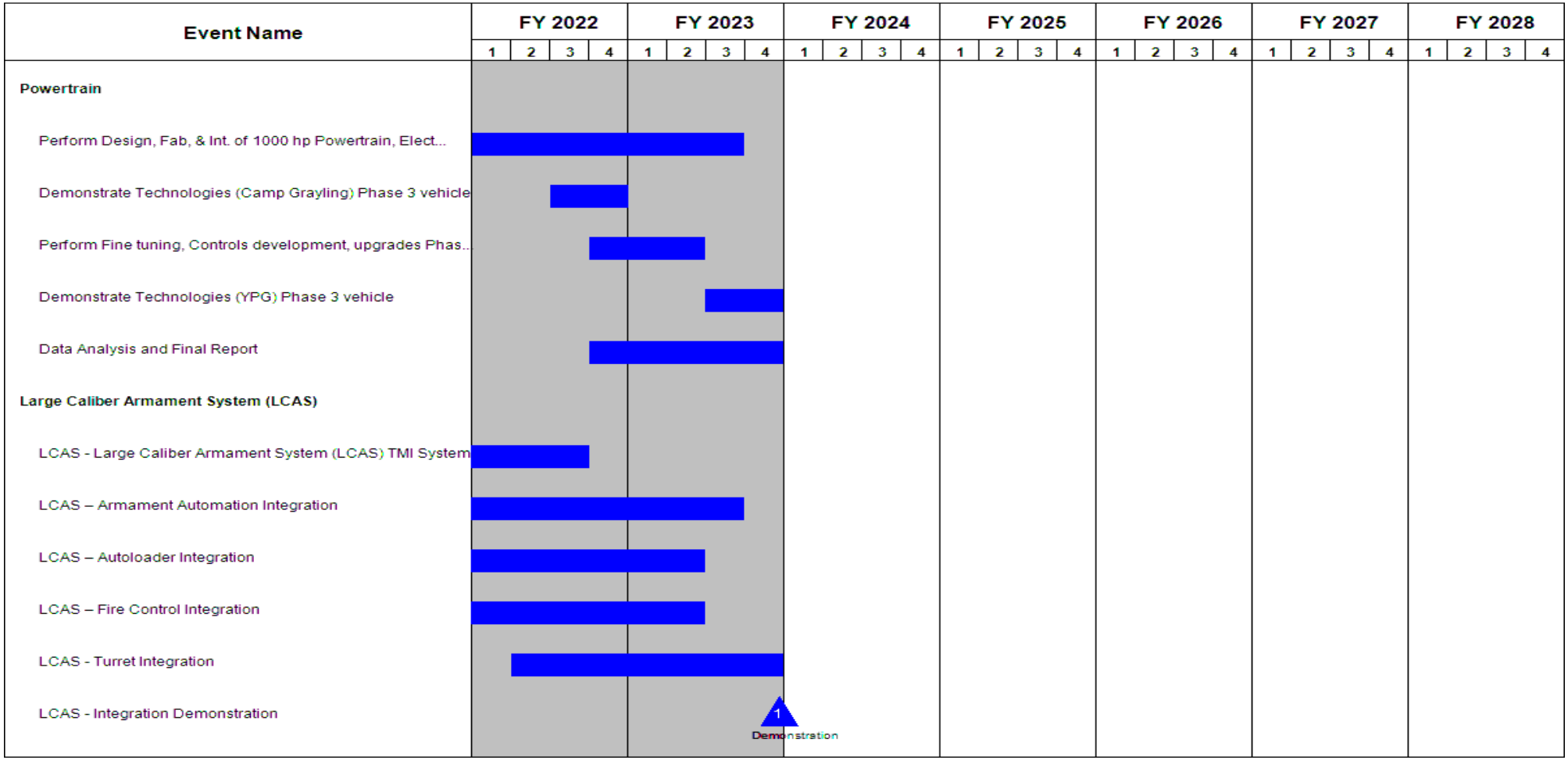
**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Design and Integration of Components | C/Various | GVSC : Warren, MI | 7.009 | 4.818 | | - | | - | | - | | - | 5.000 | 16.827 | - |
| Fabricate Powertrain Technologies | C/Various | GVSC : Warren, MI | 3.409 | - | | 1.093 | | - | | - | | - | 0.000 | 4.502 | - |
| Capability Demonstration | TBD | GVSC : Warren, MI | 2.380 | - | | 3.469 | | - | | - | | - | 5.000 | 10.849 | - |
| Turret Enhancements | TBD | GVSC : Warren, MI | - | 7.226 | | 10.116 | | - | | - | | - | 0.000 | 17.342 | - |
| | | **Subtotal** | 12.798 | 12.044 | | 14.678 | | - | | - | | - | 10.000 | 49.520 | N/A |

| | Prior Years | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 12.798 | 12.044 | | 15.234 | | - | | - | | - | 10.000 | 50.076 | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AX9 / *Adv Mobility Experimental Prototype Adv Tech* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>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. 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 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AY2 / *Army Operational Fires* | |

| COST ($ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AY2: *Army Operational Fires* | - | 36.451 | 11.051 | - | - | - | - | - | - | - | 0.000 | 47.502 |
| 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.

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 complements PE 0604182A (Hypersonics).

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

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***Title:*** Army Operational Fires | 36.451 | 10.648 | - |
| ***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.<br><br>***FY 2023 Plans:***<br>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 capability concurrent with the fielding of LRHW in FY23. Demonstrate Performance Improvements through Modeling and Simulation.<br><br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Decrease reflects the completion of the Army Operational Fires Technology Maturation Initiative projects in FY23. | | | |
| ***Title:*** SBIR & STTR Adjustment | - | 0.403 | - |

| Exhibit R-2A, RDT&E Project Justification: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AY2 / *Army Operational Fires* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***FY 2023 Plans:***<br>Funding transferred in accordance with Title 15 USC §638<br>***FY 2023 to FY 2024 Increase/Decrease Statement:***<br>Funding transferred in accordance with Title 15 USC §638 | | | |
| **Accomplishments/Planned Programs Subtotals** | 36.451 | 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 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>AY2 / *Army Operational Fires* | |

**Management Services ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SBIR & STTR Adjustment | TBD | Various : Various | - | - | | 0.403 | | - | | - | | - | 0.000 | 0.403 | - |
| | | **Subtotal** | - | - | | 0.403 | | - | | - | | - | 0.000 | 0.403 | N/A |

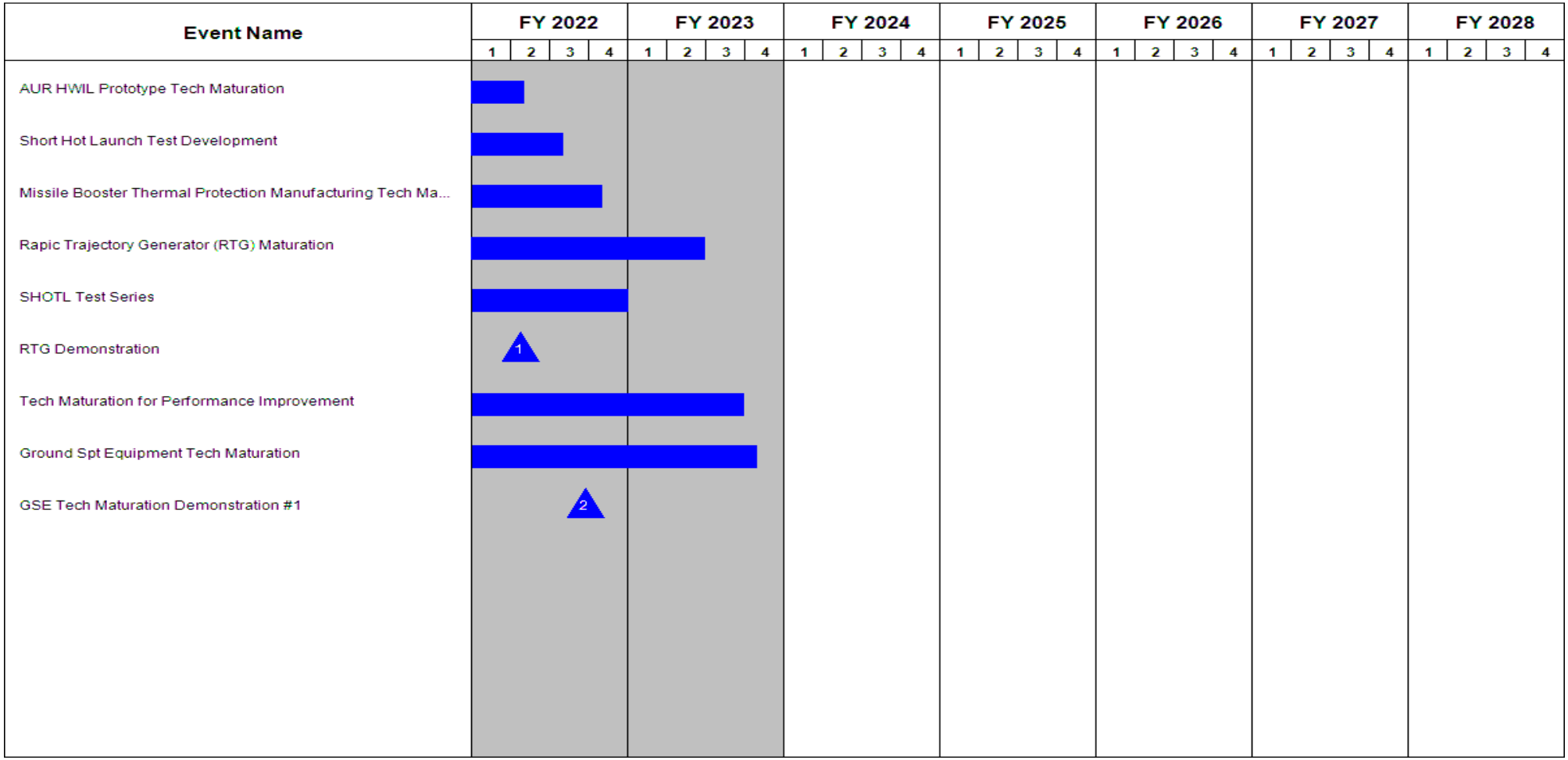
**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Army Operational Fires | C/CPIF | Lockheed-Martin - Denver : Denver | 35.458 | 36.451 | | 10.648 | | - | | - | | - | 52.700 | 135.257 | - |
| | | **Subtotal** | 35.458 | 36.451 | | 10.648 | | - | | - | | - | 52.700 | 135.257 | N/A |

| | Prior Years | FY 2022 | | FY 2023 | | FY 2024 Base | | FY 2024 OCO | | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | 35.458 | 36.451 | | 11.051 | | - | | - | | - | 52.700 | 135.660 | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>AY2 / *Army Operational Fires* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>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 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>CE4 / *Emerging Technology Initiatives Development* | |

| COST ($ in Millions) | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CE4: *Emerging Technology Initiatives Development* | - | 7.226 | - | - | - | - | - | - | - | - | 0.000 | 7.226 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

**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 2022 | FY 2023 | FY 2024 |
|---|---|---|---|
| ***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, 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. | | | |
| **Accomplishments/Planned Programs Subtotals** | 7.226 | - | - |

**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 2024 Army | | | Date: March 2023 |
|---|---|---|---|
| Appropriation/Budget Activity<br>2040 / 4 | R-1 Program Element (Number/Name)<br>PE 0604115A / *Technology Maturation Initiatives* | Project (Number/Name)<br>CE4 / *Emerging Technology Initiatives Development* | |

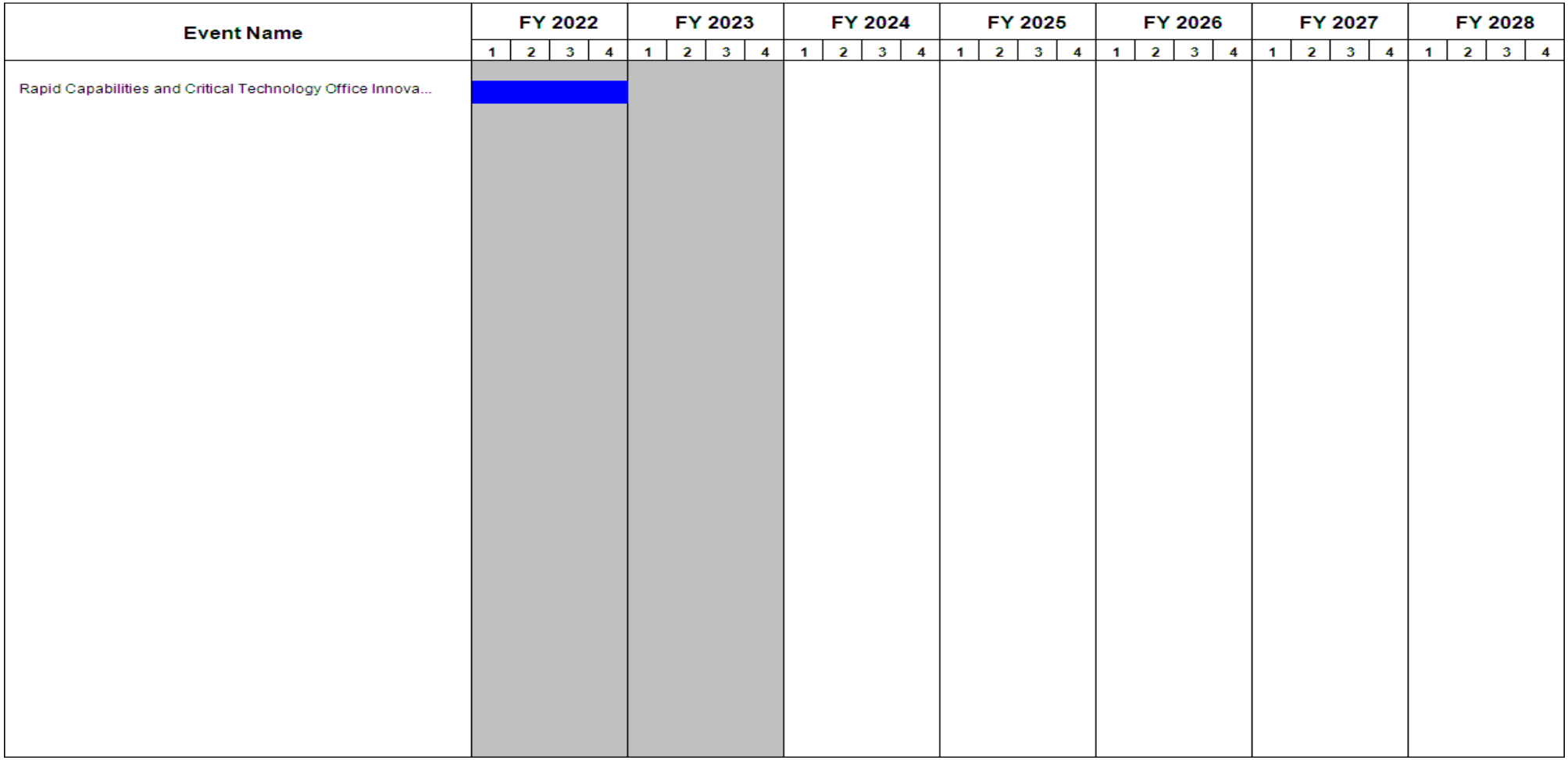
**Product Development ($ in Millions)**

| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 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 | - |
| | | **Subtotal** | - | 7.226 | | - | | - | | - | | - | 0.000 | 7.226 | N/A |

| | Prior Years | FY 2022 Cost | FY 2022 Award Date | FY 2023 Cost | FY 2023 Award Date | FY 2024 Base Cost | FY 2024 Base Award Date | FY 2024 OCO Cost | FY 2024 OCO Award Date | FY 2024 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Cost Totals** | - | 7.226 | | - | | - | | - | | - | 0.000 | 7.226 | N/A |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>CE4 / *Emerging Technology Initiatives Development* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army | | Date: March 2023 |
|---|---|---|
| **Appropriation/Budget Activity**<br>2040 / 4 | **R-1 Program Element (Number/Name)**<br>PE 0604115A / *Technology Maturation Initiatives* | **Project (Number/Name)**<br>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 |