Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*							
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	-	15.763	26.809	35.319	-	35.319	42.549	43.904	41.170	30.879	0.000	236.393
BS9: *Robotic Payloads*	-	8.220	7.643	5.071	-	5.071	15.528	15.854	11.877	-	0.000	64.193
FB3: *Robotics Architecture*	-	2.260	2.769	2.731	-	2.731	2.730	2.734	2.764	2.795	0.000	18.783
FB6: *Squad Multipurpose Equipment Transport (SMET)*	-	2.951	11.270	19.839	-	19.839	15.918	15.936	16.106	16.286	0.000	98.306
FG8: *Common Robotic Controller*	-	2.332	5.127	7.678	-	7.678	8.373	9.380	10.423	11.798	0.000	55.111

A. Mission Description and Budget Item Justification

This Program Element supports modernization of the current Ground Robotic fleets by investigating technology insertions including, but not limited to: condition-based maintenance, vetronics, Robotic Architecture, autonomous operations and other emerging technologies. Funding also supports developing initial prototypes to enable refinement of Operational Requirements and early user feedback to support future sustainment and operational movement operating concepts.

A portion of this funding line is a key enabler of the Army Modernization Priorities in support of the Universal Robotic Controller program.

BS9: The Robotic Payloads project is a suite of modular capabilities designed with open architecture to provide an increased level of standoff, situational awareness, disruption capability, and dexterity to respond to current and emergent Chemical, Biological, Radiological, and Nuclear (CBRN), Explosive Ordnance Disposal (EOD) and Engineer requirements. Current Man Transportable Robotic Systems Increment II (MTRS Inc II) and Common Robotic System - Heavy (CRS-H) system characteristics include the following: a remote-controlled articulated arm with a gripper, operating range up to 800 meters, multiple illuminated cameras, a pan/tilt surveillance camera, two-way radio, and a ruggedized operator control unit. This project supports development and testing of the following capabilities: Extended Range Mesh Network (ERMN), Pan/Tilt Imager (PTI) and Obstacle Avoidance & Digital Modeling (OA&DM). The use of robotic payloads allows the first approach, to potentially explosive hazards, to be made by a robot rather than a Soldier. These multiple, modular robotic mission payloads will use open architecture to integrate with the MTRS Inc II and CRS-H platforms to form the Army's next generation platform adaptable robotics systems.

FY 2024 Base dollars in the amount of $5.071 million, continues to support the integration and testing of the Extended Range Mesh Network (ERMN) and Pan Tilt Imager (PTI) capabilities onto both the MTRS Inc and CRS-H platforms. Additionally, FY 2024 funding supports logistics product analysis, the start of Instructor and Key Personnel Training (I&KPT), continues production prove-out testing and fixes to the prototypes once testing is complete. Programmatic Support funding will be used to achieve Milestone C.

FB3: Robotic Architecture (RA) provides the engineering and development resources to manage the overarching architecture for robotic systems that are both modular and interoperable across the Joint Force in order to facilitate future modernization efforts. It will manage the interoperability standards, modular payload interfaces, common software and common architecture for robotics & autonomous platforms, payloads & universal controllers. It will establish a Common Specifications Reference

(CSR) to provide a repository codifying the Army Robotic Autonomous Systems (RAS) standards for open architecture, interoperability interfaces, common control, performance specifications and test results. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Small Multipurpose Equipment Transport (S-MET) Inc II, Tactical Wheeled Vehicle-Leader Follower (TWV-LF) / Autonomous Transport Vehicle - System (ATV-S), Common Robotics System (Individual) (CRS(I)) Inc. II, Enhanced Robotic Payloads (ERP), Light Reconnaissance Robot (LRR), Optionally Manned Fighting Vehicle (OMFV), Robotic Combat Vehicle (RCV), Assault Breacher Vehicle Remote Control System (ABV RCS), Advanced Reconnaissance Vehicle (ARV), Universal Robotic Controller, etc.), and new standards addressing emerging requirements and Modular Mission Payloads (MMP) (i.e. Cyber Security, new autonomous behaviors & artificial intelligence, new payloads, lethality, etc.). RA underpins the RAS Software Foundry by providing the interface standards to allow the compatibility between next generation autonomous & unmanned software products (i.e., Robotic Technology Kernel, Warfighter Machine Interface, and innovative industry software products).

FY 2024 Base dollars in the amount of $2.731 million supports the post-finalization of the Robotics and Autonomous Systems, Ground (RAS-G) Interoperability Profile (IOP) Version 6.0, the initiation of IOP Version 7.0, and the maturation of IOP to a model based single source of truth to enable digital engineering. IOP 7.0 will provide the required modular open interfaces and compliance test tools for new programs including S-MET Modular Mission Payloads (MMPs), LRR, CRS(H), ATV-S, OMFV, RCV, ERP, Assault Breacher Vehicle Remote Control System (ABV RCS), Advanced Reconnaissance Vehicle (ARV), Robotics & Autonomy Command & Control (RAC2), Common Tactical Truck (CTT) and robotic applique kits for manned ground systems. The IOP provides the interfaces between autonomy kits and vehicle by-wire kits, as well as the interfaces to Robotic Technology Kernel (RTK) and Warfighter Machine Interface (WMI). Additionally, FY 2024 RDTE funds will iterate, mature & harden Robotic Operating System, Military (ROS-M) software modules and ROS-M instantiation documents and manage the ROS-M registry & repository infrastructure. FY 2024 RDTE funds will also mature the Common Specification Reference (CSR) from a minimum viable product to a minimum viable capability release.

FB6: The Small Multipurpose Equipment Transport (S-MET) provides small units with a remote-controlled cargo/equipment transport and limited tactical resupply capability, increasing mission capabilities while reducing the individual Soldier load. The S-MET will be capable of carrying 2,500 pounds of equipment currently required to support Infantry and Engineer Platoons in the Infantry Brigade Combat Team (IBCT) for a 72-hour mission without resupply. It is also capable of generating 1-3KW of offload power, with an operational range of 20 miles in silent mode. S-MET will have open architectures, a remote control, support casualty evacuation, and integrate a number of Modular Mission Payloads (MMP) and technical insertions. The Army Acquisition Objective (AAO) is 2,818 across S-MET Inc I and S-MET Inc II. The Army Procurement Objective (APO) S-MET Inc I quantity is 624.

The total cost of the S-MET Increment I Middle Tier of Acquisition Rapid Fielding effort is $162.300 million from FY19 to FY24, including $26.362 million of RDT&E and $135.938 million of Procurement. The S-MET program is fully funded across the Future Years Defense Program.

FY 2024 RDTE Base dollars in the amount of $4.227 million continues to support the development, integration, and testing of Increment I Technical Insertions, Engineering Change Proposals, and Modular Mission Payloads (MMP) to increase mission capabilities and address requirements in the Abbreviated Capability Development Document (A-CDD). FY 2024 RDTE funds will also continue to fund testing and development of logistics material required to support MMP efforts. Program support to include labor, travel and miscellaneous expenses in support of these RDTE efforts will also be funded.

FY 2024 RDTE Base dollars in the amount of $15.612 also funds the continuation of S-MET Increment II development, prototyping, test initiation, and performance and safety testing. S-MET Inc II is a follow-on program that will add capability and system maturity in the areas of platform autonomy, increased cyber and electromagnetic

interference hardening, ballistic protections against kinetic threats, and improved battery safety for additional transportability modes. In addition, S-MET Inc II will have added capability to integrate government furnished Modular Mission Payloads (MMPs).

FG8: Universal Robotics Control (URC) will provide the common information system for all squad and above Robotic and Autonomous Systems (RAS) command and control (C2). The U.S. Army is challenged to transform the Command and Control (C2) warfighting function to execute the RAS strategy in support of Multi-Domain Operations (MDO). The Universal Robotics Control (URC) program responds to this challenge by developing and fielding a system that rapidly synchronizes effects in all domains to defeat the enemy regardless of the mission command network. The URC operates as a distributed information system designed for resilience in a high threat environment utilizing existing and planned RAS elements. URC provides soldier and machine interfaces to establish and maintain positive C2 in all phases of combat and support operations, supported by a continuously developed software ecosystem. The capabilities of a unified information system for RAS C2 at the tactical edge enables improved situational awareness, multi-domain maneuvers, and deployment of lethal and nonlethal effects. URC is a critical enabling capability for NGCV OMFV and RCV programs.

FY 2024 RDTE Base dollars in the amount of $7.678 million will be utilized in the Execution Phase of the Software Acquisition Pathway. This effort will execute the development of the Minimum Viable Product (MVP) and the Minimum Viable Capability Release (MVCR) and Software Acquisition Pathway associated tasks. This phase will include: deployment of iterative developed software to the operational environment, conducting value assessments with user community to mature capability requirements, and provide technical training.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	16.360	26.809	28.724	-	28.724
Current President's Budget	15.763	26.809	35.319	-	35.319
Total Adjustments	-0.597	0.000	6.595	-	6.595
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.597	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	6.595	-	6.595

Change Summary Explanation

Project BS9 increased for completion of Extended Range Mesh Networking (ERMN) and Pan-Tilt Imaging (PTI) testing

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) BS9 / *Robotic Payloads*	

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
BS9: *Robotic Payloads*	-	8.220	7.643	5.071	-	5.071	15.528	15.854	11.877	-	0.000	64.193
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Ground Robotics - Robotic Payloads project is a suite of modular capabilities designed with open architecture to provide an increased level of standoff, situational awareness, disruption capability and dexterity to respond to current and emergent Engineer, CBRN and EOD requirements. Current Man Transportable Robotic Systems Increment II (MTRS Inc II) and Common Robotic System - Heavy (CRS-H) system characteristics include the following: a remote controlled articulated arm with a gripper, operating range up to 800 meters, multiple illuminated cameras, a pan/tilt surveillance camera, two-way radio, and a ruggedized operator control unit. This project will support development and testing of the following capabilities: Extended Range Mesh Network (ERMN), Pan/Tilt Imager (PTI) and Obstacle Avoidance & Digital Modeling (OA&DM). The use of robotic payloads allows the first approach, to potentially explosive hazards, to be made by a robot rather than a Soldier. These multiple, modular robotic mission payloads will use open architecture to integrate with the MTRS Inc II and CRS-H platforms to form the Army's next generation platform adaptable robotics systems.

FY 2024 Base dollars in the amount of $5.071 million, will support developmental testing and a soldier touch point of the Extended Range Mesh Network (ERMN) and Pan Tilt Imager (PTI) capabilities on both the MTRS Inc II and CRS-H platforms. Additionally, FY 2024 funding will support production qualification testing and a user jury. Programmatic Support funding will be used to prepare for production and achieve Milestone C.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Prototype and Payload Development ***Description:*** Development of Extended Range Mesh Network (ERMN), Pan/Tilt Imager (PTI) and payload prototypes and payload to platform integration requirements. ***FY 2023 Plans:*** FY 2023 funding will continue development of Extended Range Mesh Network (ERMN) and Pan/Tilt Imager (PTI) payload prototypes and payload to platform integration requirements. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease is due to development ending in FY 2023.	4.367	1.669	-
Title: Integration & Software Development (Platform) ***Description:*** Development of integration provisions for mounting the ERMN, PTI to both the MTRS Inc II and CRS-H platforms. Development of the necessary software updates to allow for payload to platform communications. ***FY 2023 Plans:***	2.941	2.392	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** BS9 / *Robotic Payloads*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 funding will continue the development of integration provisions for mounting the Extended Range Mesh Network (ERMN) and Pan/Tilt Imager (PTI) to both the MTRS Inc II and CRS-H platforms. It will also continue development of the necessary software updates to allow for payload to platform communications. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decrease due to Software development and Integration ending in FY23.			
Title: ERMN and PTI Prototypes ***Description:*** Purchase of the ERMN & PTI payloads ***FY 2023 Plans:*** Funding will purchase Extended Range Mesh Network (ERMN) and Pan/Tilt Imager (PTI) prototypes to be utilized in testing. ***FY 2024 Plans:*** FY 2024 funds to be used to update and retrofit payloads from test. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY24 decrease due to retrofit costs being lower than original prototype procurement.	-	1.000	0.350
Title: Testing and Evaluation ***Description:*** Testing, evaluation and log analysis of the ERMN, PTI payloads on to the host platforms CRS-H and MTRS Inc II ***FY 2024 Plans:*** FY 2024 funding supports testing and training of the vendor prototypes to the performance specifications requirements and safety requirements. FY 2024 funding will also fund soldier test point, and product qualification testing. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase due to Test and Evaluation events.	-	-	3.796
Title: Program Support ***Description:*** Program support for Enhanced Robotic Payload program ***FY 2023 Plans:*** Funding will continue to support the Enhanced Robotic Payloads program during the development of the prototype payloads, integration & software development for the platforms, as well as the testing and evaluation of the payloads. ***FY 2024 Plans:***	0.912	0.903	0.925

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** BS9 / *Robotic Payloads*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 funds to support ERP program during integration, development and test of payloads on to host platforms, and achieve Milestone C. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase due to ramp up of program events in preparation for Milestone C.			
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638.	-	0.279	-
Title: Test Assets ***FY 2023 Plans:*** FY23 funding will be used to purchase MTRS Inc II and CRS-H test assets (2 each). Systems will be dedicated and consumed in support of current and future ERP activities. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** No Test assets will be purchased in FY24	-	1.400	-
Accomplishments/Planned Programs Subtotals	8.220	7.643	5.071

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

PdM Robotic and Autonomous Systems (RAS) developed a Performance Specification (PSPEC) from the Enhanced Robotic Payloads-Unmanned Ground Systems (ERP-UGS) Capability Development Document (CDD). PdM RAS released a request for proposal from industry on capabilities to meet the PSPEC which resulted in the selection of the best capability to be further developed, integrated into the host platforms, and tested as a system in an Abbreviated Engineering Manufacturing Development (EMD) phase. After a successful EMD, a production decision will be made to enter Production and Deployment (PD) phase.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) BS9 / *Robotic Payloads*	

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 Transfer	TBD	TBD : TBD	-	-		0.279		-		-		-	0.000	0.279	-
Program Support	MIPR	DETROIT ACC and TACOM ILSC : Warren, MI	-	0.912	Oct 2021	0.903	Oct 2022	0.925	Oct 2023	-		0.925	0.000	2.740	-
		Subtotal	-	0.912		1.182		0.925		-		0.925	0.000	3.019	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
Prototype and Payload Development ERMN & PTI	SS/CPFF	FLIR : Boston, MA	-	4.367	Jan 2022	1.669	Feb 2023	-		-		-	0.000	6.036	-
Integration & Software Development ERMN & PTI	SS/CPFF	FLIR : Boston, Ma	-	2.941	May 2022	2.392	Feb 2023	-		-		-	0.000	5.333	-
ERMN & PTI Prototypes	SS/CPFF	FLIR : Boston, Ma	-	-		1.000	Feb 2023	0.350	Jul 2024	-		0.350	0.000	1.350	-
Test Assets (CRS-H and MTRS)	SS/TBD	FLIR : Boston, MA	-	-		1.400	Aug 2023	-		-		-	0.000	1.400	-
		Subtotal	-	7.308		6.461		0.350		-		0.350	0.000	14.119	N/A

Test and Evaluation ($ 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
Development Test ERMN & PTI	MIPR	ATEC : ABERDEEN, MD	-	-		-		1.000	May 2024	-		1.000	0.000	1.000	-
Logistics Product Development	MIPR	TACOM- ILSC : WARREN, MI	-	-		-		1.596	Mar 2024	-		1.596	0.000	1.596	-
Soldier Touch Point	TBD	TBD : TBD	-	-		-		0.200	May 2024	-		0.200	0.000	0.200	-
Production Qualification Test (ERMN & PTI) Plan and Conduct	MIPR	ATEC : ABERDEEN, MD	-	-		-		1.000	Sep 2024	-		1.000	0.000	1.000	-
		Subtotal	-	-		-		3.796		-		3.796	0.000	3.796	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) BS9 / *Robotic Payloads*	

	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	-	8.220		7.643		5.071		-		5.071	0.000	20.934	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** BS9 / *Robotic Payloads*

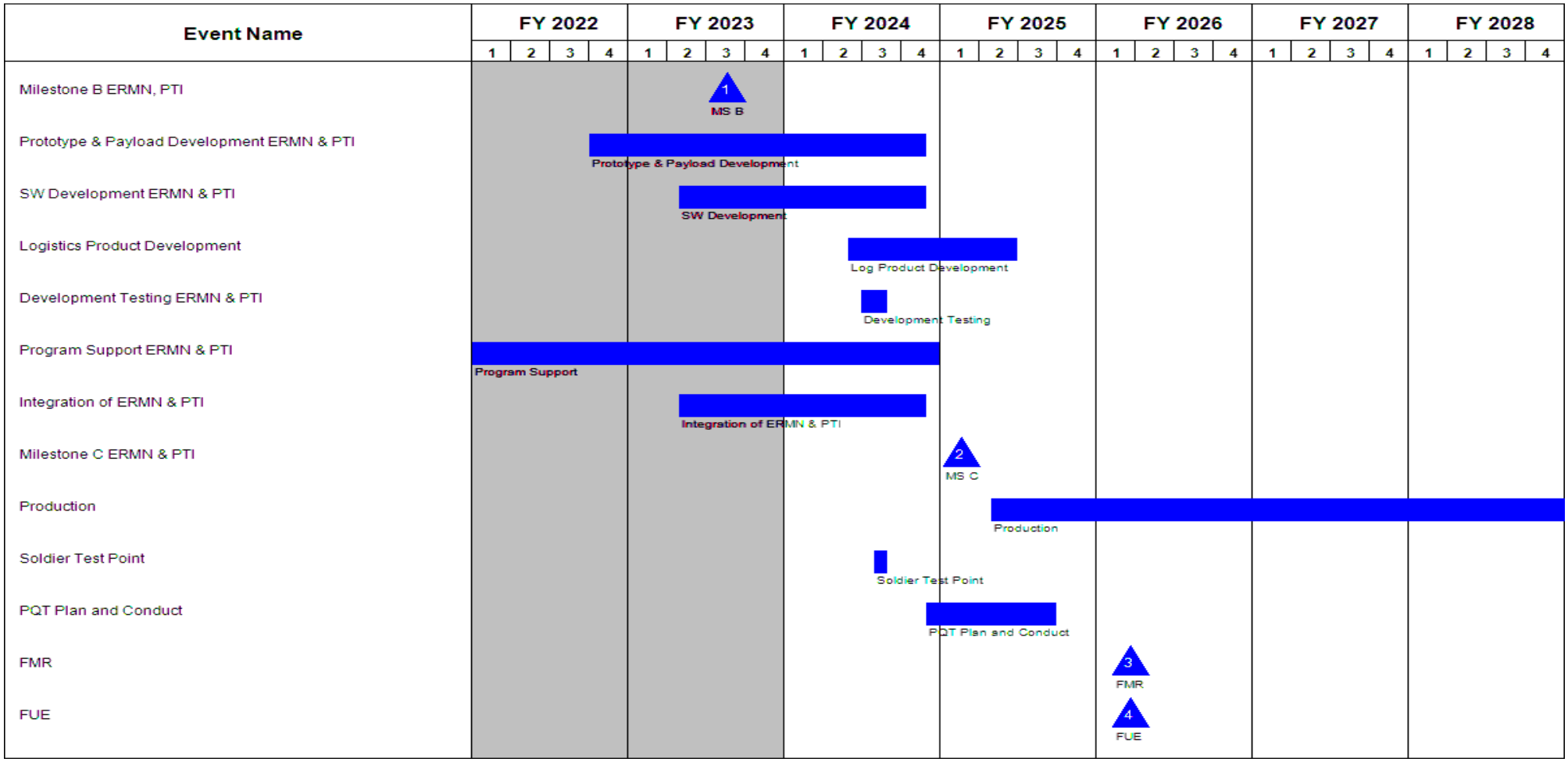

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** BS9 / *Robotic Payloads*

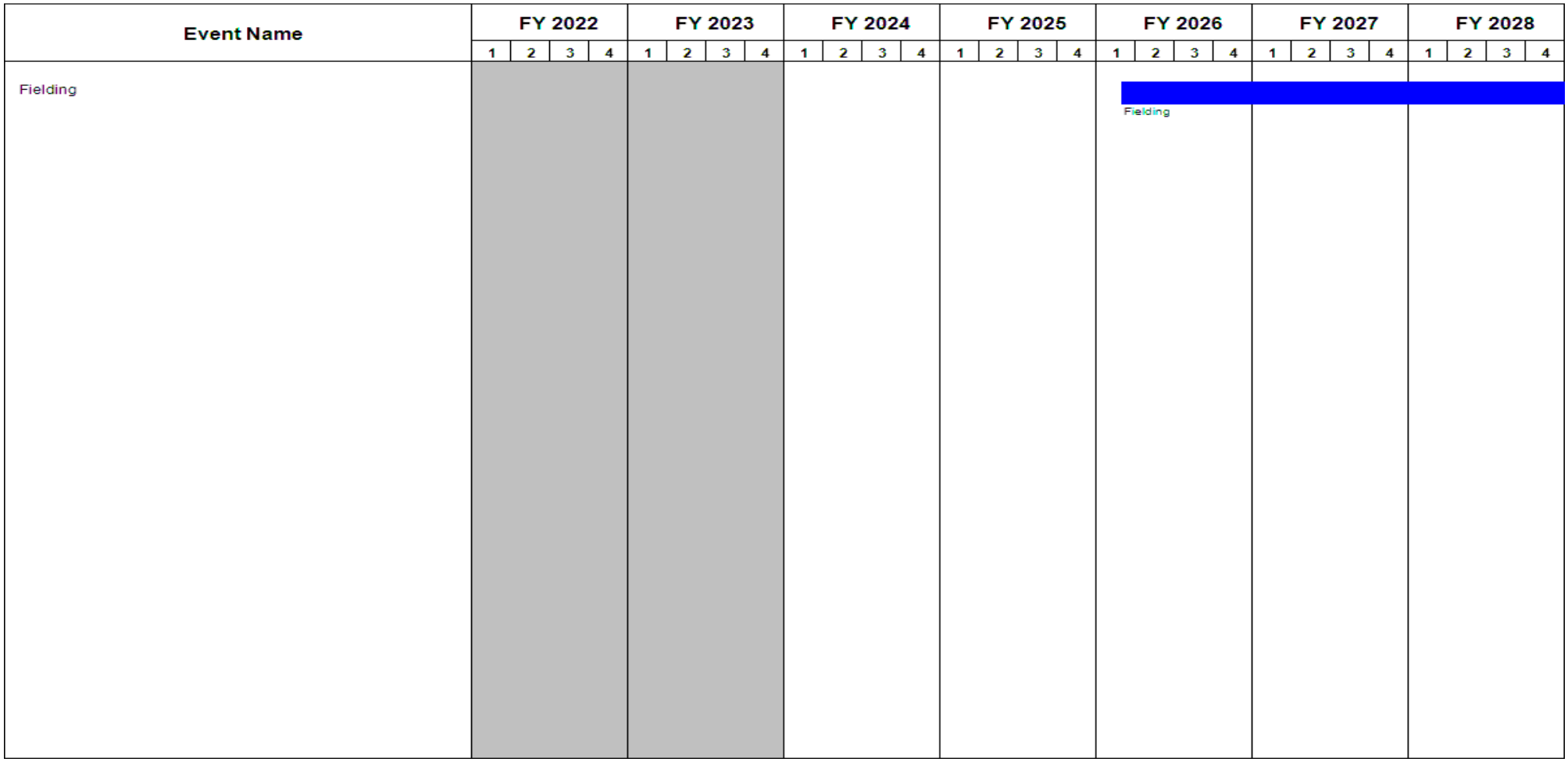

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** BS9 / *Robotic Payloads*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Milestone B ERMN, PTI	3	2023	3	2023
Prototype & Payload Development ERMN & PTI	4	2022	4	2024
SW Development ERMN & PTI	2	2023	4	2024
Logistics Product Development	2	2024	2	2025
Development Testing ERMN & PTI	3	2024	3	2024
Program Support ERMN & PTI	1	2022	4	2024
Integration of ERMN & PTI	2	2023	4	2024
Milestone C ERMN & PTI	1	2025	1	2025
Production	2	2025	2	2029
Soldier Test Point	3	2024	3	2024
PQT Plan and Conduct	4	2024	3	2025
FMR	1	2026	1	2026
FUE	1	2026	1	2026
Fielding	1	2026	2	2029

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army											Date: March 2023	
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*				Project (Number/Name) FB3 / *Robotics Architecture*			
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**
FB3: *Robotics Architecture*	-	2.260	2.769	2.731	-	2.731	2.730	2.734	2.764	2.795	0.000	18.783
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Robotic Architecture (RA) provides the engineering and development resources to manage the overarching architecture for robotic systems that are both modular and interoperable across the Joint Force in order to facilitate future modernization efforts. It will manage the interoperability standards, modular payload interfaces, common software and common architecture for robotics & autonomous platforms, payloads & universal controllers. It will enhance the Common Specifications Reference (CSR) to provide a repository codifying the Army Robotic Autonomous Systems (RAS) standards for open architecture, interoperability interfaces, common control, performance specifications and test results. RA includes the construction of program specific Interoperability Profiles (IOP) (i.e. Small Multipurpose Equipment Transport (S-MET) Inc II, Autonomous Transport Vehicle (ATV), Assault Breach Vehicle Remote Control System (ABV RCS), Robotics & Autonomy Command & Control (RAC2), Common Robotics System (Individual), (CRS(I)) Inc II, Enhanced Robotic Payloads (ERP), Light Reconnaissance Robot (LRR), Optionally Manned Fighting Vehicle (OMFV), Robotic Combat (RCV) variants, robotic bridging and construction vehicles, robotic applique kits for manned ground systems, etc.), and new standards addressing emerging requirements and Modular Mission Payloads (MMP) including Cyber Security, software safety requirements from MIL-STD-882E, new autonomous behaviors & artificial intelligence, new payloads, lethality, etc. RA underpins the RAS software Foundry by providing the interface standards to allow the compatibility between next generation autonomous & unmanned software products (i.e., Robotic Technology Kernel, Warfighter Machine Interface, and innovative industry software products). A key focus of RA will be integrating the RA interfaces with the larger enterprise confluence of Software Foundry, Agile/DevSecOps & software development environments as they are applied to matured product lines such as Robotic Technology Kernel (RTK) and Warfighter Machine Interface (WMI).

FY 2024 Base dollars in the amount of $2.731 million supports the post-finalization of the Robotics and Autonomous Systems, Ground (RAS-G) Interoperability Profile (IOP) Version 6.0, the initiation of IOP Version 7.0, and the maturation of IOP to a model based single source of truth to enable digital engineering. IOP 7.0 will provide the required modular open interfaces and compliance test tools for new programs including S-MET Modular Mission Payloads (MMPs), LRR, CRS(H), ATV, OMFV, RCV, ERP, Assault Breacher Vehicle Remote Control System (ABV RCS), Advanced Reconnaissance Vehicle (ARV), Robotics & Autonomy Command & Control (RAC2), Common Tactical Truck (CTT) and robotic applique kits for manned ground systems. The IOP provides the interfaces between autonomy kits and vehicle by-wire kits, as well as the interfaces to Robotic Technology Kernel (RTK) and Warfighter Machine Interface (WMI). Additionally, FY 2024 RDTE funds will iterate, mature & harden Robotic Operating System, Military (ROS-M) software modules and ROS-M instantiation documents and manage the ROS-M registry & repository infrastructure. FY 2024 RDTE funds will also mature the Common Specification Reference (CSR) from a minimum viable product to a minimum viable capability release.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Robotics Architecture	2.260	2.668	2.731
Description: Provide architecture tools and support for current Programs of Record (PoR) & new requirements to allow for interoperability within the Joint community for Robotics & Autonomous Systems.			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB3 / *Robotics Architecture*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 RDTE funds in the amount of $2.668 million supports the finalization of the Robotics and Autonomous Systems, Ground (RAS-G) Interoperability Profile (IOP) Version 6. IOP V6.0 will provide the required modular open interfaces and compliance test tools for new programs including Small Mobile Equipment Transport (S-MET) Modular Mission Payloads (MMPs), Common Robotic System Heavy (CRS(H)), Tactical Wheeled Vehicle Leader Follower (TWVLF), Optionally Manned Fighting Vehicle (OMFV), Robotic Combat Vehicle (RCV), Enhanced Robotics Payloads (ERP), Assault Breacher Vehicle Remote Control System (ABV RCS), Advanced Recon Vehicle (ARV), Universal Robotic Controller (URC), and robotic applique kits for manned ground systems. Additionally, FY 2023 RDTE funds will continue the development & hardening of Robotic Operating System, Military (ROS-M) software modules and ROS-M instantiation documents, and management of ROS-M registry & repository infrastructure. FY 2023 RDTE funds will also result in the minimum viable product of the Common Specification Reference (CSR). ***FY 2024 Plans:*** FY 2024 RDTE funds in the amount of $2.731 million supports the post-finalization of the Robotics and Autonomous Systems, Ground (RAS-G) Interoperability Profile (IOP) Version 6. IOP V6.0 and initiation of IOP V7.0 and will provide the required modular open interfaces and compliance test tools for new programs including Small Mobile Equipment Transport (S-MET) Increment II & Modular Mission Payloads (MMPs), Autonomous Tactical Vehicle-System (ATV-S), Optionally Manned Fighting Vehicle (OMFV), Robotic Combat Vehicle (RCV), Enhanced Robotics Payloads (ERP), Assault Breacher Vehicle Remote Control System (ABV RCS), Robotics Architecture Command & Control (RAC2), Common Tactical Truck (CTT) and robotic applique kits for manned ground systems. Additionally, FY 2024 RDTE funds will continue the development, iteration & hardening of Robotic Operating System, Military (ROS-M) software modules and ROS-M instantiation documents, and management of ROS-M registry & repository infrastructure. FY 2024 RDTE funds will also move the Common Specification Reference (CSR) from minimum viable product to minimum viable capability release. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Increase is due to Conformance Verification Testing Update efforts scheduled for FY 2024.			
Title: SBIR/STTR Transfer ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638.	-	0.101	-
Accomplishments/Planned Programs Subtotals	2.260	2.769	2.731

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB3 / *Robotics Architecture*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

In FY 2024 the Robotics Architecture line develops IOP, ROS-M, and CSR tools and supporting infrastructure. It leverages intellectual capital and products which allow for Joint interoperability and helps meet Army Program of Record cost and schedule while delivering high quality products for fielding. The architecture and tools developed under this line provide enterprise-wide efficiencies and are central to the Army's acquisition philosophy of a modular open system approach between the major subsystems of robotics and autonomous systems, as described throughout the Army approved Robotics & Autonomous Systems (RAS) Initial Capabilities Document (ICD), as well as its update to support artificial intelligence.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) FB3 / *Robotics Architecture*	

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
Program Management	MIPR	Various : Multiple	1.904	0.147	Nov 2021	0.146	Dec 2022	0.161	Jan 2024	-		0.161	0.000	2.358	-
SBIR/STTR Transfer	TBD	TBD : TBD	-	-		0.101	Jan 2023	-		-		-	0.000	0.101	-
		Subtotal	1.904	0.147		0.247		0.161		-		0.161	0.000	2.459	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
IOP Version Development	SS/CPFF	Various / DCS Corp : Warren, MI	2.063	0.650	Jun 2022	0.700	Mar 2023	0.370	Nov 2023	-		0.370	0.000	3.783	-
IOP Version Completion & Release	MIPR	GVSC : Warren, MI	-	-		0.800	Feb 2023	0.500	Nov 2023	-		0.500	0.000	1.300	-
IOP Version Instantiation Tool Development	MIPR	Various : Multiple	0.126	-		-		-		-		-	0.000	0.126	-
Conformance Verification Testing (CVT) Updates	MIPR	GVSC : Warren, MI	0.516	-		-		0.600	Nov 2023	-		0.600	0.000	1.116	-
DCS / Neya Systems for Common Specification Reference (CSR) development	C/CPFF	DCS / Neya Systems : Various	-	1.002	Jul 2022	0.300	Mar 2023	0.300	Mar 2024	-		0.300	0.000	1.602	-
Model based Systems Engineering IOP	MIPR	GVSC : Warren, MI	-	-		-		0.200	Nov 2023	-		0.200	0.000	0.200	-
Architecture Products for Autonomous Systems	SS/CPFF	DCS Corp : Alexandria, VA	-	-		0.275	Apr 2023	-		-		-	0.000	0.275	-
Robotic Operating System - Military (ROS-M)	Various	Various : Multiple	1.809	0.461	May 2022	0.447	May 2023	0.600	Mar 2024	-		0.600	0.000	3.317	-
		Subtotal	4.514	2.113		2.522		2.570		-		2.570	0.000	11.719	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	6.418	2.260		2.769		2.731		-		2.731	0.000	14.178	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) FB3 / *Robotics Architecture*	

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB3 / *Robotics Architecture*

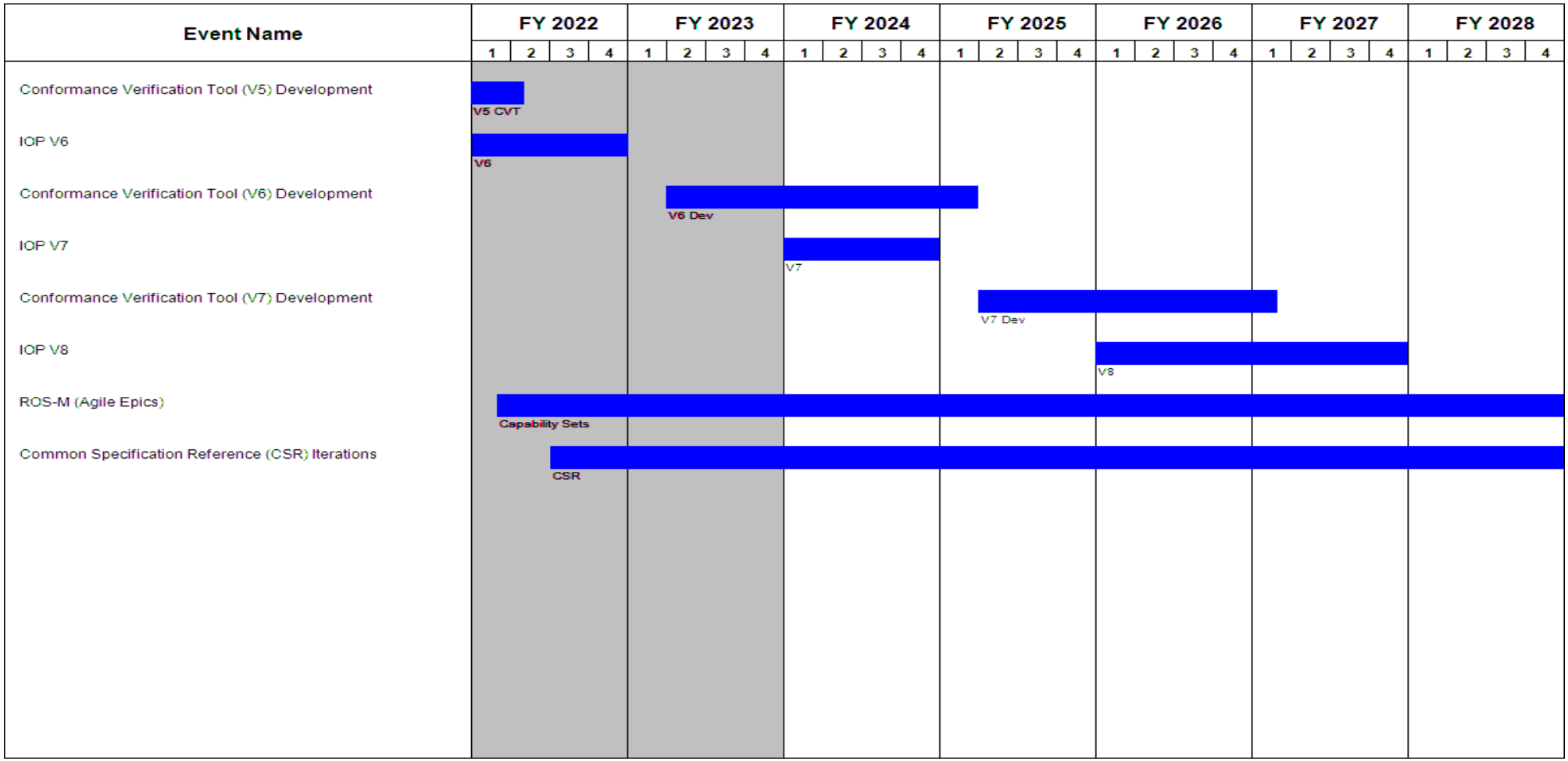

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB3 / *Robotics Architecture*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
IOP V4 Capability Plan (CP) Development	1	2018	2	2018
IOP V4 WIPT Kickoff	3	2018	3	2018
IOP V4 WG Development	3	2018	3	2019
Conformance Verification Testing (CVT) V3 Update release to industry	1	2018	4	2018
Instantiation tool development	2	2018	4	2018
Conformance Verification Testing (CVT) V4 Development	1	2019	4	2019
Conformance Verification Tool (CVT) V4 Update release to industry	1	2020	1	2021
IOP V5 Capability Plan (CP) Development	1	2020	2	2020
IOP V5 WIPT Kickoff	3	2020	3	2020
IOP V5 WG Development	3	2020	3	2021
IOP V5 Best Artifacts Stress Testing	1	2021	3	2021
Conformance Verification Tool (V5) Development	2	2021	2	2022
IOP V6	1	2022	4	2022
Conformance Verification Tool (V6) Development	2	2023	1	2025
IOP V7	1	2024	4	2024
Conformance Verification Tool (V7) Development	2	2025	1	2027
IOP V8	1	2026	4	2027
ROS-M Module SRR	3	2020	3	2020
ROS-M Module PDR	4	2020	4	2020
ROS-M Module CDR	1	2021	1	2021
ROS-M Module Build	1	2021	2	2021
ROS-M Module Stress Testing & Hardening	4	2020	2	2021
ROS-M Module Registry & Repository software Drop	2	2021	2	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB3 / *Robotics Architecture*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ROS-M (Agile Epics)	1	2022	4	2028
Common Specification Reference (CSR) Iterations	3	2022	4	2028

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) FB6 / *Squad Multipurpose Equipment Transport (SMET)*	

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
FB6: *Squad Multipurpose Equipment Transport (SMET)*	-	2.951	11.270	19.839	-	19.839	15.918	15.936	16.106	16.286	0.000	98.306
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The total cost of the S-MET Increment I Middle Tier of Acquisition Rapid Fielding effort is $162.300 million from FY19 to FY24, including $26.362 million of RDT&E and $135.938 million of Procurement. The S-MET program is fully funded across the Future Years Defense Program.

The Small Multipurpose Equipment Transport (S-MET) provides small units with a remote-controlled cargo/equipment transport and limited tactical resupply capability, increasing mission capabilities while reducing the individual Soldier load. The S-MET will be capable of carrying 2,500 pounds of equipment currently required to support Infantry and Engineer Platoons in the Infantry Brigade Combat Team (IBCT) for a 72-hour mission without resupply. It is also capable of generating 1-3KW of offload power, with an operational range of 20 miles in silent mode. S-MET will have open architectures, a remote control, support casualty evacuation, and integrate a number of Modular Mission Payloads (MMP) and technical insertions. The Army Acquisition Objective (AAO) is 2,818 across S-MET Inc I and S-MET Inc II. The Army Procurement Objective (APO) S-MET Inc I quantity is 624.

FY 2024 RDTE Base dollars in the amount of $4.227 million continues to support the development, integration, and testing of Increment I Technical Insertions, Engineering Change Proposals, and Modular Mission Payloads (MMP) to increase mission capabilities and address requirements in the Abbreviated Capability Development Document (A-CDD). FY 2024 RDTE funds will also continue to fund testing and development of logistics material required to support MMP efforts. Program support to include labor, travel and miscellaneous expenses in support of these RDTE efforts will also be funded.

FY 2024 RDTE Base dollars in the amount of $15.612 also funds the continuation of S-MET Increment II development, prototyping, test initiation, and performance and safety testing. S-MET Inc II is a follow-on program that will add capability and system maturity in the areas of platform autonomy, increased cyber and electromagnetic interference hardening, ballistic protections against kinetic threats, and improved battery safety for additional transportability modes. In addition, S-MET Inc II will have added capability to integrate government furnished Modular Mission Payloads (MMPs). million funds S-MET Increment II development, prototyping, test initiation, and performance and safety testing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: S-MET	2.951	6.700	4.227
Description: Small Multipurpose Equipment Transport (S-MET) Increment I			
FY 2023 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB6 / *Squad Multipurpose Equipment Transport (SMET)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 RDTE Base dollars in the amount of $6.700 million continues to support Increment I Technical Insertions, Funds Eight (8) Prototypes for remaining test and Modular Mission Payload Development, Engineering Change Proposals, and Modular Mission Payloads (MMP) to increase mission capabilities and address requirements in the Abbreviated Capability Development Document (A-CDD). FY 2023 RDTE funds will also to continue to fund testing and development of logistics material required to support MMP efforts. Program support to include labor, travel and miscellaneous expenses in support of these RDTE efforts will also be funded. ***FY 2024 Plans:*** FY 2024 RDTE Base dollars in the amount of $4.227 million continues to support the development, integration, and testing of Increment I Technical Insertions, Engineering Change Proposals, and Modular Mission Payloads (MMP) to increase mission capabilities and address requirements in the Abbreviated Capability Development Document (A-CDD). FY 2024 RDTE funds will also continue to fund testing and development of logistics material required to support MMP efforts. Program support to include labor, travel and miscellaneous expenses in support of these RDTE efforts will also be funded. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 budget decreases related to ramp up efforts to support S-MET Increment II			
Title: S-MET Inc II ***Description:*** Small Multipurpose Equipment Transport (S-MET) Increment II ***FY 2023 Plans:*** FY 2023 RDTE Base dollars in the amount of $4.158 million funds SMET Increment II development, prototyping, and test initiation. ***FY 2024 Plans:*** FY 2024 RDTE Base dollars in the amount of $15.612 million funds S-MET Increment II development, prototyping, test initiation, and performance and safety testing. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 budget increases related to ramp up efforts to support S-MET Increment II	-	4.158	15.612
Title: SBIR/STTR Transfer ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638. ***FY 2023 to FY 2024 Increase/Decrease Statement:***	-	0.412	-

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB6 / *Squad Multipurpose Equipment Transport (SMET)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Funding transferred in accordance with Title 15 USC §638.			
Accomplishments/Planned Programs Subtotals	2.951	11.270	19.839

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• R12154: *Squad Multipurpose Equipment Transport (SMET)*	24.448	29.709	45.890	-	45.890	74.670	82.884	65.360	65.419	0.000	388.380

Remarks

D. Acquisition Strategy

It is the Army's intent to maximize the use of an Open Systems Architecture (OSA), as well as the approved Unmanned Ground Vehicle (UGV) interoperability profiles (IOP) for Small Multipurpose Equipment Transport (S-MET). Data collected up to and during the Phase III Production Effort will be utilized to reduce development efforts and provide cost savings for future technical insertions, Engineering Change Proposals (ECP), and Modular Mission Payloads (MMP) into the Program of Record. Throughout the life of the program, the Army will continue to survey the marketplace to identify opportunities for technology insertions and required Modular Mission Payloads (MMP), relying on competition to drive down costs.

Small Multipurpose Equipment Transport (S-MET) Increment II will be a competitive field test run off and paper evaluation leading to a down selection to one or two vendor(s) under Major Capability Acquisition (MCA). The Engineering Manufacturing & Development (EMD) phase will include the delivery of prototype systems, safety and performance testing, reliability availability and maintainability testing, and further development and integration of Modular Mission Payloads (MMP). Upon EMD completion, the government will competitively down select one contractor for Program of Record (POR) Production & Deployment.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB6 / *Squad Multipurpose Equipment Transport (SMET)*

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
Program Management Costs	MIPR	PM FP : Warren, MI	5.622	1.726	Oct 2021	1.599	Oct 2022	1.591	Oct 2023	-		1.591	0.000	10.538	-
SBIR/STTR Transfer	TBD	Varoius : Various112	-	-		0.412	Oct 2022	-		-		-	0.000	0.412	-
Increment II Program Management Costs	MIPR	PM FP : Warren, MI	-	-		2.767	Oct 2022	3.481	Oct 2023	-		3.481	0.000	6.248	-
		Subtotal	5.622	1.726		4.778		5.072		-		5.072	0.000	17.198	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
Increment II Prototype Development Phase	C/FFP	Year Long Excursion : TBD	-	-		1.576	Oct 2022	10.546	Jan 2024	-		10.546	0.000	12.122	-
Technical Insertions	C/FFP	TBD : TBD	4.299	0.150	Feb 2022	1.988	Feb 2023	1.116	Feb 2024	-		1.116	0.000	7.553	-
Modular Mission Payloads (MMP)	MIPR	Ft Benning : Ft Benning, GA	1.501	0.874	Jan 2022	1.377	Jan 2023	0.500	Jan 2024	-		0.500	0.000	4.252	-
Increment I Prototypes	SS/FFP	General Dynamics Land Systems : Sterling Heights, MI	-	-		1.153	Mar 2023	-		-		-	0.000	1.153	-
		Subtotal	5.800	1.024		6.094		12.162		-		12.162	0.000	25.080	N/A

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
Cyber / Integration	MIPR	TBD : TBD	2.962	-		-		-		-		-	0.000	2.962	-
		Subtotal	2.962	-		-		-		-		-	0.000	2.962	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) FB6 / *Squad Multipurpose Equipment Transport (SMET)*	

Test and Evaluation ($ 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
ATEC Test Support	MIPR	Army Test Engineering Center : Various	6.579	0.201	Nov 2021	0.398	Nov 2022	1.020	Nov 2023	-		1.020	0.000	8.198	-
Increment II ATEC Test Support	MIPR	Army Test Engineering Center : Various	-	-		-		1.585	Jun 2024	-		1.585	0.000	1.585	-
		Subtotal	6.579	0.201		0.398		2.605		-		2.605	0.000	9.783	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	20.963	2.951		11.270		19.839		-		19.839	0.000	55.023	N/A

Remarks

The FY 2023 request includes $6.700 million for the Small Multipurpose Equipment Transport Increment I Middle Tier Acquisition (MTA).

The FY 2024 request includes $4.227 million for the Small Multipurpose Equipment Transport Increment I Middle Tier Acquisition (MTA).

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB6 / *Squad Multipurpose Equipment Transport (SMET)*

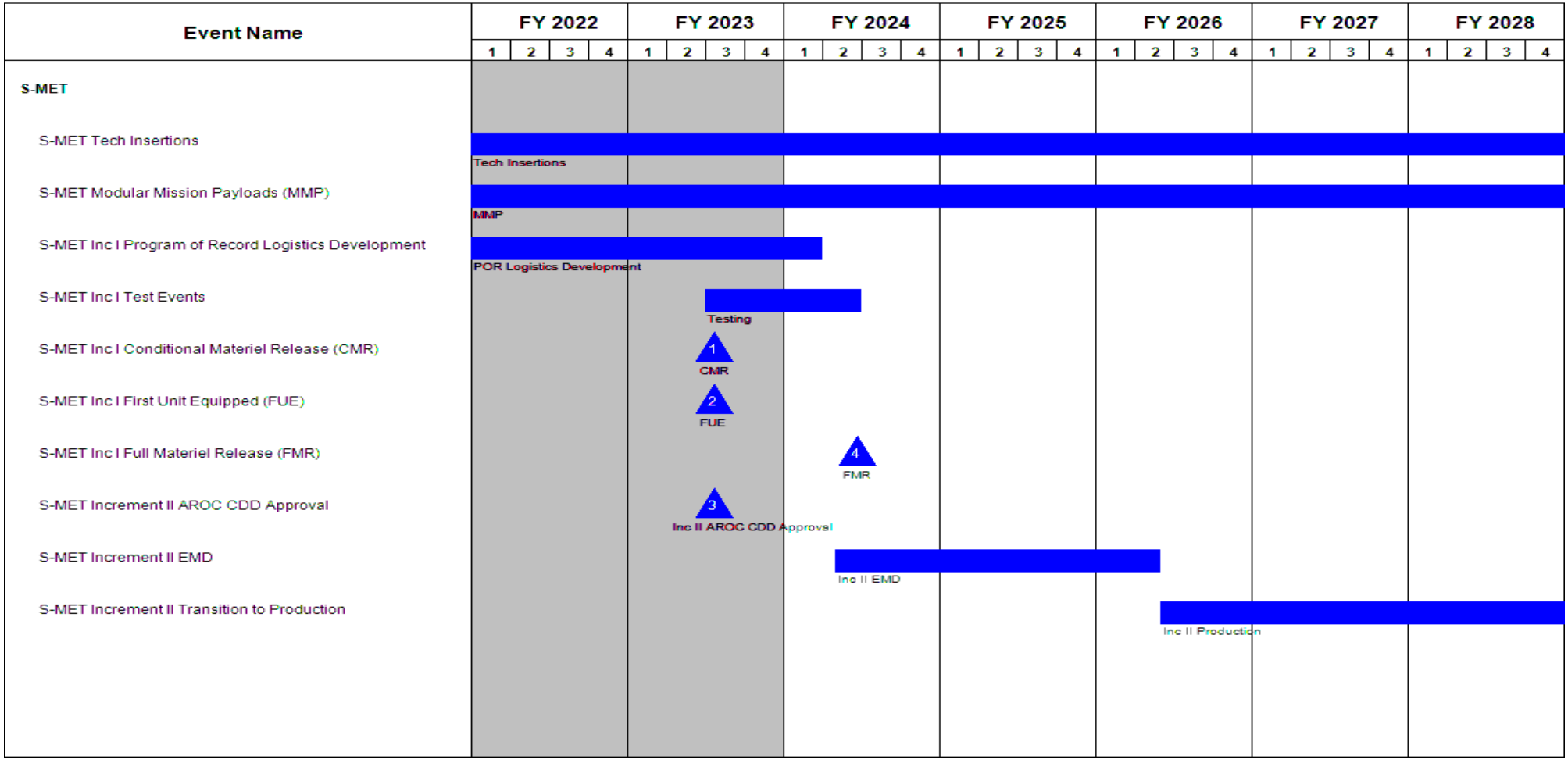

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FB6 / *Squad Multipurpose Equipment Transport (SMET)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
S-MET	1	2018	4	2022
S-MET Tech Insertions	3	2018	1	2029
S-MET Modular Mission Payloads (MMP)	2	2019	1	2029
S-MET In I DT / OT	4	2018	4	2021
S-MET Technology Demo	1	2019	3	2019
S-MET MMP Assessment	3	2019	3	2019
S-MET 804 MTA Approval	4	2019	4	2019
S-MET Production Award	4	2020	4	2020
S-MET Inc I Program of Record Logistics Development	4	2020	1	2024
S-MET Inc I Test Events	3	2023	2	2024
S-MET Inc I Conditional Materiel Release (CMR)	3	2023	3	2023
S-MET Inc I First Unit Equipped (FUE)	3	2023	3	2023
S-MET Inc I Full Materiel Release (FMR)	2	2024	2	2024
S-MET Increment II AROC CDD Approval	3	2023	3	2023
S-MET Increment II EMD	2	2024	2	2026
S-MET Increment II Transition to Production	2	2026	1	2029

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) FG8 / *Common Robotic Controller*	

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
FG8: *Common Robotic Controller*	-	2.332	5.127	7.678	-	7.678	8.373	9.380	10.423	11.798	0.000	55.111
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Robotic and Autonomous Command and Control effort (RAC2) (formerly Universal Robotic Control (URC)) is a software only program that is a critical capability for ground robotic vehicles: the Next Generation Combat Vehicle (NGCV), Optionally Manned Fighting Vehicle (OMFV), Robotic Combat Vehicle (RCV), and unmanned aircraft vehicles: Short-Range Reconnaissance (SRR), and Long-Range Reconnaissance (LRR). RAC2 will provide the common information system for all Brigade and below Robotic and Autonomous Systems (RAS) Command and Control (C2). The RAC2 program meets the challenge of providing the C2 warfighting function to execute the US Army RAS Strategy in support of Multi-Domain Operations (MDO). RAC2 provides soldier and machine interfaces to establish and maintain positive C2 in all phases of combat and support operations, supported by a continuously developed software ecosystem. The capabilities of RAC2 provide a unified information system at the tactical edge enabling improved situational awareness and multi-domain maneuver.

FY 2024 RDTE Base dollars in the amount of $7.678 million will be utilized in the Execution Phase of the Software Acquisition Pathway. This effort will execute the development of the Minimum Viable Product (MVP) and the Minimum Viable Capability Release (MVCR) and Software Acquisition Pathway associated tasks. This phase will include deployment of iterative developed software to the operational environment, conducting value assessments with user community to mature capability requirements, and provide technical training.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: RAC2 improves Soldier situational awareness while reducing cognitive load on Soldiers and the robotics portfolio logistics footprint	2.332	4.940	7.678
Description: The Robotic and Autonomous Command and Control (RAC2) information system improves situational awareness, multi-domain maneuvers, and deployment of lethal and nonlethal effects utilizing the entire Robotics and Autonomous Systems (RAS) portfolio.			
FY 2023 Plans: FY 2023 RDTE funding in the amount of $5.127 million will be utilized for Systems Engineering and Program Management (SEPM), risk reduction, and program maturation. This effort will develop and execute risk reduction and program maturation activities. This includes the personnel for preparation of the necessary acquisition strategy, plans, costing, specifications, and supporting documentation for the scheduled FY 2024 year of execution. FY23 funding will be utilized to conduct the planning phase of the Software Acquisition Pathway per Acquisition Decision Memorandum (ADM) signed 26 April 2022.			
FY 2024 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FG8 / *Common Robotic Controller*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2024 RDTE funding in the amount of $7.678 million will be utilized for System Engineering and Program Management (SEPM), Software Engineering Development and Licensing to support the execution phase of the Software Acquisition Pathway. This effort will execute the development of the Minimum Viable Product (MVP) and Minimum Viable Capability Release (MVCR) and Software Acquisition Pathway associated tasks. This Phase will include deployment of iterative developed software to the operational environment, conducting value assessments with user community to mature capability requirements, and provide technical training. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2023 to FY 2024 budget increases related to additional efforts of deployment of software to the operational environment, conducting value assessments, and technical training support.			
Title: Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) ***Description:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 Plans:*** Funding transferred in accordance with Title 15 USC §638 ***FY 2023 to FY 2024 Increase/Decrease Statement:*** Funding transferred in accordance with Title 15 USC §638	-	0.187	-
Accomplishments/Planned Programs Subtotals	2.332	5.127	7.678

C. Other Program Funding Summary ($ in Millions)

Line Item	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
• G99595: *Common Robotic System-Individual (CRS-I)*	1.141	-	0.000	-	0.000	-	-	-	-	0.000	1.141

Remarks

D. Acquisition Strategy

The RAC2 is to conduct Software Acquisition Pathway per Acquisition Decision Memorandum (ADM) signed 26 April 2022.

Robotic and Autonomous Command and Control (RAC2) Software Capabilities Need Statement (CNS) dated 31 March 2022 was approved by the Robotic Requirements Division (RRD) Maneuver-Capabilities Development Integration Directorate (M-CDID).

The Robotic Autonomous Command and Control (RAC2) Capability Needs Statement (CNS) defines critical capabilities for Battalion (BN) and below Robotic and Autonomous Systems (RAS) Command and Control (C2) software (SW) that enable the operational RAS System of Systems (SoS). The procedures, infrastructure,

developmental environment, and capabilities developed for RAC2 will provide the basis for future RAS C2 SW development as well as integration into legacy and future air/ground platforms.

Project Manager Unmanned Air Systems (PM-UAS), as the material developer, will coordinate the Army's combined efforts for the development of RAS C2. The Robotics Requirements Division (RRD) will serve as the lead capability developer for RAC2. This partnership will prioritize development of detailed user needs and will integrate these needs into the system's capabilities. PM UAS will also provide annual RAC2 CNS user updates, in partnership with RRD, and in-line with the jointly developed User Agreement (UA).

PM UAS will develop and maintain a product roadmap and product backlog for each of the main capabilities based on the RAC2 UA. PM UAS will seek to gain user feedback through a series of virtual/simulated or live/field test events. PM UAS will utilize user feedback from these events to inform prioritization for the product roadmaps and backlogs for each capability.

PM UAS will implement software for each capability, which builds on Modular Open Systems Approach (MOSA) principles and in accordance with Inter-Operability Protocols (IOPs).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Army			Date: March 2023
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605053A / *Ground Robotics*	Project (Number/Name) FG8 / *Common Robotic Controller*	

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
Program Management support	C/TBD	Various : Multiple	2.382	1.602	Jun 2022	2.748	Nov 2022	2.241	Jan 2024	-		2.241	0.000	8.973	-
SBIR/STTR	TBD	TBD : TBD	-	-		0.187	Mar 2023	-		-		-	0.000	0.187	-
		Subtotal	2.382	1.602		2.935		2.241		-		2.241	0.000	9.160	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
Engineering Manufacturing & Development	C/CPFF	TBD : TBD	0.517	-		-		3.542	Jan 2024	-		3.542	0.000	4.059	-
Software support	Various	Various : Various	1.284	-		-		1.895	Jan 2024	-		1.895	0.000	3.179	-
Risk Reduction/ Engineering Studies	TBD	TBS : TBD	-	0.730	Jun 2022	2.192	Feb 2023	-		-		-	0.000	2.922	-
		Subtotal	1.801	0.730		2.192		5.437		-		5.437	0.000	10.160	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	4.183	2.332		5.127		7.678		-		7.678	0.000	19.320	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FG8 / *Common Robotic Controller*

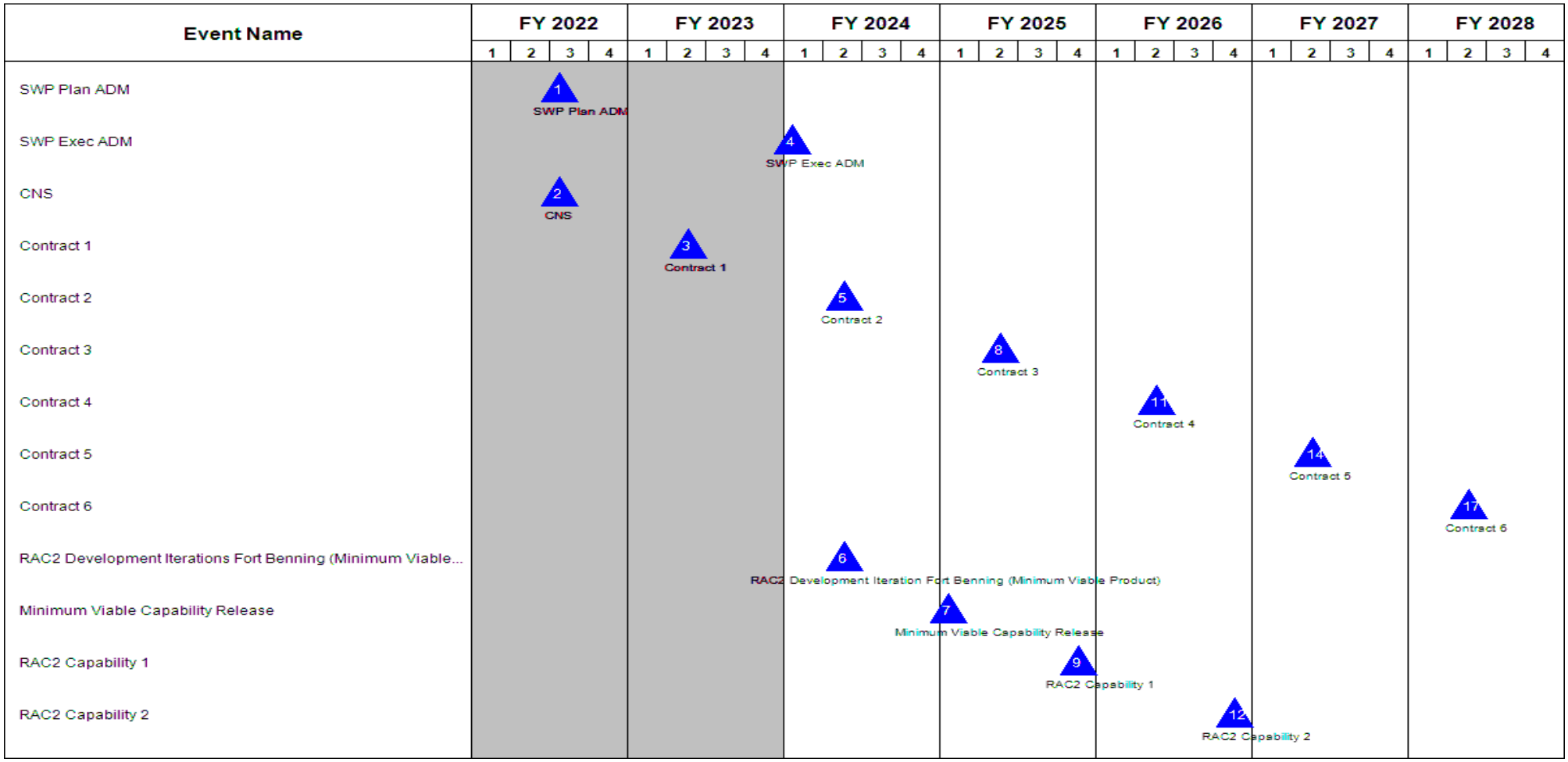

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FG8 / *Common Robotic Controller*

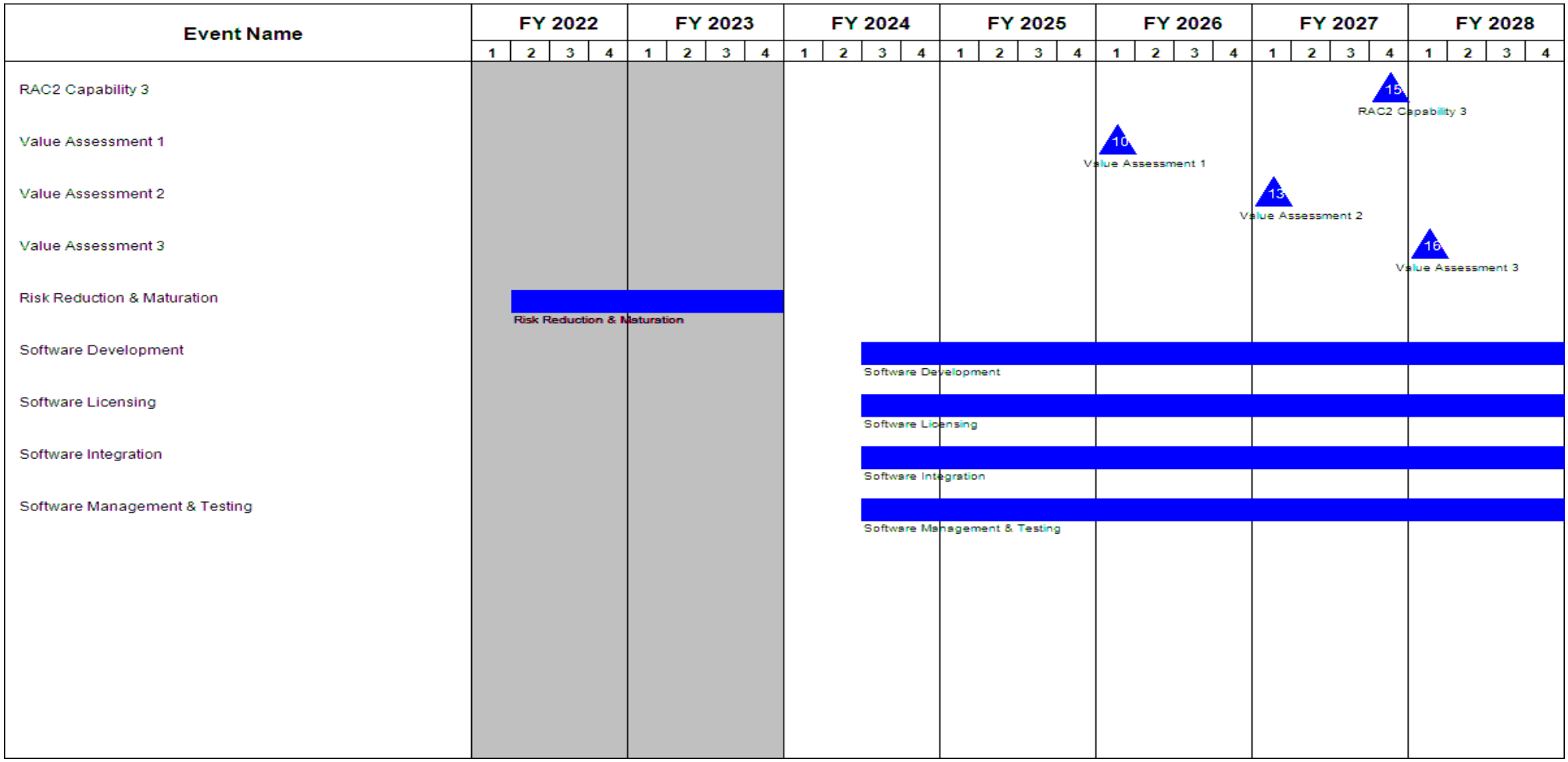

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Army		Date: March 2023
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605053A / *Ground Robotics*	**Project (Number/Name)** FG8 / *Common Robotic Controller*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SWP Plan ADM	3	2022	3	2022
SWP Exec ADM	1	2024	1	2024
CNS	3	2022	3	2022
Contract 1	2	2023	2	2023
Contract 2	2	2024	2	2024
Contract 3	2	2025	2	2025
Contract 4	2	2026	2	2026
Contract 5	2	2027	2	2027
Contract 6	2	2028	2	2028
RAC2 Development Iterations Fort Benning (Minimum Viable Product)	2	2024	2	2024
Minimum Viable Capability Release	1	2025	1	2025
RAC2 Capability 1	4	2025	4	2025
RAC2 Capability 2	4	2026	4	2026
RAC2 Capability 3	4	2027	4	2027
Value Assessment 1	1	2026	1	2026
Value Assessment 2	1	2027	1	2027
Value Assessment 3	1	2028	1	2028
Risk Reduction & Maturation	2	2022	4	2023
Software Development	3	2024	4	2030
Software Licensing	3	2024	4	2030
Software Integration	3	2024	4	2030
Software Management & Testing	3	2024	4	2030