Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army											Date: May 2021	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 1206120A *I Assured Positioning, Navigation and Timing (PNT)*							
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
Total Program Element	-	133.307	-	-	-	-	-	-	-	-	-	-
FJ8: *Assured Positioning, Navigation and Timing (PNT)*	-	40.635	-	-	-	-	-	-	-	-	-	-
FJ9: *Dismounted A-PNT*	-	29.492	-	-	-	-	-	-	-	-	-	-
FK2: *Mounted A-PNT*	-	54.725	-	-	-	-	-	-	-	-	-	-
FK3: *Anti-Jam Antenna*	-	8.455	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Assured Positioning, Navigation and Timing (A-PNT) provides Army ground maneuver forces access to assured PNT information under conditions where space-based PNT Global Positioning System (GPS) may be limited or denied (jammed and spoofed). A-PNT products are ruggedized tactical systems that enable Army forces at echelon the ability to shoot, move, communicate, and protect their forces to penetrate and dis-integrate enemy anti-access systems, thereby allowing them to maneuver from operational and strategic distances to close with, destroy, and exploit the enemy in close and deep maneuver areas with sufficient combat bower, tempo, and momentum. A-PNT addresses two critical capability gaps: Access and Integrity. Access is the ability to retrieve accurate PNT information in a contested Electronic Warfare/Cyber environment. Integrity is the ability to trust the PNT information. PNT is a critical enabler of many Army Maneuver, Fires, and Command and Control systems that are dependent on accurate Position and Timing, and a foundational Multi-Domain Battle capability to support: calibrated force posture (position and maneuver across strategic distances); multi-domain formations (operate in contested spaces against near-peer adversaries); convergence (continuous integration of capabilities in all domains). The current Global Positioning System (GPS) capability is a fixed frequency system susceptible to electronic warfare and field environments (e.g. urban, dense vegetation).

Joint Requirements Oversight Council Memo (JROCM) 049-10, dated 05 April 2010, approved the PNT Assurance Initial Capabilities Document and designated the Army as the Lead Component for Assured PNT. Army Futures Command approved the Mounted A-PNT System (MAPS) Directed Requirement (DR) on 13 January 2019. The Dismounted A-PNT System (DAPS) Directed Requirement was approved 05 April 2019. The Alternative Navigation (ALTNAV) Directed Requirement was approved in November 2019. MAPS transitions to a Capability Development Document (CDD) in June 2020 and DAPS transitions in FY 2021.

Assured Positioning, Navigation and Timing (A-PNT) consists of:
(FJ8) - The Assured PNT project funding line is for: PNT System of Systems Architecture (SOSA) Testing to validate performance of end-to-end system performance; Resiliency and Software Assurance Measures (RSAM) upgrades to legacy GPS systems. In addition, this line supports the development of complementary and adjacent A-PNT technologies as well as Enterprise Enablers including the Alternative Navigation (ALT NAV) signal Enterprise Build-out. These technologies will be integrated into future products, strategies, concepts of operation, architectures, and platforms to assure PNT.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Army	Date: May 2021
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 1206120A *I Assured Positioning, Navigation and Timing (PNT)*

(FJ9) - Dismounted Assured PNT (A-PNT) System (DAPS) will provide the Soldiers equipped with Nett Warrior and other Soldier architecture compliant systems (e.g.Integrated Visual Augmentation System (IVAS)) conducting operations outside of vehicles, unhindered access the critical timing and position data to effectively engage targets, share data across the network and conduct mission command functions.

(FK1) - The Pseudolite project was terminated by the Army on 12 February 2019.

(FK2) - The Mounted Assured Positioning, Navigation, and Timing (PNT) System (MAPS) is a platform-mounted, ruggedized tactical PNT system which provides electronic protection capabilities that enable combatant commanders the ability to move, shoot, and communicate in a Global Positioning System (GPS) challenged or denied environments.

(FK3) - The Anti-Jam Antenna Systems (AJAS) provides GPS signal point protection and PNT Assurance in challenged environments through Anti-Jam technologies. AJAS enables tactical capabilities through assured signal acquisition in challenged environments. The AJAS will assist in delivering distributed assured PNT capabilities to mounted platforms over time in an iterative, affordable manner that allows for future modernization.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	139.110	0.000	0.000	-	0.000
Current President's Budget	133.307	0.000	0.000	-	0.000
Total Adjustments	-5.803	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.079	-			
• SBIR/STTR Transfer	-5.724	-			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FJ8 / *Assured Positioning, Navigation and Timing (PNT)*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
FJ8: *Assured Positioning, Navigation and Timing (PNT)*	-	40.635	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Element (PE) 1206120A project FJ8, planned program title Assured Positioning, Navigation and Timing Enterprise Enablers transitions to PE 0604120A project BV4 beginning in FY21.

Program Element (PE) 1206120A project FJ8, planned program title PNT System of System (SOSA) Testing and Resiliency and Software Assurance Measures (RSAM) transitions to PE 0604120A project ED5 beginning in FY21.

A. Mission Description and Budget Item Justification

The Assured Positioning, Navigation and Timing (PNT) project funds the Resiliency and Software Assurance Measures (RSAM) which provides increased capability and situational awareness for 500,000+ fielded legacy military Global Positioning System (GPS) receivers supporting systems and soldiers through at least 2035. Legacy GPS receivers targeted for RSAM enhancements, include but are not limited to, 226,000 Defense Advanced GPS Receiver (DAGR) and 200,000+ embedded Ground Based-GPS Receiver Applications Module (GB-GRAM). RSAM mitigates risks in a GPS-challenged operational environment until future Positioning, Navigation and Timing (PNT) solutions are fully deployed. This line also funds the Assured PNT enablers which includes prototype development and testing to demonstrate and prove emerging capabilities for legacy and future PNT resilient solutions. Assured PNT enablers also includes the Alternative Navigation signal enterprise build-out, providing PNT data in a denied or degraded environment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: PNT System of System (SOSA) Testing and Resiliency and Software Assurance Measures (RSAM) ***Description:*** The effort supports SOSA testing, RSAM and other Army PNT capabilities.	13.583	-	-
Title: Assured Positioning, Navigation and Timing (PNT) Enterprise Enablers and Build-out ***Description:*** Enterprise Enablers provide enhanced PNT capability across an operational enterprise. These materiel solutions may augment or replace GPS by providing complementary PNT information. As complementary PNT providers, Enterprise Enablers build resiliency and robustness by diversifying PNT sources to ensure Soldiers have the right PNT information to drive mission success.	27.052	-	-
Accomplishments/Planned Programs Subtotals	40.635	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ8 / *Assured Positioning, Navigation and Timing (PNT)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• K49010: *Mounted/ Dismounted Receivers*	1.724	5.894	1.990	-	1.990	-	-	-	-	-	-

Remarks

K49010: Mounted/Dismounted Receivers is an OPA subset of Line Item Number 9897K49000 / Assured Positioning, Navigation and Timing.

D. Acquisition Strategy

The planned acquisition strategy for Positioning, Navigation and Timing (PNT) System of Systems Architecture (SOSA) testing and Resiliency and Software Assurance Measures (RSAM) implementation is to award sole source contracts to the original equipment manufacturers and leverage the Communications Electronics Research Development Engineering Center (CERDEC) to develop and evaluate solutions to enhance the resiliency of Global Positioning System (GPS)-dependent systems operating in evolving contested environments. PNT SOSA testing and RSAM implementation will complete software development for Defense Advanced GPS Receiver (DAGR), Ground Based GPS Receiver Applications Module (GB-GRAM), and MicroGRAM to include engineering build testing and formal qualification testing, as well as integration and integration testing, for platforms utilizing DAGR, GB-GRAM and MicroGRAM engineering builds.

The Assured PNT Enterprise Enablers project will conduct market research, prototyping, experimentation, and technical demonstrations of Alternative Navigation (ALT NAV), emerging situational awareness capabilities and net-enabled GPS solutions. These solutions will leverage commercial capabilities, existing contracts, industry, academia, and the warfighter in an iterative process, that will be integrated into future products, strategies, concepts of operation, architectures, and platforms to assure PNT.

The Assured PNT Enterprise Build-out will conduct network integration, installation and testing of the assured timing/location modular enterprise capability for ALT NAV. ALT NAV provides positioning, navigation and timing data in a denied or degraded environment. Enterprise Buildout will be completed to enable ALT NAV capabilities.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FJ8 / *Assured Positioning, Navigation and Timing (PNT)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RSAM Project Management Support	Allot	PM PNT : Various	3.056	0.593	Jan 2020	-		-		-		-	0.000	3.649	-
FY 2018 NDAA SEC 825 MDAP Cost Overrun	TBD	TBD : TBD	0.118	-		-		-		-		-	0.000	0.118	-
		Subtotal	3.174	0.593		-		-		-		-	0.000	3.767	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RSAM - DAGR Software Development	SS/CPFF	Rockwell Collins : Cedar Rapids, IA	2.102	3.368	Dec 2019	-		-		-		-	0.000	5.470	-
RSAM - GB-GRAM Software Development	SS/CPIF	Rockwell Collins : Cedar Rapids, IA	0.272	2.902	Feb 2020	-		-		-		-	0.000	3.174	-
Assured PNT Enterprise Enablers	C/FFP	Various : Various	-	18.160	Dec 2019	-		-		-		-	0.000	18.160	-
Assured PNT Enterprise Buildout	MIPR	Various : Various	27.955	8.892	Dec 2019	-		-		-		-	0.000	36.847	-
RSAM Army Modernization Priorities	MIPR	Rockwell Collins : Cedar Rapids, IA	2.034	1.339		-		-		-		-	0.000	3.373	-
FY 2019 Pending Rescission	TBD	TBD : TBD	2.913	-		-		-		-		-	0.000	2.913	-
		Subtotal	35.276	34.661		-		-		-		-	0.000	69.937	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RSAM Engineering and Technical Contracting Services	C/FFP	DCS Corp : APG, MD	9.110	1.928	Jan 2020	-		-		-		-	0.000	11.038	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FJ8 / *Assured Positioning, Navigation and Timing (PNT)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
RSAM Engineering and Technical Government Services	MIPR	C4ISR : Various	6.833	1.102	Jan 2020	-		-		-		-	0.000	7.935	-
Assured PNT Enterprise Enablers Contractor Engineering Support	Various	DCS Corporation : APG, MD	0.328	-		-		-		-		-	0.000	0.328	-
		Subtotal	16.271	3.030		-		-		-		-	0.000	19.301	N/A

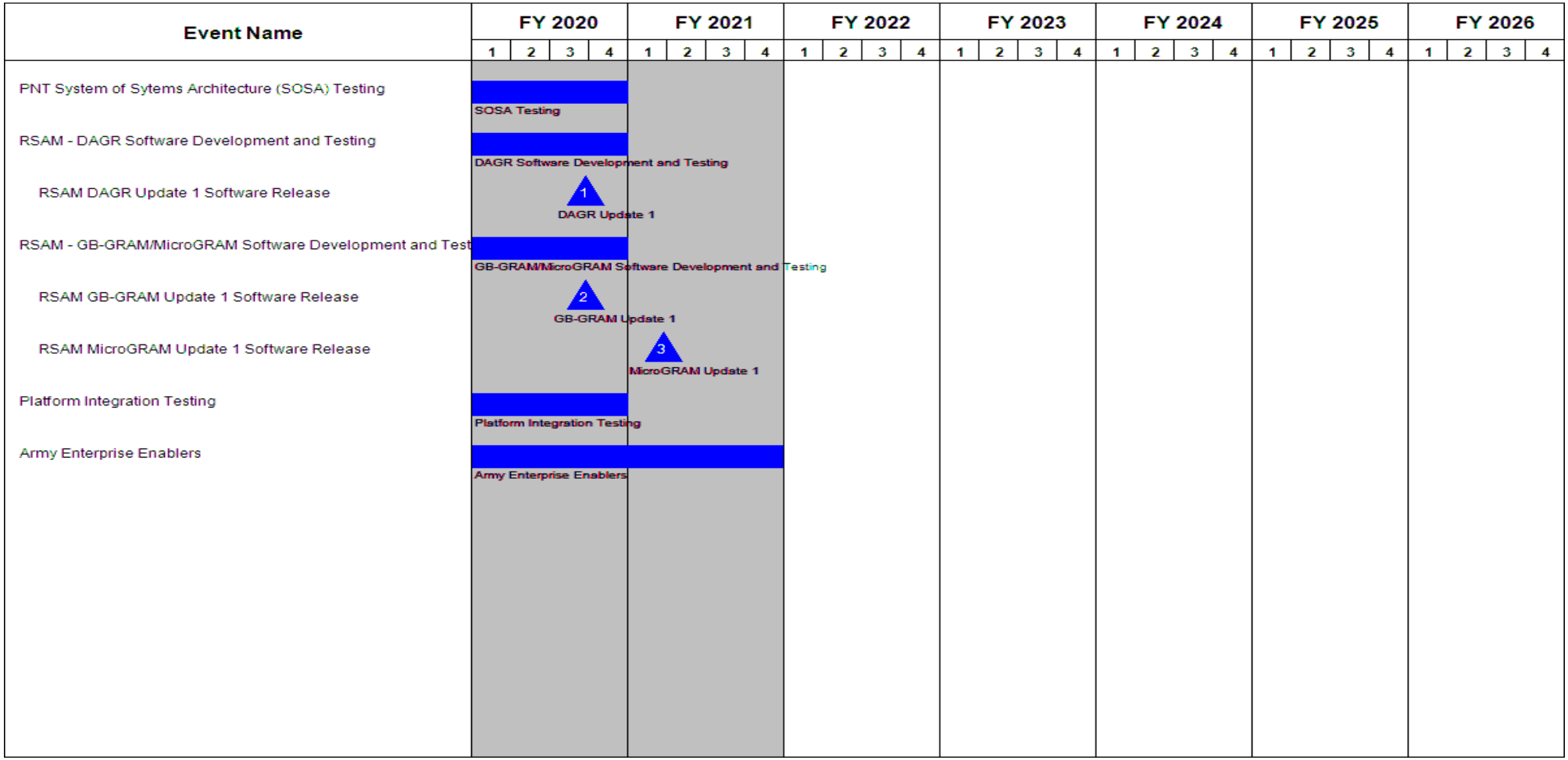
Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SOSA Testing/RSAM - Government Eng Support	MIPR	Various : Various	0.826	0.620	Jan 2020	-		-		-		-	0.000	1.446	-
SOSA Testing/RSAM - Contractor Eng Support	C/CPFF	Various : Various	1.276	0.308	Jan 2020	-		-		-		-	0.000	1.584	-
RSAM Platform Integration Testing	C/Various	Various : Various	3.700	0.535	Mar 2020	-		-		-		-	0.000	4.235	-
SOSA Testing/RSAM Test Equipment	C/Various	Various : Various	0.191	0.888	Jun 2020	-		-		-		-	0.000	1.079	-
Assured PNT Enterprise Buildout Test Support	C/Various	Various : Various	1.914	-		-		-		-		-	0.000	1.914	-
		Subtotal	7.907	2.351		-		-		-		-	0.000	10.258	N/A

	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	62.628	40.635		0.000		-		-		-	0.000	103.263	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ8 / *Assured Positioning, Navigation and Timing (PNT)*



Note

Program Element (PE) 1206120A project FJ8, planned program title Assured Positioning, Navigation and Timing Enterprise Enablers transitions to PE 0604120A project BV4 beginning in FY21.

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ8 / *Assured Positioning, Navigation and Timing (PNT)*

Program Element (PE) 1206120A project FJ8, planned program title PNT System of System (SOSA) Testing and Resiliency and Software Assurance Measures (RSAM) transitions to PE 0604120A project ED5 beginning in FY21.

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ8 / *Assured Positioning, Navigation and Timing (PNT)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
PNT System of Sytems Architecture (SOSA) Testing	1	2019	4	2020
RSAM - DAGR Software Development and Testing	1	2019	4	2020
RSAM DAGR Update 1 Software Release	3	2020	3	2020
RSAM - GB-GRAM/MicroGRAM Software Development and Testing	1	2019	4	2020
RSAM GB-GRAM Update 1 Software Release	3	2020	3	2020
RSAM MicroGRAM Update 1 Software Release	1	2021	1	2021
Platform Integration Testing	1	2019	4	2020
Army Enterprise Enablers	1	2019	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FJ9 / *Dismounted A-PNT*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
FJ9: *Dismounted A-PNT*	-	29.492	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Element (PE) 1206120A project FJ9 transitions to PE 0604120A project EH8 beginning in FY 2021.

A. Mission Description and Budget Item Justification

Dismounted Assured PNT (A-PNT) System (DAPS) implements congressional and OSD guidance to develop and field Military Code (M-Code) Ground User Equipment (MGUE) receivers and provides the Soldiers equipped with Nett Warrior (NW) and other Soldier architecture compliant systems (e.g. Integrated Visual Augmentation System (IVAS)) the critical timing and position data to effectively engage targets, share data across the network, and conduct mission command functions. DAPS is planned to be a size, weight and power (SWaP) optimized form-factor that paces the threats and includes development and integration of Global Positioning System (GPS) and non-GPS sensors. DAPS integrates with the NW system and other Soldier architecture compliant systems, and distributes PNT information to the End-User Device (EUD). DAPS includes receiver software capable of fusing sensors and Global Navigation Satellite Systems (GNSS) signals resulting in additional integrity for military GPS in denied environments and includes a M-Code receiver solution, or a Selective Availability Anti-Spoofing Module (SAASM) system with growth path to M-Code.

Through an iterative approach, DAPS will continue to fuse M-Code, GNSS, and non-GPS sensors, as well as fuse Alternate Navigation (ALTNAV) and other complementary PNT sources in a SWaP constrained system in order to pace/overmatch the threat and continue to deliver critical timing and position data to effectively engage targets, share data across the network, and conduct mission command functions.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Dismounted A-PNT System (DAPS) ***Description:*** This effort supports the development and delivery of DAPS prototypes for integration, evaluation and performance testing.	29.492	-	-
Accomplishments/Planned Programs Subtotals	29.492	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• K49020: *Dismounted Hub*	-	48.449	32.643	-	32.643	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ9 / *Dismounted A-PNT*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost

Remarks

K49020 / Dismounted Hub is an OPA subset of Line Item Number 9897K49000 / Assured Positioning, Navigation and Timing.

D. Acquisition Strategy

Dismounted A-PNT program will provide the Soldier conducting operations outside of vehicles the means to maintain accurate position, velocity, and time information in Global Positioning System (GPS) challenged or degraded/denied environments where space based PNT may be limited or denied. The Dismounted A-PNT capability will provide improved performance over the currently fielded Defense Advanced GPS Receiver.

The first iteration of capabilities will employ tailored processes to identify and close key technology gaps. Technologies available from Industry today will be evaluated for performance and operational suitability and equipped to select critical units. This will be implemented by utilizing Other Transaction Authority (OTA)'s to competitively obtain prototypes. The Government will conduct laboratory and performance testing. The findings from these efforts will provide technology viability and allow for the transition to limited production. Providing initial equipment to specified units will result in an assessment to determine production and fielding readiness of the capability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FJ9 / *Dismounted A-PNT*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support - Contractor	C/CPFF	Various : Various	1.435	0.515	Dec 2019	-		-		-		-	0.000	1.950	-
		Subtotal	1.435	0.515		-		-		-		-	0.000	1.950	N/A

Remarks

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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dismounted A-PNT Prototyping & Development Vendor 1	C/FFP	Integrated Solutions for Systems, Inc. (IS4S) : Auburn, AL	6.112	5.367	Jan 2020	-		-		-		-	0.000	11.479	-
Dismounted A-PNT Prototyping & Development Vendor 2	C/FFP	Mayflower Communications Company, Inc : Bedford, MA	2.206	1.565	Jan 2020	-		-		-		-	0.000	3.771	-
Dismounted A-PNT Protoyping & Delivery	C/FFP	NAL Research Corporation : Manassas, VA	-	13.034	Apr 2020	-		-		-		-	0.000	13.034	-
Development of a Dismounted M-Code capable prototype	MIPR	L3 Technologies Interstate Electronics Corporation : Anaheim, CA	1.300	0.330	Feb 2020	-		-		-		-	0.000	1.630	-
Development of a small SWAP-C multi sensor navigation prototype	MIPR	CERDEC Command Power and Integration Directorate : APG, MD	0.896	-		-		-		-		-	0.000	0.896	-
Engineering and Technical Product Development	MIPR	C5ISR : Various	1.060	2.207	Dec 2019	-		-		-		-	0.000	3.267	-
Nett Warrior Integration	MIPR	Various : Various	0.783	0.578	Feb 2020	-		-		-		-	0.000	1.361	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FJ9 / *Dismounted A-PNT*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	12.357	23.081		-		-		-		-	0.000	35.438	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Services - Government	Various	C5ISR : Various	0.372	0.674	Nov 2019	-		-		-		-	0.000	1.046	-
Engineering and Technical Services - Contractor	C/CPFF	DCS Corporation : APG, MD	1.120	1.872	Jan 2020	-		-		-		-	0.000	2.992	-
		Subtotal	1.492	2.546		-		-		-		-	0.000	4.038	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Support	C/Various	Various : Various	0.100	3.350	Dec 2019	-		-		-		-	0.000	3.450	-
		Subtotal	0.100	3.350		-		-		-		-	0.000	3.450	N/A

	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	15.384	29.492		0.000		-		-		-	0.000	44.876	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ9 / *Dismounted A-PNT*

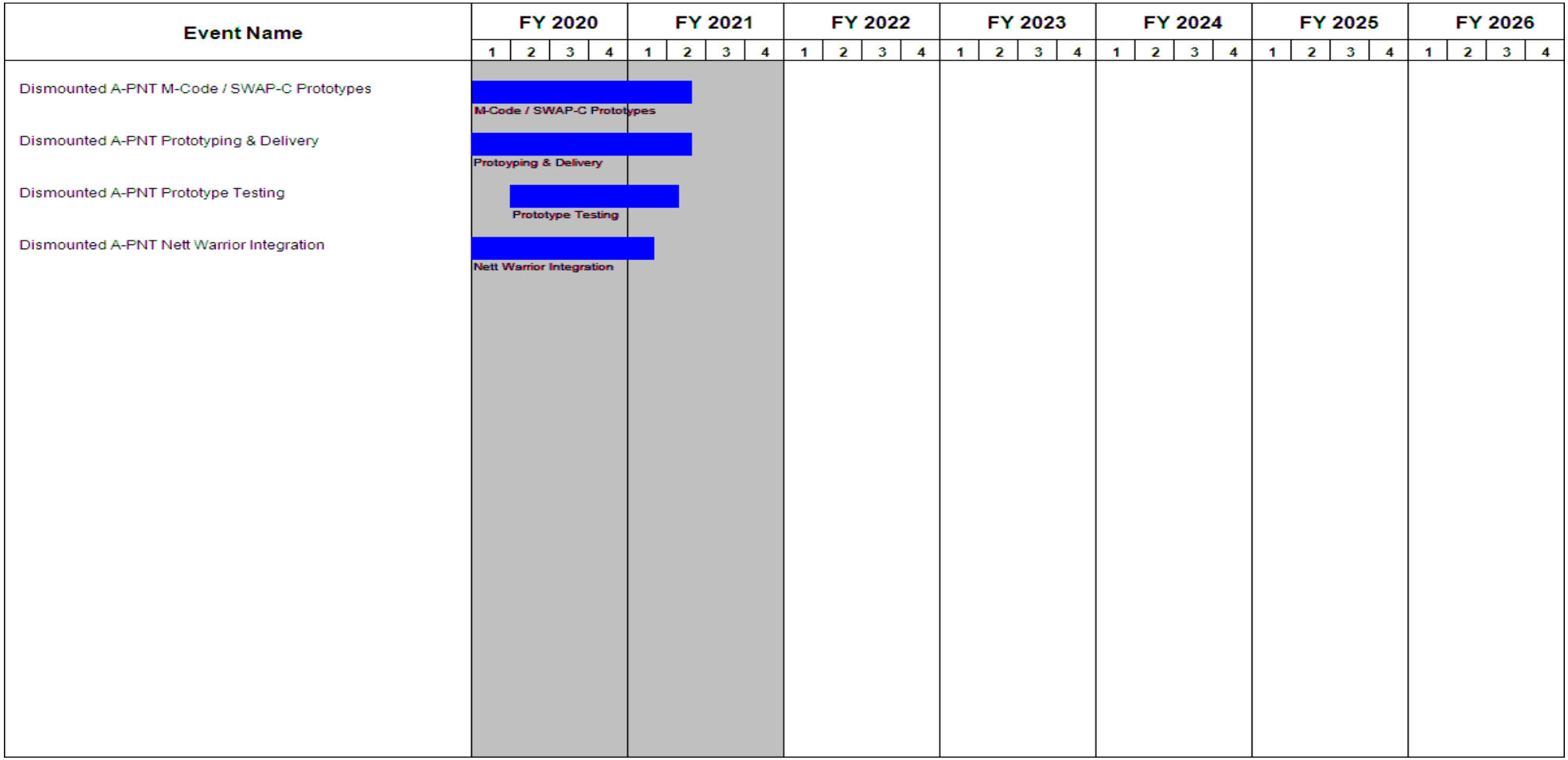

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FJ9 / *Dismounted A-PNT*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Dismounted A-PNT M-Code / SWAP-C Prototypes	1	2019	2	2021
Dismounted A-PNT Prototype Acquisition Decision	2	2019	2	2019
Dismounted A-PNT Prototyping & Delivery	2	2019	2	2021
Dismounted A-PNT Prototype Testing	1	2020	2	2021
Dismounted A-PNT Nett Warrior Integration	4	2019	1	2021

Note

Program Element (PE) 1206120A project FJ9 transitions to PE 0604120A project EH8 beginning in FY 2021.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FK2 / *Mounted A-PNT*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
FK2: *Mounted A-PNT*	-	54.725	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Element (PE) 1206120A project FK2 transitions to PE 0604120A project EJ2 beginning in FY 2021.

A. Mission Description and Budget Item Justification

Mission Command Network Modernization Implementation Plan - Line of Effort 1, 17 April 2018.

Mounted Assured Positioning, Navigation and Timing System (MAPS) will provide the Army's ground maneuver forces access to assured PNT information under conditions where space-based PNT Global Positioning System (GPS) may be limited or denied. A-PNT products are ruggedized tactical systems which provides electronic protection capabilities that enable combatant commanders the ability to move, shoot, and communicate in a Global Positioning System (GPS) challenged or denied environments. MAPS addresses two critical capability gaps: Access and Integrity. Access is the ability to retrieve accurate PNT information in a contested Electronic Warfare/Cyber environment. Integrity is the ability to trust the PNT data. PNT is a critical enabler of many Army Maneuver, Fire and Command and Control systems that are dependent on accurate Position and Timing.

Mounted Hub A-PNT: The Mounted Assured Positioning, Navigation, and Timing (PNT) System (MAPS) is a platform-mounted, ruggedized tactical PNT system which provides electronic protection capabilities that enable combatant commanders the ability to move, shoot, and communicate in a Global Positioning System (GPS) challenged or denied environments. Included in the MAPS is the Anti-Jam Antenna System (AJAS) which provides GPS signal point protection and PNT Assurance in challenged environments through Anti-Jam technologies. The MAPS will provide PNT when GPS is degraded or denied through M-code, ALTNAV, timing, sensor fusion, anti-jam antenna, and beam steering. This capability will deliver distributed assured PNT capabilities to mounted platforms over time in an iterative, affordable manner that allows for future modernization. This capability will assist in delivering distributed assured PNT capabilities to mounted platforms over time in an iterative, affordable manner that allows for future modernization.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Mounted A-PNT System (MAPS)	54.725	-	-
Description: This effort supports the delivery of MAPS prototypes for platform integration, performance and reliability testing, technical evaluation, and operational assessment.			
Accomplishments/Planned Programs Subtotals	54.725	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK2 / *Mounted A-PNT*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• K49030: *Mounted Hub A-PNT*	41.728	86.610	80.658	-	80.658	-	-	-	-	-	-

Remarks

K49030 / Mounted Hub A-PNT is an OPA subset of Line Item Number 9897K49000 / Assured Positioning, Navigation and Timing

D. Acquisition Strategy

The goal of the Mounted Assured Positioning, Navigation and Timing (PNT) System (MAPS) program is to deliver distributed assured PNT capabilities to mounted platforms over time in an iterative, affordable manner that allows for future modernization. The first iteration of capabilities will employ tailored processes to identify and close key technology gaps. Technologies available from Industry today will be evaluated for performance and operational suitability and equipped to select critical units. This will be implemented by utilizing a competitive Other Transaction Agreement (OTA) to obtain prototypes. The Government will conduct Electromagnetic Interference and Environmental Testing, as well as performance testing in the System Integration Lab (SIL), anechoic chamber testing and a Military Feasibility Assessment (MFA). The findings from these tests and assessment efforts will determine whether or not to begin platform integration. Providing initial equipment to specified units will result in an assessment to determine production and fielding readiness of the capability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK2 / *Mounted A-PNT*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	C/CPFF	Various : Various	1.381	3.952	Jan 2020	-		-		-		-	0.000	5.333	-
		Subtotal	1.381	3.952		-		-		-		-	0.000	5.333	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mounted/AJAS Prototype Development Contract	C/FFP	Various : Various	4.455	18.328	Jan 2020	-		-		-		-	0.000	22.783	-
Manufacturing Readiness (Product Maturation) Contract	C/FFP	Collins Aerospace : Cedar Rapids, IA	-	9.200	Sep 2020	-		-		-		-	0.000	9.200	-
Mounted PNT Integration - Combat Platforms	Various	Various : Warren, MI	-	2.270	Feb 2020	-		-		-		-	0.000	2.270	-
Mounted PNT Integration - Combat Support Platforms	MIPR	PEO CS&CSS : Various	0.975	0.477	Sep 2020	-		-		-		-	0.000	1.452	-
Mounted PNT Integration - Combat Systems Platforms	Various	Various : Various	-	3.630	Oct 2019	-		-		-		-	0.000	3.630	-
Client Software Integration (JBCP / MMC)	MIPR	AMRDEC/S3I : APG, MD	0.544	-		-		-		-		-	0.000	0.544	-
Engineering and Technical Product Development	MIPR	C5ISR : APG, MD	4.361	4.753	Mar 2020	-		-		-		-	0.000	9.114	-
		Subtotal	10.335	38.658		-		-		-		-	0.000	48.993	N/A

Remarks

Client and Platform Integration is required for 81 Platforms and 27 Client PMs.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FK2 / *Mounted A-PNT*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Services - Government	MIPR	C5ISR : Various	0.639	0.741	Dec 2019	-		-		-		-	0.000	1.380	-
Engineering and Technical Services - Contractor	C/CPFF	DCS : Various	3.498	5.413	Jan 2020	-		-		-		-	0.000	8.911	-
		Subtotal	4.137	6.154		-		-		-		-	0.000	10.291	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Performance Testing	MIPR	C5ISR : Various	1.294	3.296	Jan 2020	-		-		-		-	0.000	4.590	-
Reliability Testing	MIPR	C5ISR : Various	-	0.430	Mar 2020	-		-		-		-	0.000	0.430	-
Field Testing	MIPR	Army Test and Evaluation Command (ATEC) : White Sands Missile Range (WSMR)	0.415	1.691	Jan 2020	-		-		-		-	0.000	2.106	-
Military Feasibility Assessment (MFA)	MIPR	Various : TBD	2.111	-		-		-		-		-	0.000	2.111	-
Systems Engineering and Integration Testing & Support	MIPR	CERDEC Command Power and Integration Directorate : APG, MD	2.903	0.544	Sep 2020	-		-		-		-	0.000	3.447	-
		Subtotal	6.723	5.961		-		-		-		-	0.000	12.684	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.576	54.725		0.000		-		-		-	0.000	77.301	N/A

Remarks

Program Element (PE) 1206120A project FK2 transitions to PE 0604120A project EJ2 beginning in FY 2021. Program schedule continues on PE 0604120A project EJ2.

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK2 / *Mounted A-PNT*

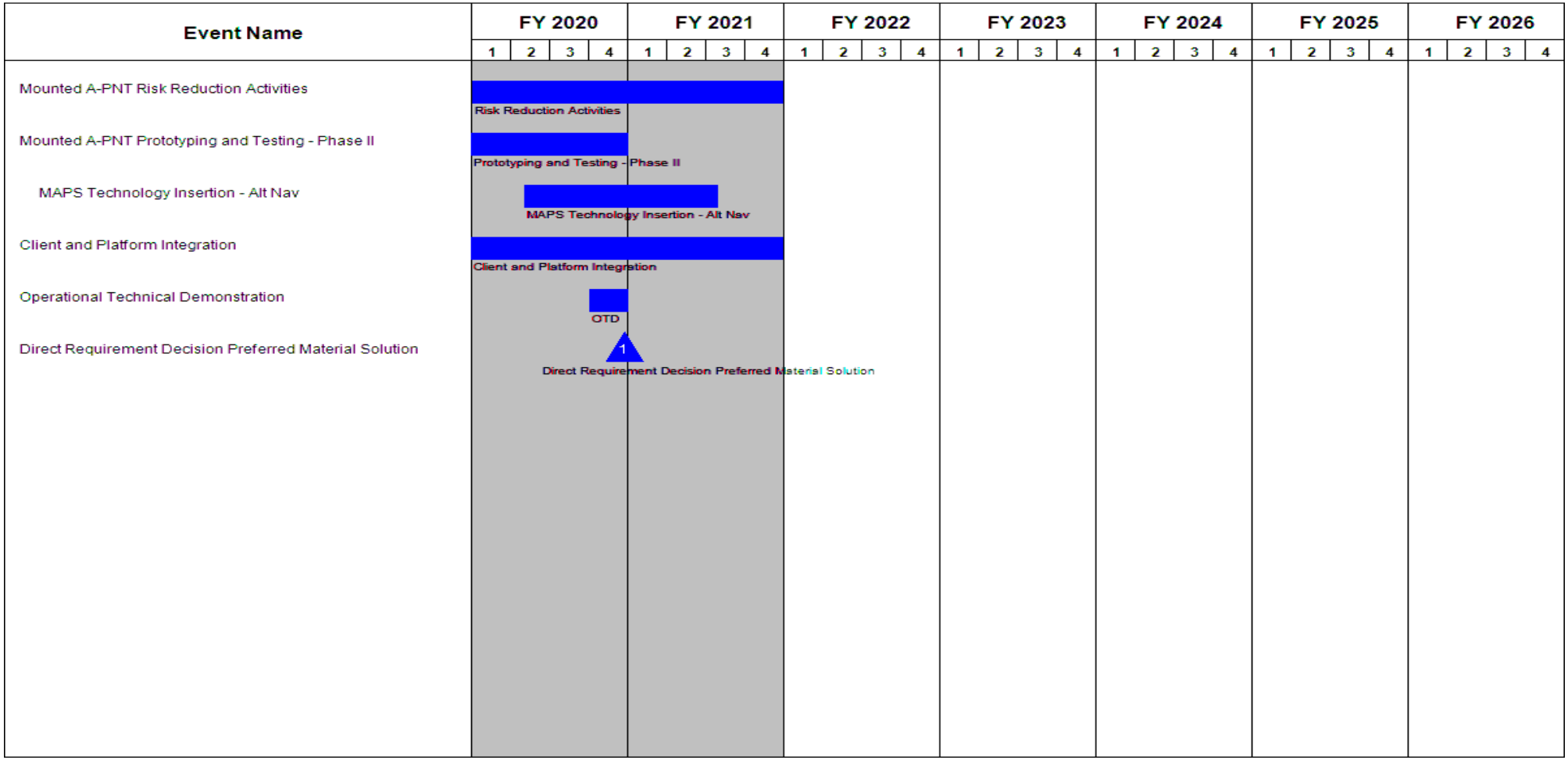

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK2 / *Mounted A-PNT*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Mounted A-PNT Risk Reduction Activities	1	2019	4	2021
Mounted A-PNT Prototyping and Testing - Phase I	1	2019	4	2019
Mounted A-PNT Prototyping and Testing - Phase II	4	2019	4	2020
MAPS Technology Insertion - Alt Nav	2	2020	3	2021
Client and Platform Integration	3	2019	4	2021
Operational Technical Demonstration	4	2020	4	2020
Direct Requirement Decision Preferred Material Solution	4	2020	4	2020

Note

Program schedule continues on PE 0604120A project EJ2.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FK3 / *Anti-Jam Antenna*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
FK3: *Anti-Jam Antenna*	-	8.455	-	-	-	-	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Program Element (PE) 1206120A project FK3 transitions to PE 0604120A project EJ2 beginning in FY 2021.

A. Mission Description and Budget Item Justification

Mounted Assured Positioning, Navigation and Timing System (MAPS) implements congressional and OSD guidance to develop and field M-code Ground User Equipment (MGUE) receivers and provides the Army's ground maneuver forces access to assured PNT information under conditions where space-based PNT Global Positioning System (GPS) may be limited or denied. A-PNT products are ruggedized tactical systems which provide electronic protection capabilities that enable Army forces the ability to move, shoot, communicate, and provide situational awareness in Global Positioning System (GPS) challenged or denied environments. MAPS addresses two critical capability gaps: Access and Integrity. Access is the ability to retrieve PNT information in a contested Electronic Warfare/Cyber environment. Integrity is the ability to trust the PNT information. PNT is a critical enabler of many Army Maneuver, Fire and Command and Control systems that are dependent on accurate Position and Timing. The MAPS will provide PNT when GPS is degraded or denied through M-code, ALTNAV, timing, sensor fusion, anti-jam antenna, and beam steering. This capability will deliver distributed assured PNT capabilities to mounted platforms over time in an iterative, affordable manner that allows for future modernization.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Anti-Jam Antenna System	8.455	-	-
Description: This effort supports the delivery of MAPS prototypes for platform integration, performance and reliability testing, technical evaluation, and operational assessment.			
Accomplishments/Planned Programs Subtotals	8.455	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The goal of the Anti-Jam Antenna System (AJAS) program is to deliver distributed A-PNT capabilities to mounted platforms over time in an iterative, affordable manner that allows for future modernization. The first iteration of capabilities will employ tailored processes to identify and close key technology gaps. Technologies available from Industry today will be evaluated for performance and operational suitability and equipped to select critical units. This will be implemented by utilizing a competitive Other Transaction Agreement (OTA) to obtain prototypes. The Government will conduct partial Electromagnetic Interference and Environmental Testing, as well as

Exhibit R-2A, RDT&E Project Justification: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK3 / *Anti-Jam Antenna*

performance testing in the System Integration Lab (SIL), anechoic chamber testing and a Military Feasibility Assessment. The findings from these test and assessment efforts will determine whether or not to proceed to platform integration. Providing initial equipment to specified units will result in an assessment to determine production and fielding readiness of the capability.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK3 / *Anti-Jam Antenna*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Management Support	C/CPFF	Various : Various	0.338	0.402	Nov 2019	-		-		-		-	0.000	0.740	-
		Subtotal	0.338	0.402		-		-		-		-	0.000	0.740	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Mounted and AJAS Prototype Development Contract	C/FFP	Various : Various	2.231	2.160	Feb 2020	-		-		-		-	0.000	4.391	-
Manufacturing Readiness (Product Maturation) Contract	C/FFP	Collins Aerospace : Cedar Rapids, IA	-	0.997	Sep 2020	-		-		-		-	0.000	0.997	-
Mounted PNT Integration - Combat Platforms	MIPR	PM Styker : Warren, MI	-	0.894	Jul 2020	-		-		-		-	0.000	0.894	-
Mounted PNT Integration - Combat Support Platforms	MIPR	JPO JLTV : Warren, MI	-	0.209	May 2020	-		-		-		-	0.000	0.209	-
Client Software Integration (JBCP / MMC)	MIPR	AMERDEC/S3I Directorate : APG,MD	-	0.801	Nov 2019	-		-		-		-	0.000	0.801	-
Development of the Systems Engineering and Integration Lab	MIPR	CERDEC Command Power and Integration Lab : APG, MD	-	0.041	Jan 2021	-		-		-		-	0.000	0.041	-
Engineering and Technical Product Development	MIPR	C5ISR : APG,MD	1.820	-		-		-		-		-	0.000	1.820	-
		Subtotal	4.051	5.102		-		-		-		-	0.000	9.153	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Army			Date: May 2021
Appropriation/Budget Activity 2040 / 4	R-1 Program Element (Number/Name) PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	Project (Number/Name) FK3 / *Anti-Jam Antenna*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Technical Services - Government	MIPR	C5ISR : Various	0.034	0.351	Oct 2019	-		-		-		-	0.000	0.385	-
Engineering and Technical Services - Contractor	C/CPFF	C5ISR : Various	2.076	0.142	Jun 2020	-		-		-		-	0.000	2.218	-
		Subtotal	2.110	0.493		-		-		-		-	0.000	2.603	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Live Sky Demo and Antenna Anechoic Chamber Test	MIPR	CERDEC - Command Power and Integration Directorate : APG, MD	0.384	-		-		-		-		-	0.000	0.384	-
Anti-Jam Antenna Integrity/ Performance Testing	MIPR	CERDEC STCD : APG,MD	1.098	2.458	Jan 2020	-		-		-		-	0.000	3.556	-
TNT Prototype testing	MIPR	CERDEC STCD : APG, MD	0.128	-		-		-		-		-	0.000	0.128	-
		Subtotal	1.610	2.458		-		-		-		-	0.000	4.068	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.109	8.455		0.000		-		-		-	0.000	16.564	N/A

Remarks

Program Element (PE) 1206120A project FK3 transitions to PE 0604120A project EJ2 beginning in FY 2021. Program schedule continues on PE 0604120A project EJ2.

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK3 / *Anti-Jam Antenna*

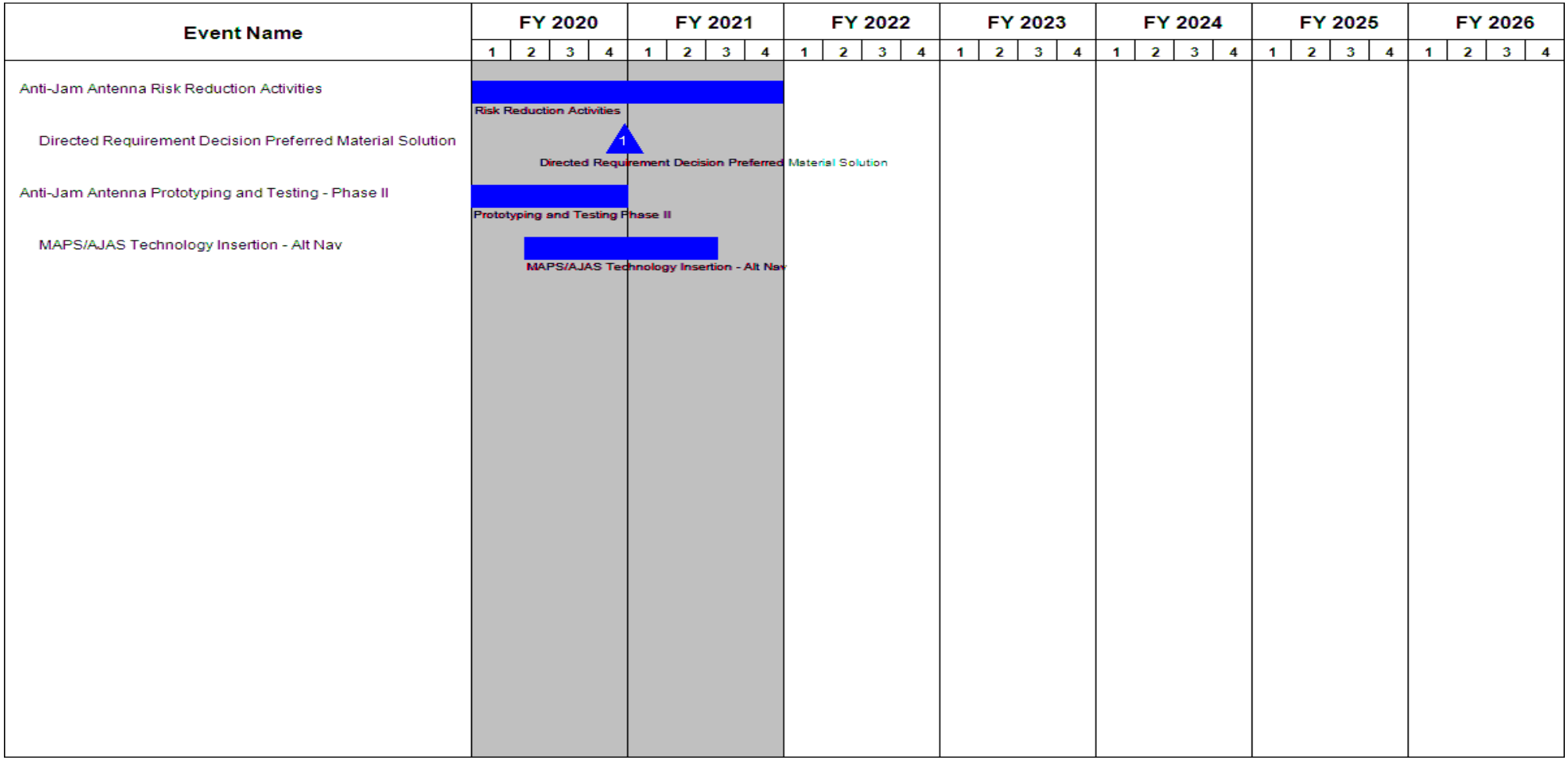

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Army		Date: May 2021
Appropriation/Budget Activity 2040 / 4	**R-1 Program Element (Number/Name)** PE 1206120A / *Assured Positioning, Navigation and Timing (PNT)*	**Project (Number/Name)** FK3 / *Anti-Jam Antenna*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Anti-Jam Antenna Risk Reduction Activities	1	2019	4	2021
Anti-Jam Antenna Prototyping and Testing - Phase I	1	2019	4	2019
Phase I OTA Prototype Testing	3	2019	4	2019
Antenna Anechoic Chamber Test Integrity/Performance Testing	3	2019	4	2019
Directed Requirement Decision Preferred Material Solution	4	2020	4	2020
Live Sky Demo	1	2019	2	2019
Anti-Jam Antenna Prototyping and Testing - Phase II	4	2019	4	2020
MAPS/AJAS Technology Insertion - Alt Nav	2	2020	3	2021

Note

Program schedule continues on PE 0604120A project EJ2.