Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604818A *I Army Tactical Command & Control Hardware & Software*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	169.375	164.409	178.693	-	178.693	128.654	113.562	114.008	118.061	Continuing	Continuing
323: *Common Hardware Systems*	-	4.636	5.190	4.879	-	4.879	5.565	5.083	4.169	4.286	0.000	33.808
334: *Common Software*	-	3.176	0.842	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.018
C29: *Centralized Technical Support Facility (CTSF)*	-	2.517	4.918	8.816	-	8.816	8.711	8.601	8.280	8.742	0.000	50.585
C34: *Army Tac C2 Sys Eng*	-	8.654	7.767	9.394	-	9.394	9.483	9.716	9.985	11.706	0.000	66.705
EJ4: *COMMAND POST COMPUTING ENVIRONMENT (CPCE)*	-	90.254	61.576	35.018	-	35.018	20.650	1.805	1.843	1.881	0.000	213.027
EJ5: *MOUNTED COMPUTING ENVIRONMENT (MCE)*	-	16.202	16.949	19.190	-	19.190	8.200	0.000	0.000	0.000	0.000	60.541
EJ6: *TACTICAL ENHANCEMENT*	-	12.907	0.000	17.873	-	17.873	11.862	9.884	0.000	0.000	0.000	52.526
EJ7: *TACTICAL DIGITAL MEDIA*	-	1.572	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.572
EK9: *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*	-	0.000	9.348	10.514	-	10.514	8.691	27.434	30.207	35.483	0.000	121.677
EQ8: *Mobile/Handheld Computing Environment (M/HHCE)*	-	17.680	11.850	9.489	-	9.489	9.562	9.765	8.874	8.107	Continuing	Continuing
ER9: *Command Post Integrated Infrastructure*	-	0.000	20.000	44.685	-	44.685	15.391	12.453	25.317	27.339	Continuing	Continuing
EW3: *Unit Task Reorganization (UTR) Development*	-	11.777	25.969	18.835	-	18.835	30.539	28.821	25.333	20.517	0.000	161.791

A. Mission Description and Budget Item Justification

Project 323, the Common Hardware Systems (CHS) program, acquires and sustains highly flexible, customized, cost effective, common, and simplified non-developmental Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR) solutions that improve

interoperability and connectivity on the battlefield while garnering efficient competition to integrate the latest commercial technology onto the Army tactical network. CHS provides technical support, environmental and evaluation testing, system design, and end of life/configuration management across Army tactical programs to ensure interoperability and integration of hardware throughout the development of capabilities. CHS hardware evaluations facilitate and simplify the selection of common hardware solutions across the operational battlefield. CHS creates efficiencies through the acquisition of streamlined common hardware configurations across the Common Operating Environments (COE)s, the sustainment community, and tactical programs. CHS also provides logistical services to include worldwide 72-hour turnaround repair through strategically located support centers for tactical military units, manages customizable warranty, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.

Project 334, the Common Software (CS) program, is the suite of systems through which the Army develops, integrates and tests common software products and/or components used for communication between Army Mission Command Systems and Joint and coalition Command and Control (C2) applications. The CS project provides state-of-the-art software technologies and functionality that is used by numerous Mission Command (MC) and joint systems to eliminate the need for service independent development and duplication of effort. The CS project also manages and performs technology demonstrations of emerging technologies for future use by Army C2 systems. The CS program is a cornerstone in the Army's COE modernization efforts. There is no FY19 RDTE funding since Common SW will be transitioning into sustainment in FY19.

Project C29, the Central Technical Support Facility (CTSF), is the Army's single strategic facility responsible for executing Army Interoperability Certification (AIC) system of system verification/validation checkout, testing, and configuration management for the Army's LandWarNet Baseline.

Project C34 funds the PEO Command, Control, Communications-Tactical (PEO C3T) Technical Management Division (TMD), which effectively manages the System-of-Systems engineering, Enterprise and Integration efforts for the continuing evolution of the network within the PEO C3T portfolio of technology across the capability enhancement packages to deliver efficient and effective cross-domain technical solutions.

Project EJ5, the Mounted Computing Environment (MCE), is one of the six computing environments (CEs) formalized by the AAE under the Common Operating Environment (COE) initiative. MCE standardizes end-user environments and enables streamlined deployment of new warfighting applications. The JBC-P is the foundational hardware element of the MCE. MCE enables Mission Command capability development to echelons from dismounted command nodes to echelons above corps, providing enhanced interoperability, and simplified end-user interface. Requirements for the MCE are established in the draft Mounted Computing Environment Information System Initial Capabilities Document (MCE IS CDD). FY2019 funding provides the means to continue to manage and develop MCE in concert with CPCE.

Project EJ4, the Command Post Computing Environment (CPCE), is one of the computing environments under the Common Operating Environment (COE). It provides a common framework (Common Infrastructure / Common Services) upon which future Warfighter capabilities can be built. The CPCE targets Command and Control (C2) and Situational Awareness (SA) capability development at tactical echelons that span from Army Service Component Commands (ASCC) to company level. The CPCE will be the most critical computing environment developed to support the command posts and combat operations.

Project EJ7, Tactical Digital Media (TDM), is comprised of photo, video and audio recording and editing equipment that will be assembled and issued as variant kits tailored to unit mission requirements. TDM kits address modernization gaps associated with all operational Combat Camera (COMCAM), Public Affairs (PA), and Military

Information Support Operations (MISO) units. TDM provides essential imagery, multimedia products, and live interview capabilities that directly contribute to successful execution of a Commander's strategic engagement and communications strategy across the full range of military operations. No FY19 RDTE funding.

Project EK9, Tactical Network Operations (NetOps) Management (TNOM), will support the development and integration of the Tactical NetOps software capabilities in support of Network Operations (NetOps) Convergence, Army Objectives and emerging Cyber Center of Excellence (CCOE) requirements. The end state program is designed to synchronize LandWarNet, Network-enabled Mission Command, and Global Information Grid 2.0 Network Operations (NetOps) efforts in an integrated and interoperable framework, spanning all echelons of command and supporting the full range of military operations for Army, Joint, and Coalition Forces in order to ensure converged NetOps. The initial mission is convergence of DoD Information Network (DoDIN) functions into a single integrated set of Tactical NetOps and Management software. This integrated solution provides NetOps capability to manage Tactical Networks from the Soldier to the Theater network entry point and supports the implementation of integrated NetOps for Unified Network Operations (UNO). UNO will deliver a standardized visualization capability (integrating both Upper and Lower Tactical Internet NetOps) in order to reduce complexity and inform the military decision making processes. UNO will also provide enhanced capability to detect, respond, and restore from cyber incidents.

Project ER9, Command Post Integrated Infrastructure (CPI2), fields mobile Command Post Nodes by integrating supporting mission command solutions in accordance with Directed Requirement with a FY20 First Unit Equipped in order to enhance the survivability and mobility of brigade and below command post formations. On order, Command Post Integrated Infrastructure will replace selected elements of the legacy command post to provide improved expeditionary capability, survivability, agility, and scalability for Corps and Division Main and Tactical Command Posts, Brigade Main and Tactical Command Posts, and Battalion Command Posts. It will ensure information and support systems are introduced into the Command Post through physical integration allowing the commander to tailor the Command Post as missions dictate.

Project EQ8, Mobile/Handheld Computing Environment, supports the Nett Warrior (NW) Program (named in honor of Medal of Honor recipient Colonel Robert C. Nett), also known as the Ground Soldier System (GSS) Program. The program leverages commercial smart devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader.

Project EW3, Unit Task Reorganization (UTR), is the process performed by the S6 and their staff to affect change on the network in order to support the operational mission and dynamic nature of the Army. Currently network challenges exist during this process with regard to: maintaining accurate and up to date information, distributing configuration files and activating / re-establishing the network. UTR strives to make authoritative NETOPS available across all systems, reduce cognitive burden for soldiers to plan and manage the network and reduce manual touch labor.

Project EJ6, Tactical Enhancement, supports the evaluation and testing requirements for Modular Communications Node - Advanced Equipment (MCN-AE), Terrestrial Transmission (TRILOS) and Troposcatter Transmission (TROPO) capabilities procured and fielded under the Signal Modernization (SIGMOD) funding line, B00010. TRILOS and TROPO will provide redundancy communications in a Satellite denied environment by providing improved Line of Site and beyond line of sight radio systems. SIGMOD Capabilities include:

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Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604818A *I Army Tactical Command & Control Hardware & Software*

MCN-AE: Provides Top Secret/Sensitive Compartmented Information (TS/SCI) communications to Brigades, Divisions, Corps, and Signal Battalions over the WIN-T network; TRILOS: Enables Mission Command in a Satellite Denied environment at higher throughput than the current High Capacity Line of Sight System (HCLOS). TRILOS: Enables Army units to reduce reliance on costly satellite bandwidth. TRILOS will extend the network by utilizing a significantly reduced Size, Weight and Power (SWaP) radio verses the aging HCLOS system.
TROPO: Enables Mission Command in a Satellite Denied environment by providing Beyond Line of Site (BLOS) capability over longer ranges and at higher throughput than the current BLOS System. TROPO extends the network by utilizing a significantly reduced SWaP radio verses the current system. TROPO will enable Army units to reduce reliance on costly satellite bandwidth.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	205.590	164.409	189.277	-	189.277
Current President's Budget	169.375	164.409	178.693	-	178.693
Total Adjustments	-36.215	0.000	-10.584	-	-10.584
• Congressional General Reductions	-0.090	-			
• Congressional Directed Reductions	-9.816	-			
• Congressional Rescissions	-	-			
• Congressional Adds	7.500	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-26.815	-			
• SBIR/STTR Transfer	-6.994	-			
• Adjustments to Budget Years	-	-	-10.584	-	-10.584

Change Summary Explanation

FY 2019 Overall Base funding increase of $7,498 million is driven by the following program changes and project funding realignments:
- Project 323 / Common Hardware Systems was decreased by $0.659 million.
- Project 334 / Common Software was decreased by $0.991 million.
- Project C29 / Centralized Technical Support Facility (CTSF) was increased by $2.198 million.
- Project C34 / Army Tactical C2 Systems Engineering was increased by $1.604 million.
- Project EJ4 / Command Post Computing Environment (CPCE) was decreased by $1.494 million.
- Project EJ5 / Mounted Computing Environment (MCE) was increased by $2.366 million.
- Project EJ6 / Tactical Enhancement was increased by $9.273million.
- Project EK9 / Tactical Network Operations and Management was decreased by $30.309 million.
- Project EQ8 / Mobile/Handheld Computing Environment (M/HHCE) was decreased by $2.431 million.
- Project ER9 / Expeditionary Army Command Post was increased by $15.455 million.
- Project EW3 / Unit Task Reorganization (UTR) Development was decreased by $5.596 million.The FY 2019 funding request was reduced to account for the availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) 323 / *Common Hardware Systems*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
323: *Common Hardware Systems*	-	4.636	5.190	4.879	-	4.879	5.565	5.083	4.169	4.286	0.000	33.808
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Hardware Systems (CHS) program acquires and sustains highly flexible, customized, cost effective, common, and simplified non-developmental C5ISR solutions that improve interoperability and connectivity on the battlefield while garnering efficient competition to integrate the latest commercial technology onto the Army tactical network. CHS provides technical support, environmental and evaluation testing, system design, and end of life/configuration management across Army tactical programs to ensure interoperability and integration of hardware throughout the development of capabilities. CHS hardware evaluations facilitate and simplify the selection of common hardware solutions across the operational battlefield. CHS creates efficiencies through the acquisition of streamlined common hardware configurations across the Common Operating Environments (COE)s, the sustainment community, and tactical programs. CHS also provides logistical services to include worldwide 72-hour turnaround repair through strategically located support centers for tactical military units, manages customizable warranty, maintenance and failure rate reporting, and technical support services to support specific Army program requirements.

FY 2019 funds support CHS to continue to manage the acquisition and delivery of CHS equipment and associated services in support of customer requirements. It will also provide technology insertions and the continued support for hardware and systems engineering, and evaluations. CHS will continue CHS-5 contract post-award activities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Acquisition Management, System/ Configuration Management, and technical evaluation and testing of CHS equipment and services in support of program requirements ***Description:*** Funding is provided for the following effort	3.596	-	-	-	-
Title: CHS Technology Insertion in support of program capability requirements ***Description:*** Funding is provided for the following effort.	0.800	-	-	-	-
Title: Non Recurring Engineering (NRE) Costs for CHS-5 Products ***Description:*** Funding is provided for the following effort.	0.240	-	-	-	-
Title: Program Support and Acquisition Support for CHS and customer programs	-	3.010	2.699	-	2.699

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** 323 / *Common Hardware Systems*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Funding is provided for the following effort. ***FY 2018 Plans:*** Will continue CHS program support and acquisition support for CHS and customer programs. ***FY 2019 Base Plans:*** Will continue CHS program support and acquisition support for CHS and customer programs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Core Labor will be paid from OMA funding.					
Title: Logistical service support for customer programs ***Description:*** Funding is provided for the following effort. ***FY 2018 Plans:*** Will continue CHS Logistical service support for customer programs. ***FY 2019 Base Plans:*** Will continue CHS Logistical service support for customer programs.	-	0.623	0.623	-	0.623
Title: Technical and Test Support for customer programs ***Description:*** Funding is provided for the following effort. ***FY 2018 Plans:*** Will continue CHS Technical and Test Support for customer programs. ***FY 2019 Base Plans:*** Will continue CHS Technical and Test Support for customer programs.	-	1.557	1.557	-	1.557
Accomplishments/Planned Programs Subtotals	4.636	5.190	4.879	-	4.879

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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D. Acquisition Strategy

The overall goal is to improve interoperability, compatibility and sustainability and lower life cycle costs by standardizing battlefield command and control automation and other warfighting systems (net centric, etc) through centralized buys of modified/ruggedized non-developmental items. CHS will provide seamless, rapid, and consolidated procurement of commercial IT, customizable sustainment strategies, non-personal services, and continuous technology upgrades to support tactical programs fielding schedules. CHS provides a coherent migration strategy for acquisition of warfighting systems and new technology through the use of technology insertion. CHS also conducts common environmental testing of hardware items thereby reducing the testing requirements for individual Project Managers. CHS provides contractual tools that enable supported programs to effectively and efficiently establish organic sustainment support for commercial IT and utilizes hardware failure data and logistical analysis to support programs sustainment strategy decisions.

An Indefinite Delivery/Indefinite Quantity firm fixed priced, full and open competition contract was awarded to General Dynamics in May 2003, for ruggedization and production. In August 2011, CHS awarded, on a best value basis, the follow-on CHS-4 contract via full and open competition. CHS-5 is to be awarded in FY18 to provide flexibility for Tactical Programs of Record (PoR)s to meet hardware and associated services requirements through full and open competition and to provide an agile solution to support COE, network integration activities, capability set development, and logistical requirements.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Support Costs	C/FP	Various : Various	81.688	1.875	Dec 2016	-		-		-		-	0.000	83.563	-
Product Procurement	C/FP	Various : Various	90.456	1.721	Dec 2016	-		-		-		-	0.000	92.177	-
Technology Insertion	C/FP	Various : Various	16.980	0.800	Dec 2016	-		-		-		-	0.000	17.780	-
CHS-5 Non-Recurring Engineering	C/FP	Various : Various	0.232	0.240	Dec 2016	-		-		-		-	0.000	0.472	-
Program & Acquisition Support	C/FP	Various : Various	-	-		3.010		2.699	Dec 2018	-		2.699	Continuing	Continuing	Continuing
Technical & Test Support	C/FP	Various : Various	-	-		0.623		0.623	Dec 2018	-		0.623	Continuing	Continuing	Continuing
Logistical Service Support	C/FP	Various : Various	-	-		1.557		1.557	Dec 2018	-		1.557	Continuing	Continuing	Continuing
		Subtotal	189.356	4.636		5.190		4.879		-		4.879	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	189.356	4.636		5.190		4.879		-		4.879	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** 323 / *Common Hardware Systems*

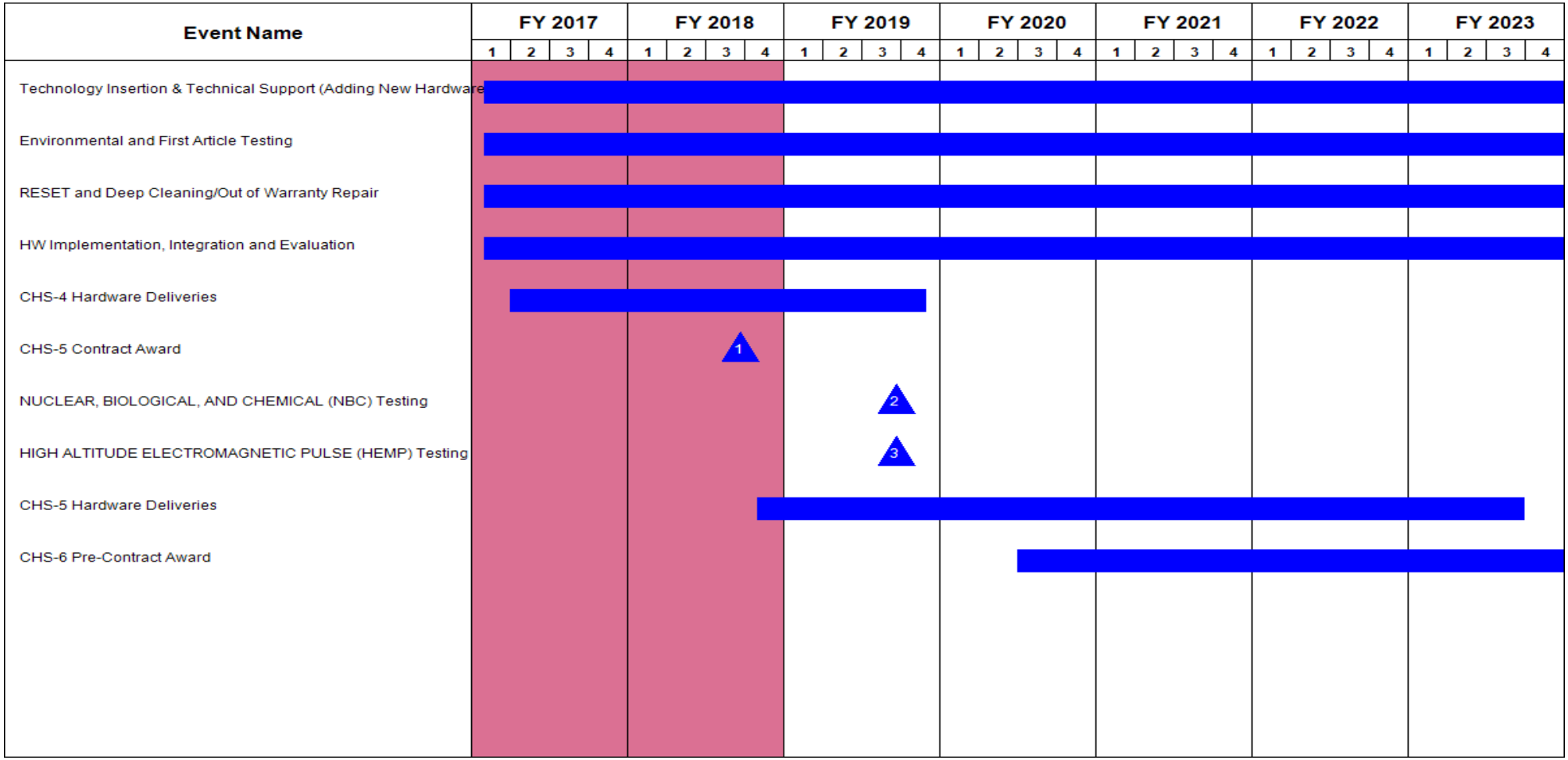

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
TSR-3 Ongoing Contract Management	1	2006	4	2013
CHS-3 Hardware Deliveries	2	2004	2	2014
OFS Support	1	2006	4	2014
Technology Insertion & Technical Support (Adding New Hardware to Conntract)	1	2007	4	2023
Environmental and First Article Testing	1	2006	4	2023
RESET and Deep Cleaning/Out of Warranty Repair	1	2006	4	2023
HW Implementation, Integration and Evaluation	1	2006	4	2023
CHS-4 Hardware Deliveries	1	2012	4	2019
CHS-5 Contract Award	3	2018	3	2018
NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC) Testing	3	2019	3	2019
HIGH ALTITUDE ELECTROMAGNETIC PULSE (HEMP) Testing	3	2019	3	2019
CHS-5 Hardware Deliveries	4	2018	3	2023
CHS-6 Pre-Contract Award	3	2020	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
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COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
334: *Common Software*	-	3.176	0.842	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.018
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project 334 Common Software (CS): CS is the suite of systems through which the Army develops, integrates and tests common software products and/or components used for communication between Army Mission Command Systems and the greater Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) community. The CS project provides state-of-the-art software technologies and functionality that is used by numerous C4ISR and joint systems to eliminate the need for service independent development and duplication of effort. The CS program is the hub of interoperability for the Army's current C4ISR systems.

FY18 funding supports any remaining adjustments to ensure backwards compatibility with previous versions of Common Software products implementations.

There is no FY19 funding since CS will be transitioning into sustainment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Common Software development in support of the C4ISR community ***Description:*** Interoperability and Backwards Compatibility efforts ***FY 2018 Plans:*** Funding is provided for Common Software transition efforts and development of MOA with SEC to ensure all programmatic requirements are accounted for. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Common Software will be transitioning into sustainment in FY19.	1.828	0.613	-	-	-
Title: Software Development - Tactical Server Infrastructure (TSI) ***Description:*** Tactical Server Infrastructure (TSI) provides an integrated Server hardware and locally hosted Enterprise Service Infrastructure for use in tactical Army command posts. C2 infrastructure and data services hosted on TSI providing a common core infrastructure component to the C4ISR architecture	0.713	-	-	-	-
Title: Test and Evaluation ***Description:*** Test and Evaluation efforts include the planning and conduct of Test, Evaluation, and Integration events. This includes participation in Network Integration Exercises (NIEs), User Juries, Assessments, Risk	0.300	0.174	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Reduction Events (RREs), vulnerability testing, and Army Interoperability Certification (AIC) testing. Testing can consist of stand-alone capability testing in a lab/sandbox environment or full interoperability testing with multiple systems in an operational environments ***FY 2018 Plans:*** Test and Evaluation required for Common Software. Software testing documentation and training and AIC ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Common Software will be transitioning into sustainment in FY19.					
Title: Program Management ***Description:*** Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and IPTs ***FY 2018 Plans:*** Program Management - Includes Core, Matrix, and Contractor support ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Common Software will be transitioning into sustainment in FY19.	0.335	0.055	-	-	-
Accomplishments/Planned Programs Subtotals	3.176	0.842	-	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The overall acquisition goal of the CS project is to provide common products that are used horizontally across programs, preventing duplication of effort by Army and Joint programs and facilitating life cycle cost efficiencies. All software development efforts will be competed among Capability Maturity Model Integration (CMMI) certified developers.

In accordance with the approved Net-enabled Mission Command Initial Capabilities Document (NeMC ICD), software capability will be developed in 3-year increments to facilitate messaging, mediation and addressing for Army, Joint and Coalition Partners. The product development funded under this R-Form is an integral part of the C4ISR systems, and a core communication component of the virtualized infrastructure and will be accomplished in part under a Project Manager, Mission Command

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(PM MC) General Services Administration (GSA) engineering services contract approach which will consist of multiple prime contractors competitively bidding on a single development solicitation. This strategy is designed to optimize opportunities for improved interoperability among the systems, to capture the benefits of competition, and to ensure the rapid integration of new capabilities into warfighter systems. This strategy is also designed to reduce the physical footprint, the logistics support requirements, and to increase operational efficiency by integration of additional system interoperability services which reduce duplication of effort and cost; and allows for development of communication standards across the DoD community.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Management	Various	PM Mission Command : Aberdeen, MD	12.846	0.335	Jan 2017	0.055		-		-		-	Continuing	Continuing	-
		Subtotal	12.846	0.335		0.055		-		-		-	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Common Software Product Engineering/Software Development	C/CPFF	Various Contractors : Various Locations	3.556	1.828	Feb 2017	-		-		-		-	Continuing	Continuing	-
Mission Command/Army System Engineering & Integration	C/CPFF	Future Skies : Wall Township, NJ	8.764	-		-		-		-		-	0.000	8.764	6.679
Engineering & Integration for Joint and Coalition Interoperability	C/CPFF	Various Contractors : Various Locations	3.362	-		-		-		-		-	Continuing	Continuing	-
Evaluation, modification, validation & integration of developed SW	C/CPFF	Various Contractors : Various Locations	5.808	-		-		-		-		-	0.000	5.808	4.159
Tactical Server Infrastructure and Application Development	C/CPFF	CECOM Software Engineering Center : APG, MD	4.558	0.713	Feb 2017	-		-		-		-	Continuing	Continuing	Continuing
Common Software Product Engineering/Software Development	C/FFP	FUTURE SKIES : Wall Twp, NJ	-	-		0.613		-		-		-	0.000	0.613	-
		Subtotal	26.048	2.541		0.613		-		-		-	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test/ Operational Test	MIPR	Various : Various Locations	8.907	0.300		0.174		-		-		-	Continuing	Continuing	-
		Subtotal	8.907	0.300		0.174		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	47.801	3.176		0.842		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** 334 / *Common Software*

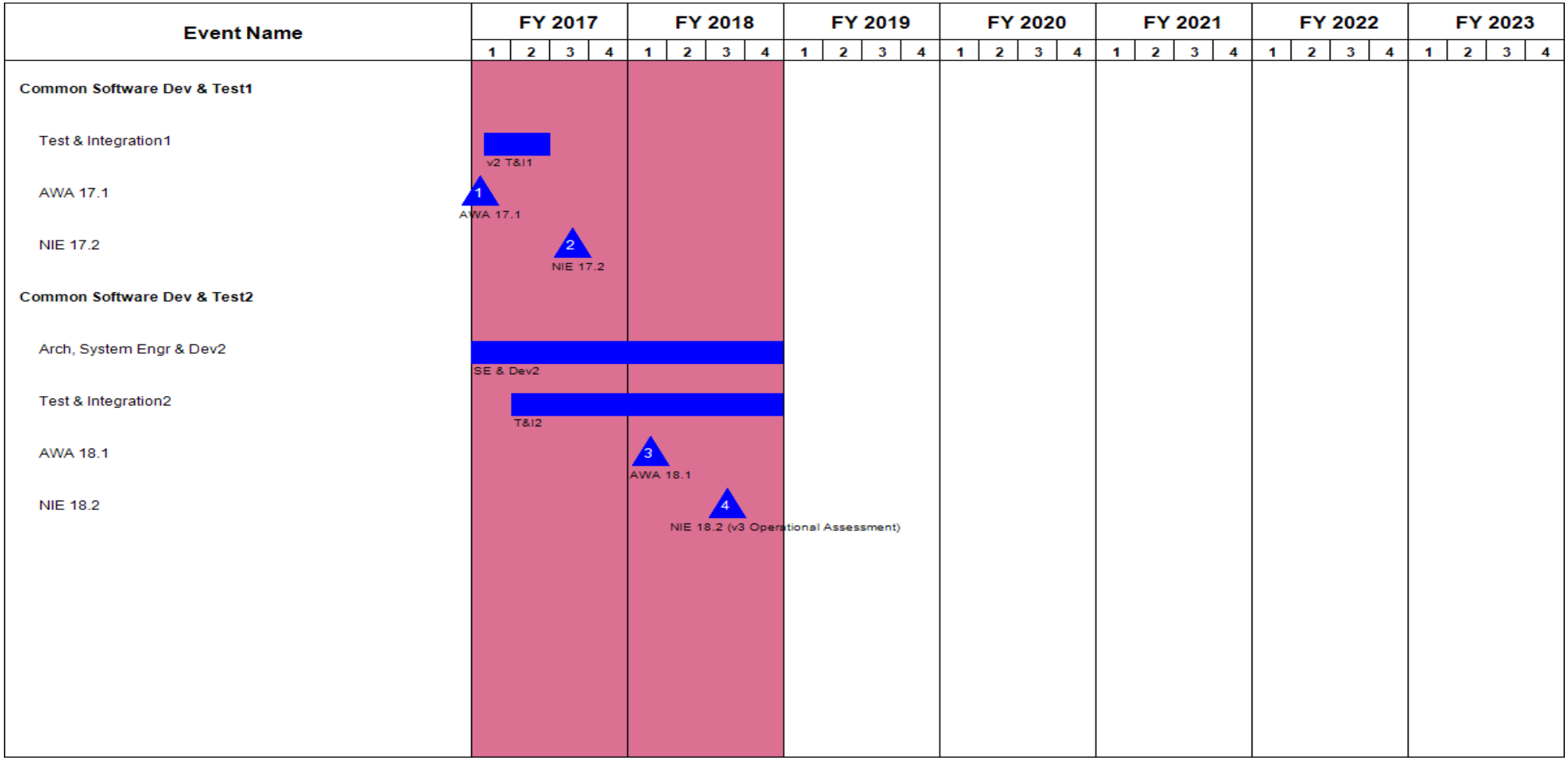

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** 334 / *Common Software*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Common Software Dev & Test1	2	2012	2	2017
Arch, System Engr & Dev1	2	2012	2	2016
Test & Integration1	1	2015	2	2017
AWA 17.1	1	2017	1	2017
NIE 17.2	3	2017	3	2017
Common Software Dev & Test2	4	2014	4	2018
Arch, System Engr & Dev2	4	2014	4	2018
Test & Integration2	2	2017	4	2018
AWA 18.1	1	2018	1	2018
NIE 18.2	3	2018	3	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
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COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
C29: *Centralized Technical Support Facility (CTSF)*	-	2.517	4.918	8.816	-	8.816	8.711	8.601	8.280	8.742	0.000	50.585
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C29 - Centralized Technical Support Facility: The Central Technical Support Facility (CTSF) is the Army's premier test and certification facility for System of Systems interoperability, functioning as CIO/G6's designated independent test agent. CTSF is the Army's sole strategic facility responsible for conducting engineering support associated with test integration of Army LandWarNet/Mission Command (LWN/MC) architectures and baselines into the Army Interoperability Certification (AIC) system of systems environment, performing AIC testing and conducting configuration management for all operational and tactical level applications (individual systems, System of Systems, and Families of Systems) prior to fielding. The CTSF provides validated test data to the Department of the Army and Joint agencies to accredit interoperability certifications. The distributed test environment of the CTSF is accomplished through the Federation of Net-centric Sites (FaNS) construct. This FaNS construct addresses distributed integration development and testing using the core infrastructure of the CTSF to harness AMC, Army, and Joint expertise/ resources. Through these federated resources, the CTSF executes interoperability development and certification testing of the Warfighter mission areas, to include Network Evaluation spinouts, as they digitize and become part of the Army's LandWarNet.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Army Interoperability Certification (AIC) Testing	0.885	3.494	7.110	-	7.110
Description: Conduct Army Interoperability Certification (AIC), planning/coordination/scheduling/ and reporting of Common Operating Environment (COE) and software block testing (local and distributed). Provide stakeholders data collection/data analysis/data dissemination/simulation/stimulation verification/validation. Manage the set-up, configuration, integration, operations and maintenance of the LandWarNet/Mission Command (LWN/MC) systems within the CTSF test environments. Function as the CIO/G-6's Independent Test Agent for Program Managers of LWN/MC systems that have an Acquisition Life Cycle requirement for testing interoperability of software and associated hardware prior to fielding to the Warfighter. Report the results of Army Interoperability Certification Tests to the CIO/G-6, PM, and TRADOC communities to support updates to the G-3/5/7 managed baseline. ***FY 2018 Plans:*** Continue SWB11-12 test planning, test case development, test environment architecture set-up, to include information assurance software compliance, and software test tools. Conduct interoperability testing for the SWB11-12 systems that comprise the LWN/MC baseline. Continue work to define the testing methodology as					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** C29 / *Centralized Technical Support Facility (CTSF)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
part of the Army transition to a COE strategy, while working to incrementally implement and utilize distributed CP test processes and test architectures that will comprise the Federated Integration Environment (FIE). Conduct COE v3.0 planning, test case development and architecture set-up incorporating CP testing construct for the Computing Environment (CE). ***FY 2019 Base Plans:*** Continue SWB11-12, and COE v3 and beyond test planning, test case development, test environment architecture set-up, to include information assurance software compliance, and software test tools. Conduct interoperability testing for the SWB11-12 systems that comprise the LWN/MC baseline. Support the ASA(ALT) led Interoperability and Integration Event (I2E) for COE v3.0. Conduct COE v3.0 planning, test case development and architecture set-up incorporating CP testing construct for the CE. Continue work to define the testing methodology as part of the Army transition to a COE strategy, while working to incrementally implement and utilize distributed CP test processes and test architectures that will comprise the Federated Integration Environment (FIE). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Test execution transitioning to a single architecture representing the field (multiple baselines) with universal mission threads. FY19 increase supports a new operational requirement to run multiple simultaneous testing events.					
Title: Engineering Services ***Description:*** Provide network engineering support to establish and maintain tactical architectures on the CTSF test floors and to deploying/fielded units at training centers around the world (NIE, JRTC, NTC, JMRC). System engineering support provides hardware virtualization, advanced Host Based Security System (HBSS) support, system validation and integration support to numerous PMs on the integration and risk reduction labs, and assists Army programs with interoperability assessments and AIC rehearsal. Modify and merge army data products for CTSF test architectures. Develop/Maintain Applications for CTSF in-house programs. ***FY 2018 Plans:*** Support AIC Integration and Testing. Continue Network Integration Checkout prior to each AIC. Continue support to PMs for integration of future COE insertions and integration. Identify and incorporate software tools to monitor performance and assist in issue resolution. Integrate and implement HBSS technology. Assist PMs in the development of HBSS policies. Assist integration and test architectures to include Program of Record (POR) and non-POR radio communications devices to provide PMs and Materiel Developers testing in	0.139	0.159	0.155	-	0.155

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
realistic environments. Provide CTSF network and systems engineering for validation of end-to-end sensor and platform communications and interoperability. Provide software patch validation; network support for integration and test floors; network support to fielded units upon request; and systems engineering and analysis support to system of systems integration activities. Provide PMs and CTSF Configuration Management (CM) with a Virtualization Suite and assist in virtualizing software. Plan and conduct engineering evaluations for AIC testing and data collection in the Network Integration Evaluation (NIE)/Capability Integration Evaluation (CIE) to leverage the operational environment and NIE/CIE resources. Support Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and interoperability demonstrations. Assist Assistant Secretary of the Army (Acquisition, Logistics and Technology) [ASA(ALT)] in developing and refining Control Point Testing for COE and distributed testing between the Computing Environments (CEs). Assist the CEs in Federation of Net-Centric Sites (FaNS) accreditation for distributed testing. Assist ASA(ALT) in defining the COE architectures and services. Assist in interoperability issues for multiple Combatant Commands. Conduct radio Verification and Validation. Integrate One Semi-Automated Forces (OneSAF), the United States Army's next generation simulation system into CTSF test Architecture. Application Programmers continue to develop and modify Configuration Management Tool Suite version 3 (CMTS3) modules.					
FY 2019 Base Plans: Support AIC Integration and Testing. Continue Network Integration Checkout prior to each AIC. Continue support to PMs for integration of future COE insertions and integration. Identify and incorporate software tools to monitor performance and assist in issue resolution. Integrate and implement HBSS technology. Assist PMs in the development of HBSS policies. Assist integration and test architectures to include Program of Record (POR) and non-POR radio communications devices to provide PMs and Materiel Developers testing in realistic environments. Provide CTSF network and systems engineering for validation of end-to-end sensor and platform communications and interoperability. Provide software patch validation; network support for integration and test floors; network support to fielded units; and systems engineering and analysis support to system of systems integration activities. Provide PMs and CTSF Configuration Management (CM) with a Virtualization Suite and assist in virtualizing software. Plan and conduct engineering evaluations for AIC testing and data collection in the Network Integration Evaluation (NIE)/Capability Integration Evaluation (CIE) to leverage the operational environment and NIE/CIE resources. Support Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and interoperability demonstrations. Assist Assistant Secretary of the Army (Acquisition, Logistics and Technology) [ASA(ALT)] in developing and refining Control Point Testing for COE and distributed testing between the Computing					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** C29 / *Centralized Technical Support Facility (CTSF)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Environments (CEs). Assist the CEs in Federation of Net-Centric Sites (FaNS) accreditation for distributed testing. Assist ASA(ALT) in defining the COE architectures and services. Assist in interoperability issues for multiple Combatant Commands. Conduct radio Verification and Validation. Application Programmers continue to develop and modify Configuration Management Tool Suite version 3 (CMTS3) modules. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Test execution transitioning to a single architecture representing the field (multiple baselines) with universal mission threads. No significant change from FY18 to FY19.					
Title: Configuration Management ***Description:*** As the CTSF Configuration Management Office, provide CM functional and physical configuration management and change management to the CTSF Army Interoperability Certification test floor environment. As Army Configuration Management Office (ACMO), establish and maintain oversight control of the Army Master Library for the Army Interoperability Certified Fielded Baseline (AICFB). Archive system software and data products, correlated with their associated documentation, for the Army LandWarNet Mission Command Baseline (ALWNMCB), a subset of the AICFB. Establish and maintain the configuration and change management to the AICFB and the ALWNMCB for Lifecycle Software Management (LCSM). Provide support to the Army Staff (ARSTAF), Material Developers (MATDEV), Project Managers (PM), and System Owners (SO) through the orderly management of product configuration information and product change management (ChM), which enables capability revisions, improved reliability and maintainability, extended life, and reduced cost. Maintain and improve the Configuration Management Tracking System version 3 (CMTSIII), the Army?s authoritative database management system (DBMS) for configuration management (CM) of the systems comprising Coalition Interoperability Assurance and Validation (CIAV), and the Warfighter Mission and Business Mission Areas of the Army Information Technology (IT) portfolio. Assist the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations. ***FY 2018 Plans:*** Provide CM functional and physical configuration management and change management to the CTSF Army Interoperability Certification test floor environment. Provide CM functional and physical configuration management and change management to the AIC Fielded Baseline, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provide baseline reconciliation to the four quarterly CIO/G6 AICFB reports, identifying to commanders and their G-3/G-6 staff the Army?s AIC certified, Interoperability Capability and Limitations assessed, AIC waivered, and AIC exempted system software that is authorized to connect to the	0.358	0.499	0.499	-	0.499

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Army?s network. Assist the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations. Continue CMTSIII evolutionary developments: Streamline the Reproduction Distribution Installation Training (RDIT) support from four discrete modules into a single Software Management Module, adding capability and accountability. Automate the ASA (ALT) Configuration Control Board slides and certification requirements into CMTSIII; expand reporting outputs. Collaborate to obtain system accreditation for, and implement, the Configuration Management Tracking System Virtual Console (CMTSVC). Initiate changes to enable CMTSIII to maintain currency/compatibility with Common Operating Environment evolutionary developments. Define and establish the CM Continuity of Operations Plan (COOP) requirements. ***FY 2019 Base Plans:*** Provide CM functional and physical configuration management and change management to the CTSF Army Interoperability Certification test floor environment. Provide CM functional and physical configuration management and change management to the AICFB, to include archiving the required system software, data products and documentation, while correlating the relevant data within the CMTSIII DBMS for visibility to users Army wide. Provide baseline reconciliation to the four quarterly CIO/G6 AICFB reports, identifying to commanders and their G-3/G-6 staff the Army?s AIC certified, Interoperability Capability and Limitations assessed, AIC waivered, and AIC exempted system software that is authorized to connect to the Army?s network. Assist the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations. Continue CMTSIII evolutionary developments. Initiate changes to enable CMTSIII to maintain currency/compatibility with Common Operating Environment evolutionary developments.					
Title: Management Operations/Program Office ***Description:*** Provide management operations consisting of planning, programming and executing funds; planning and programming for required personnel; planning, programming and executing contracts supporting AIC testing processes; identifying reimbursable tests and collecting/allocating appropriate funds; planning and programming logistics activities, managing/controlling/documenting physical assets and inventories; and perform oversight and coordination of physical security with hosting installation. ***FY 2018 Plans:*** Assist development and implementation of CMTSIII Resource Management Module and Reporting as well as FMIS for use in documenting/programming/executing funds and personnel levels of effort associated with mission activities. Program and execute funding; plan and program manpower requirements and coordinate with CECOM G8 for implementation; identify contracting requirements and develop strategy for implementation in conjunction with CECOM Acquisition Center. Track testing schedule, prepare/coordinate/track customer funding	1.135	0.766	1.052	-	1.052

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
for AIC testing activities (e.g. COE v3.0 tests, CS 11-12 Bi-Annual testing, Joint, Coalition), and infrastructure support. Continue to provide field support coordination for unit training and exercises upon request. Maintain existing infrastructure while continuing to develop coordinate planning/engineering activities associated with transition to permanent facility; continue to enhance physical security, access control, force protection, COOP and EAP activities and exercises. Continue inventory accountability programs and asset control. ***FY 2019 Base Plans:*** Continue to utilize CMTSIII Resource Management Module and Reporting as well as FMIS for use in documenting/programming/executing funds and personnel levels of effort associated with mission activities. Program and execute funding; plan and program manpower requirements and coordinate with CECOM G8 for implementation; identify contracting requirements and develop strategy for implementation in conjunction with CECOM Acquisition Center. Track testing schedule, prepare/coordinate/track customer funding for AIC testing activities (e.g. COE v3.0 tests, CS 11-12 Bi-Annual testing, Joint, Coalition), and infrastructure support. Continue to provide field support coordination for unit training and exercises upon request. Maintain existing infrastructure while continuing to develop coordinate planning/engineering activities associated with transition to permanent facility; continue to enhance physical security, access control, force protection, COOP and EAP activities and exercises. Continue inventory accountability programs and asset control. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** CTSF has an increased operational requirement to execute multiple simultaneous events requiring additional labor to plan and execute.					
Accomplishments/Planned Programs Subtotals	2.517	4.918	8.816	-	8.816

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Execute system of systems interoperability testing and certification through the use of Government and Systems Engineering and Technical Analysis (SETA) contract personnel experienced in product development and interoperability testing. Testing and certification occurs in a cyclical fashion, with an expectation of an annual Software Block/Capability Set test followed with cyclical test events (Bi-Annual Tests) to ensure integrity of software baselines to the Warfighter. Engineering Services provides strategic integration of software into a system of systems/family of systems environment to support interoperability testing. Establish and maintain

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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Configuration Management and version control of the Army's Interoperable Battle Command LandWarNet Baseline. Distributed testing capability uses local assets and leverages other federated test facilities to create synergy and realize efficiencies, to include system of system test efforts, where possible at 2/1 AD/WSMR (NIE/AWA).

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MITRE Corp	FFRDC	Engineering Services : Fort Hood, TX	17.178	-		-		-		-		-	0.000	17.178	-
In-House	Allot	Engineering Services : Fort Hood, TX	2.548	-		-		-		-		-	0.000	2.548	-
		Subtotal	19.726	-		-		-		-		-	0.000	19.726	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CECOM Matrix	Allot	Program and Budget Analysis Support : Fort Hood, TX/ Aberdeen Proving Grounds, MD	3.936	0.183		0.463		0.741		-		0.741	Continuing	Continuing	Continuing
In-House Support	Allot	Management Operations, Logistics Support : Fort Hood, TX	9.928	-		-		-		-		-	0.000	9.928	-
ISSA/Training/TDY	Allot	Site Support Activities : Fort Hood, TX	-	0.062		0.244		0.250		-		0.250	Continuing	Continuing	Continuing
Supplies	C/UCA	Management Operations, Logistics Support : Fort Hood, TX	1.309	0.066		0.059		0.060		-		0.060	Continuing	Continuing	Continuing
Moving Costs	Allot	Management Operations, Logistics Support : Fort Hood, TX	-	-		-		0.001		-		0.001	0.000	0.001	Continuing
		Subtotal	15.173	0.311		0.766		1.052		-		1.052	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Under "open-the-door" cost model, all In-house support efforts are included under Test & Evaluation.
Moving Costs associated with transitioning to permanent facility beginning in FY18.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CECOM R2 3G	C/CPFF	Test, Configuration Management : Fort Hood, TX	10.547	0.001	May 2018	0.340		3.610	May 2019	-		3.610	Continuing	Continuing	Continuing
CECOM S3	C/CPFF	Facilities, Maintenance, Security : Fort Hood, TX	8.606	0.394	Aug 2016	1.248		1.227	Aug 2019	-		1.227	Continuing	Continuing	Continuing
ISSA	MIPR	Utilities & NEC Support : Fort Hood, TX	4.945	-		0.026		-		-		-	0.000	4.971	-
ARL Matrix	MIPR	Test : Fort Hood, TX	6.374	-		-		-		-		-	0.000	6.374	-
In-House Support	Allot	Test : Fort Hood,TX	3.444	1.656		2.316		2.827		-		2.827	Continuing	Continuing	Continuing
Instrumentation	C/UCA	Test Equipment Infrastructure : Fort Hood, TX	3.029	0.155		0.222		0.100		-		0.100	Continuing	Continuing	Continuing
		Subtotal	36.945	2.206		4.152		7.764		-		7.764	Continuing	Continuing	N/A

Remarks

ARL Matrix effort became a "reimbursable" effort under Open-the-Door cost model effective in FY17; no longer "Direct" funded.
ISSA no longer funded at CTSF level.

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	71.844	2.517		4.918		8.816		-		8.816	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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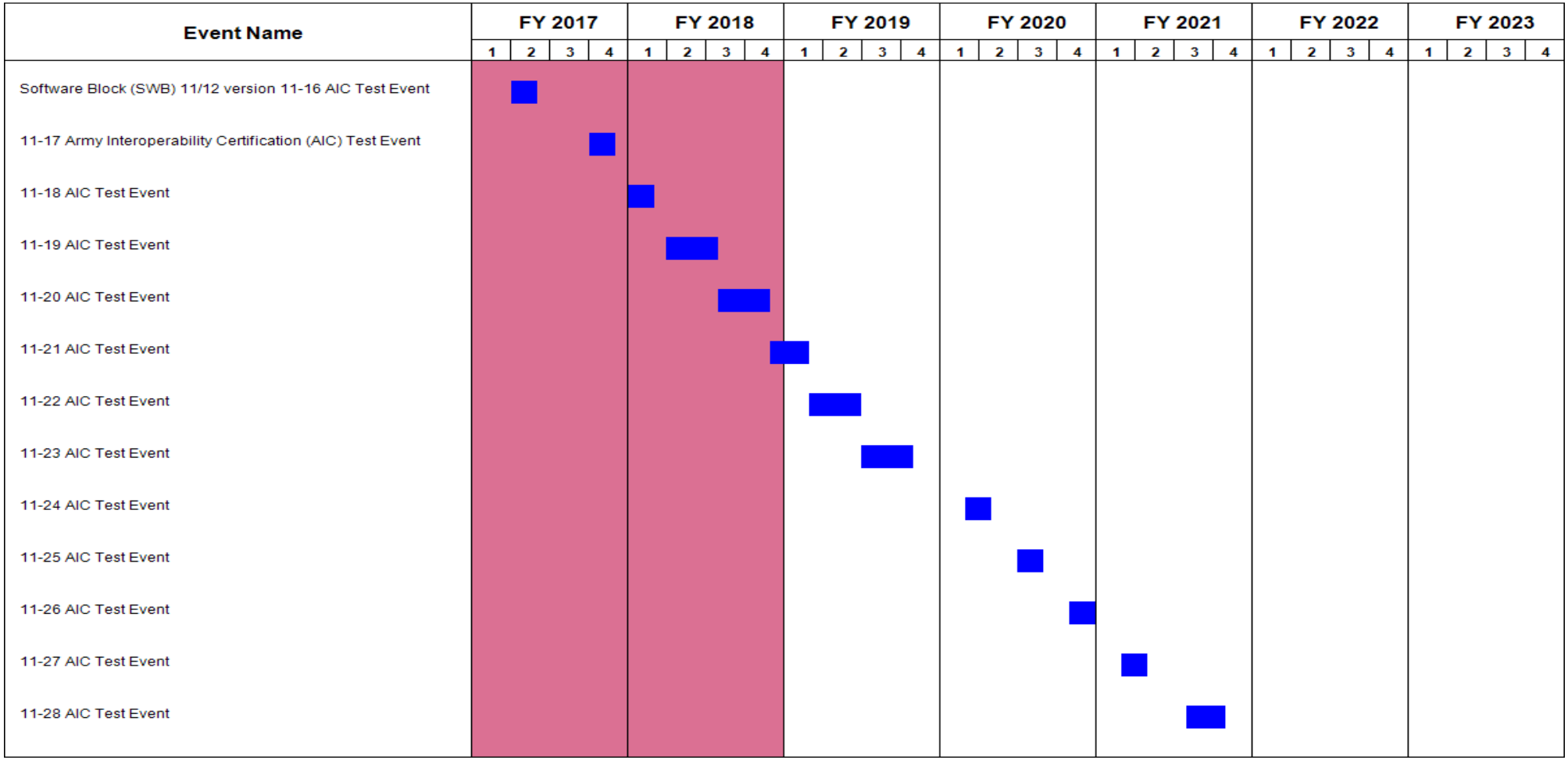

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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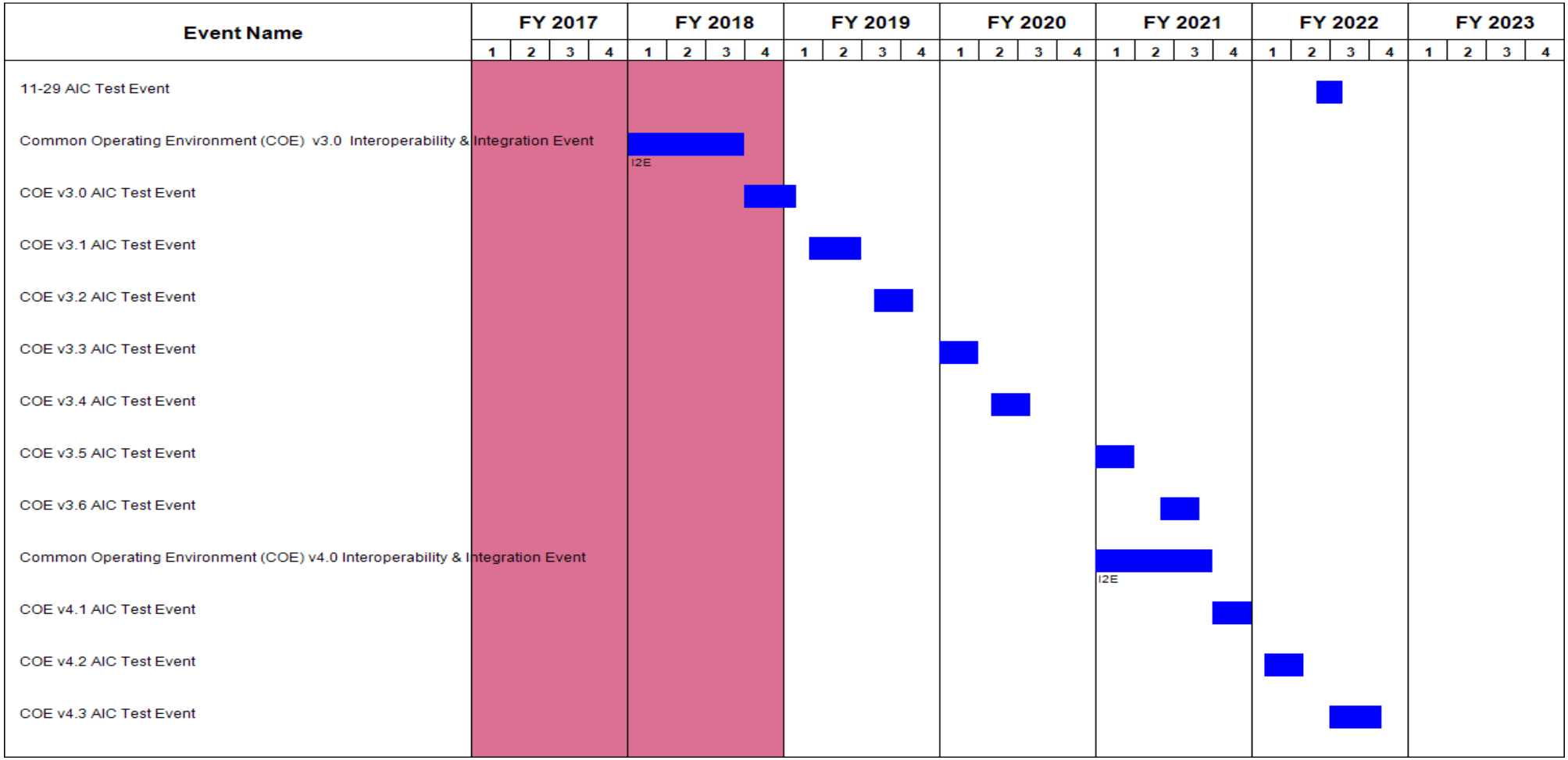

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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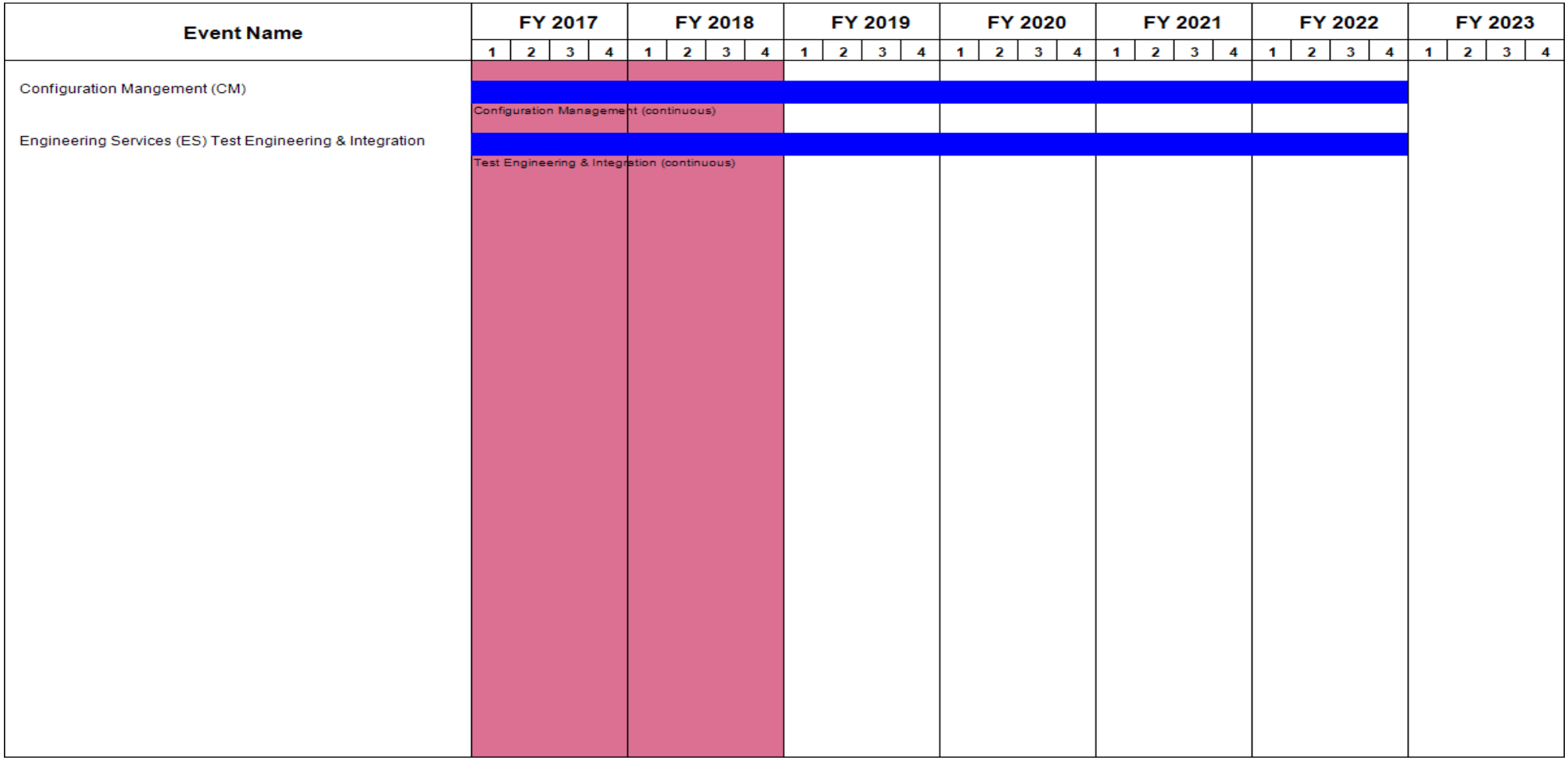

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Software Block (SWB) 11/12 version 11-16 AIC Test Event	2	2017	2	2017
11-17 Army Interoperability Certification (AIC) Test Event	4	2017	4	2017
11-18 AIC Test Event	1	2018	1	2018
11-19 AIC Test Event	2	2018	3	2018
11-20 AIC Test Event	3	2018	4	2018
11-21 AIC Test Event	4	2018	1	2019
11-22 AIC Test Event	1	2019	2	2019
11-23 AIC Test Event	3	2019	4	2019
11-24 AIC Test Event	1	2020	2	2020
11-25 AIC Test Event	3	2020	3	2020
11-26 AIC Test Event	4	2020	4	2020
11-27 AIC Test Event	1	2021	2	2021
11-28 AIC Test Event	3	2021	4	2021
11-29 AIC Test Event	2	2022	3	2022
Common Operating Environment (COE) v3.0 Interoperability & Integration Event	1	2018	3	2018
COE v3.0 AIC Test Event	4	2018	1	2019
COE v3.1 AIC Test Event	1	2019	2	2019
COE v3.2 AIC Test Event	3	2019	4	2019
COE v3.3 AIC Test Event	1	2020	1	2020
COE v3.4 AIC Test Event	2	2020	3	2020
COE v3.5 AIC Test Event	1	2021	1	2021
COE v3.6 AIC Test Event	2	2021	3	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** C29 / *Centralized Technical Support Facility (CTSF)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Common Operating Environment (COE) v4.0 Interoperability & Integration Event	1	2021	3	2021
COE v4.1 AIC Test Event	4	2021	4	2021
COE v4.2 AIC Test Event	1	2022	2	2022
COE v4.3 AIC Test Event	3	2022	4	2022
Configuration Mangement (CM)	2	2007	4	2022
Engineering Services (ES) Test Engineering & Integration	2	2007	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) C34 / *Army Tac C2 Sys Eng*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
C34: *Army Tac C2 Sys Eng*	-	8.654	7.767	9.394	-	9.394	9.483	9.716	9.985	11.706	0.000	66.705
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project C34, Army Tactical Command and Control Systems Engineering: This project funds the PEO Command, Control, Communications-Tactical (PEO C3T) Technical Management Division (TMD) System of Systems engineering and integration, experimentation, acquisition management, testing, fielding and sustainment support to ensure interoperability and affordability within the PEO C3T portfolio. The TMD focuses on System-of-Systems (SoS) Engineering and Integration for the C3T network with increased emphasis on immediate Warfighter needs as well as leveraging emerging technologies. Fiscal Year 2018 will focus on the continued development, implementation and integration of the Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR) network architectures. This will include development of a technology enhancement roadmap for SoS capability evolution across the PEO C3T portfolio; network integration support and design products for system validation through various integration testing; integration of tactical Networked capabilities for all Mission Command Network systems, initial fieldings, and integration events; integration of tactical information assurance solutions and security measures for consistent cyber protection; and execution of SoS developmental testing across the PEO portfolio in support of system fielding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Continue Army Tactical Battle Command and Network Synchronization and Integration Support	0.133	0.120	0.145	-	0.145
Description: .					
FY 2018 Plans: Continue the support of current force and the development of future force C5ISR across the tactical network to ensure all Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Common Operating Environment.					
FY 2019 Base Plans: Continue the support of current force and the development of future force C5ISR across the tactical network to ensure all Assistant Secretary of the Army (Acquisition, Logistics & Technology) (ASA(ALT)) programs are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Common Operating Environment.					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** C34 / *Army Tac C2 Sys Eng*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Funding supports continued design work.					
Title: Continue Developmental Test and Integration Test Support between Programs of Record (PORs) and platforms / Command Posts (CPs) to execute System-of-Systems (SoS) and Interoperability ***Description:*** . ***FY 2018 Plans:*** Design, configure and establish a system of systems integration test infrastructure architecture and implementation. Continue to provide the infrastructure and support in conducting integration testing and systems engineering for C3T non-program of record and program of record systems, products, technical insertions, and systems under evaluation to ensure integration of capabilities across the network. Establish FANS Accreditation in support of COE risk reduction testing. Design and coordination of integration testing across the Mission Command Network systems. ***FY 2019 Base Plans:*** Continue to mature/revise the design, configuration and establishment of the system of systems integration test infrastructure architecture and implementation. Continue to provide the infrastructure and support in conducting integration testing and systems engineering for C3T non-program of record and program of record systems, products, technical insertions, and systems under evaluation to ensure integration of capabilities across the network. Maintain the FANS Accreditation in support of COE risk reduction testing. Continue the design and coordination of integration testing across the Mission Command Network systems. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports continued development.	1.296	1.163	1.406	-	1.406
Title: Continue Tactical Network Engineering ***Description:*** . ***FY 2018 Plans:*** Develop effective engineering strategies to integrate tactical applications for use across the C3T enterprise network. Continue to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies. ***FY 2019 Base Plans:***	0.743	0.666	0.806	-	0.806

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Develop effective engineering strategies to integrate tactical applications for use across the C3T enterprise network. Continue to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports continued engineering.					
Title: Conduct and Support System Interoperability Engineering and Development of System-of-Systems (SoS) Architectural Products ***Description:*** . ***FY 2018 Plans:*** Within the PEO C3T portfolio, continue to assess Emerging Technologies, identify critical integrated test points, monitor developmental testing at integration points, develop architectural data processes and products, and facilitate the transition of Network capabilities to the warfighter. ***FY 2019 Base Plans:*** Within the PEO C3T portfolio, continue to assess Emerging Technologies, identify critical integrated test points, monitor developmental testing at integration points, develop architectural data processes and products, and facilitate the transition of Network capabilities to the warfighter. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports continued development efforts.	1.668	1.497	1.810	-	1.810
Title: Continue Development and Implementation of Tactical Information Assurance (IA) ***Description:*** . ***FY 2018 Plans:*** Implement ARCYBER, CIO/G6 and CYBERCOM guidance for execution of Information Assurance policies and procedures at the tactical level. Continue to document the current tactical IA network architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Continue to plan and design security measures and IA requirements across the tactical network for future capabilities. ***FY 2019 Base Plans:***	0.251	0.226	0.273	-	0.273

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** C34 / *Army Tac C2 Sys Eng*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Implement ARCYBER, CIO/G6 and CYBERCOM guidance for execution of Information Assurance policies and procedures at the tactical level. Continue to document the current tactical IA network architecture with the goal of developing recommendations to eliminate inconsistencies/duplications, increasing the security posture, decreasing complexity of operations, and decreasing costs. Continue to plan and design security measures and IA requirements across the tactical network for future capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports continuing development efforts.					
Title: Continue System of Systems Development ***Description:*** . ***FY 2018 Plans:*** Continue to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs. Conduct verification and provide technical expertise with respect to SoS capabilities planned to field in FY19. Conduct design and engineering activities culminating in a PDR and CDR for SoS capabilities planned to field in FY20. Conduct design and engineering activities culminating in requirement and functional reviews for SoS capabilities planned to field in FY21. ***FY 2019 Base Plans:*** Continue to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs. Continue to conduct SoS engineering design for capabilities planned to field in FY20, FY21 and FY22. . ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports continued SoS development.	2.969	2.665	3.223	-	3.223
Title: System of Systems (SoS) Engineering and Integration Evolution of the Network ***Description:*** . ***FY 2018 Plans:*** Continue to implement cross PEO System of Systems Engineering and Integration processes, analysis and S&T coordination to ensure successful development Engineering and Testing of current and future systems. Continue	1.594	1.430	1.731	-	1.731

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
to develop streamlined processes to support ASA(ALT) SoSE&I and implement Value Engineering (VE) and Lean Six Sigma initiatives across all PEO C3T capabilities to include the Mission partner Environment. ***FY 2019 Base Plans:*** Continue to implement cross PEO System of Systems Engineering and Integration processes, analysis and S&T coordination to ensure successful development Engineering and Testing of current and future systems. Continue to develop streamlined processes to support ASA(ALT) SoSE&I and implement Value Engineering (VE) and Lean Six Sigma initiatives across all PEO C3T capabilities to include the Mission partner Environment. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports continuing SoS integration efforts.					
Accomplishments/Planned Programs Subtotals	8.654	7.767	9.394	-	9.394

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Not applicable for this item.

D. Acquisition Strategy

This project provides the technical and programmatic disciplines required for systems engineering and integration, experimentation, acquisition management, testing, interoperability, support to fielding and sustainment. It will focus on System-of-Systems (SoS) Systems Engineering and Integration for the tactical network with increased emphasis on immediate Warfighter needs as well as leveraging emerging technologies, through the G3 LandWarNet Capability Set Development and Integration. The Technical Management Division (TMD) will ensure that the Program Executive Office Command, Control, Communications-Tactical (PEO C3T) capability portfolio is effectively SoS engineered and integrated to meet the tactical Warfighter's evolving mission needs.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Emerging Technologies	SS/FP	CACI : Aberdeen Proving Ground, MD	21.092	-		-		-		-		-	0.000	21.092	-
Emerging Technologies	SS/FP	Southwest Research Installation : Aberdeen Proving Ground, MD	0.175	-		-		-		-		-	0.000	0.175	-
System Of System Engineering and Integration, Current and Strategic Initiatives	C/T&M	CSC Aberdeen Proving Ground /Fort Hood, TX : APG	57.690	-		-		-		-		-	0.000	57.690	-
System of System Engineering & Integration, Current & Strategic Initiative, Architecture Integration	Various	Bowhead (extension) : Aberdeen Proving Ground, MD	8.601	2.511	Feb 2017	2.254		0.989	Oct 2018	-		0.989	0.000	14.355	-
System of System Engineering & Integration, Current & Strategic Initiative, Architecture Integration	TBD	TBD (previously Bowhead. Bowhead PoP ends 12/2018) : APG MD	-	-		-		2.969	Dec 2018	-		2.969	Continuing	Continuing	Continuing
Architecture Integration	C/T&M	CSC : various	9.005	-		-		-		-		-	0.000	9.005	-
Systems Engineering Support	SS/FP	LOCKHEED MARTIN : Eatontown, NJ	7.799	-		-		-		-		-	0.000	7.799	-
Systems Engineering Support	C/CPFF	Northrop Grumman : Arlington, VA	5.282	-		-		-		-		-	0.000	5.282	-
Systems Engineering Support	C/CPFF	Various : tbd	3.068	0.364	Oct 2016	0.328		0.395	Oct 2018	-		0.395	Continuing	Continuing	Continuing
System of System Architectures, Engineering, and Integration	SS/FP	MITRE : Aberdeen Proving Ground, MD/ Eatontown, NJ	91.084	4.248	Sep 2016	3.812		4.611	Sep 2018	-		4.611	Continuing	Continuing	Continuing
Tactical Network Initialization	SS/FP	Future Skys Inc. : Neptune, NJ	0.600	-		-		-		-		-	0.000	0.600	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System of System Engineering and Integration	C/T&M	CSC : Huntsville, AL	0.183	-		-		-		-		-	0.000	0.183	-
System of System Engineering and Integration	C/T&M	Viatech : NJ	0.367	-		-		-		-		-	0.000	0.367	-
		Subtotal	204.946	7.123		6.394		8.964		-		8.964	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IN-HOUSE SUPPORT	Various	PEO C3T : APG, MD	31.629	1.101		0.987		-		-		-	0.000	33.717	-
MATRIX	Various	Various : Aberdeen Proving Ground, MD	12.802	0.430		0.386		0.430		-		0.430	Continuing	Continuing	Continuing
OTHER GOVERNMENT SUPPORT	Various	Various : Various	7.377	-		-		-		-		-	0.000	7.377	-
		Subtotal	51.808	1.531		1.373		0.430		-		0.430	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	256.754	8.654		7.767		9.394		-		9.394	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** C34 / *Army Tac C2 Sys Eng*

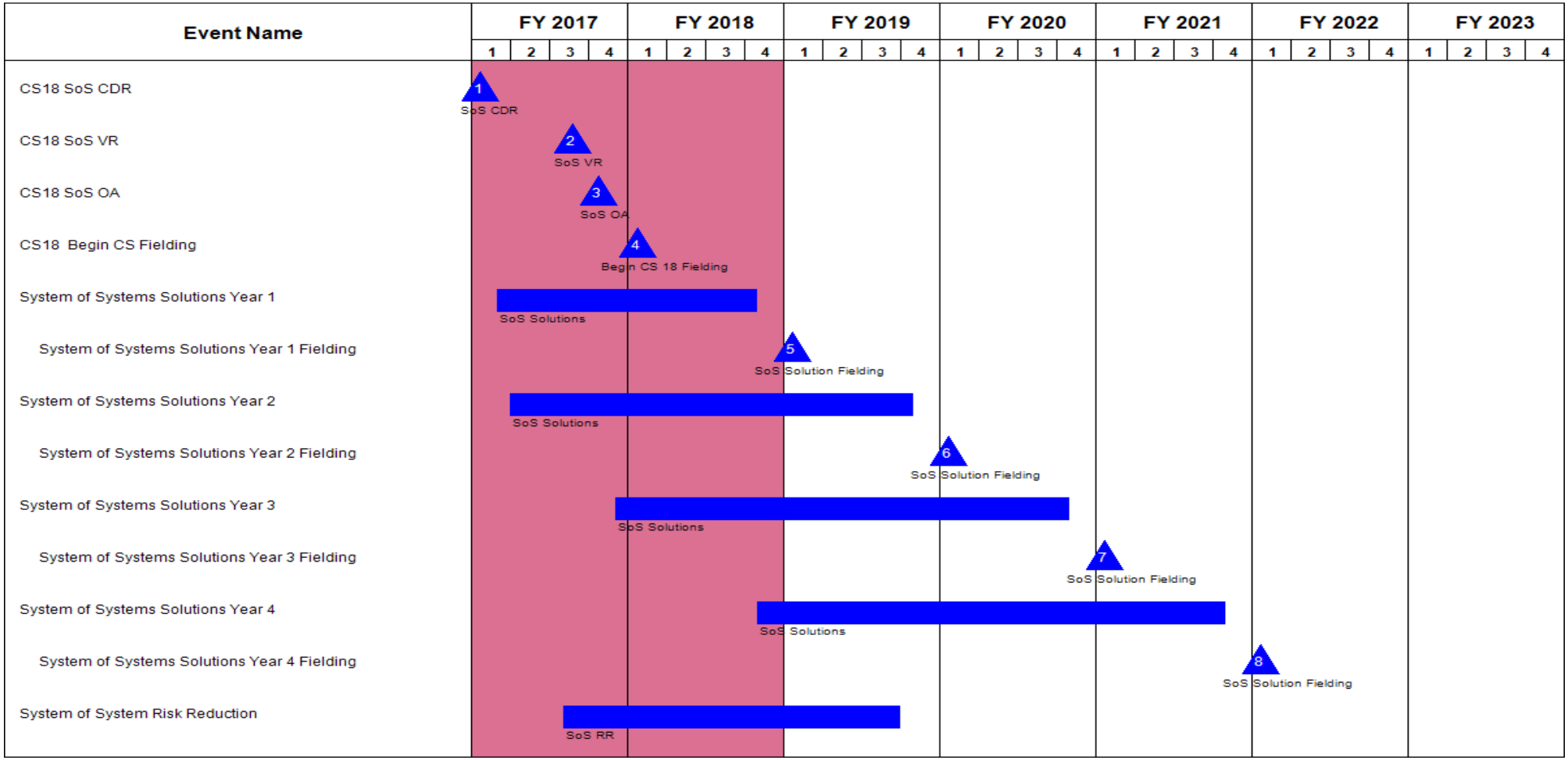

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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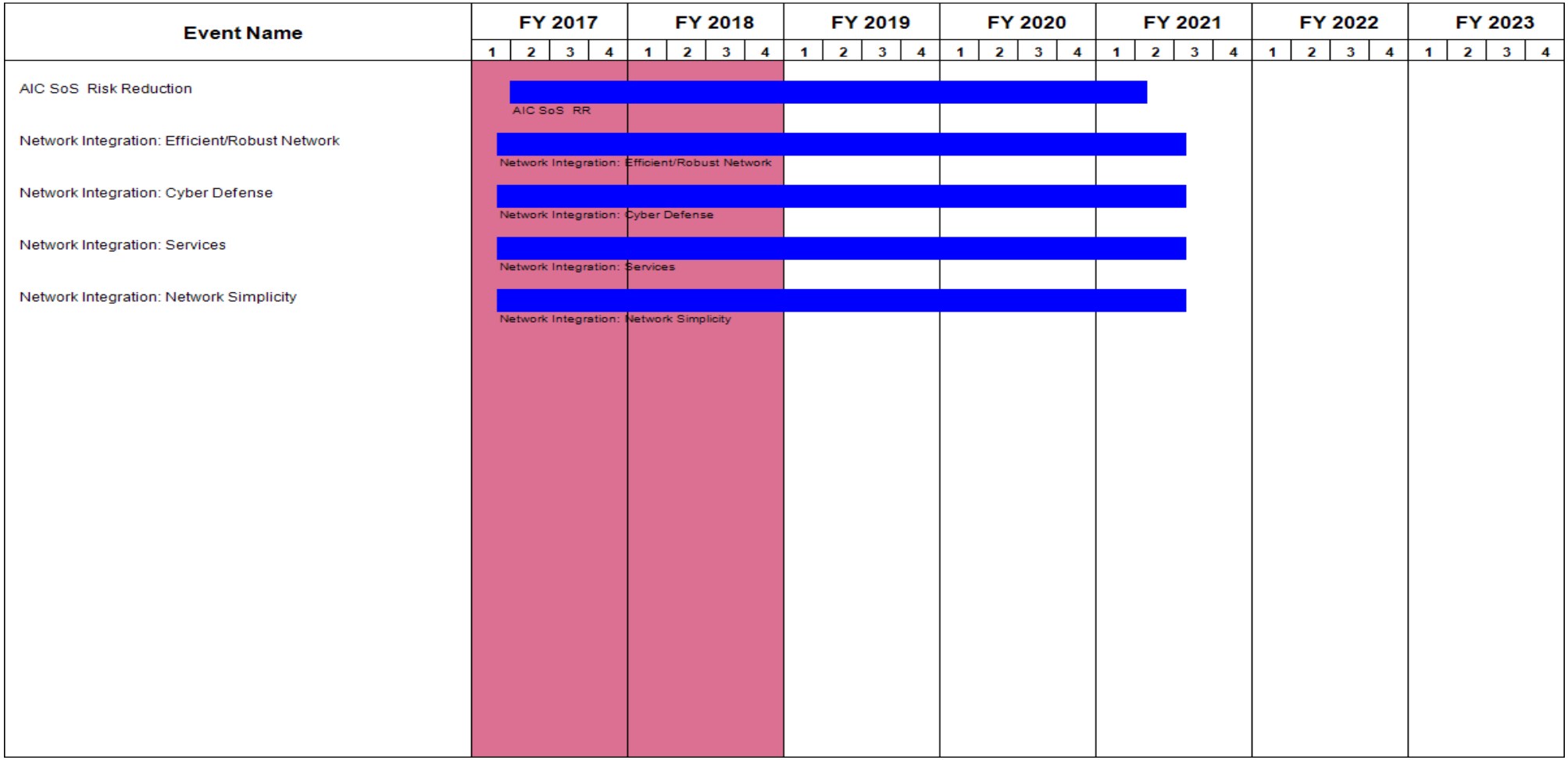

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CS18 SoS CDR	1	2017	1	2017
CS18 SoS VR	3	2017	3	2017
CS18 SoS OA	4	2017	4	2017
CS18 Begin CS Fielding	1	2018	1	2018
System of Systems Solutions Year 1	1	2017	4	2018
System of Systems Solutions Year 1 Fielding	1	2019	1	2019
System of Systems Solutions Year 2	1	2017	4	2019
System of Systems Solutions Year 2 Fielding	1	2020	1	2020
System of Systems Solutions Year 3	4	2017	4	2020
System of Systems Solutions Year 3 Fielding	1	2021	1	2021
System of Systems Solutions Year 4	4	2018	4	2021
System of Systems Solutions Year 4 Fielding	1	2022	1	2022
System of System Risk Reduction	3	2017	3	2019
AIC SoS Risk Reduction	1	2017	2	2021
Network Integration: Efficient/Robust Network	1	2017	3	2021
Network Integration: Cyber Defense	1	2017	3	2021
Network Integration: Services	1	2017	3	2021
Network Integration: Network Simplicity	1	2017	3	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EJ4 / *COMMAND POST COMPUTING ENVIRONMENT (CPCE)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EJ4: *COMMAND POST COMPUTING ENVIRONMENT (CPCE)*	-	90.254	61.576	35.018	-	35.018	20.650	1.805	1.843	1.881	0.000	213.027
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The goal of the Command Post Computing Environment (CPCE), one of the six computing environments under the Army's Common Operating Environment (COE) initiative, is to eliminate "stove-piped" legacy systems and provide an integrated, interoperable, cyber-secure, cost-effective computing infrastructure framework to serve as the basis for multiple warfighting functions. CPCE will provide Programs of Record a core infrastructure, including a common operating picture (COP) tool, common data strategy, common applications, common hardware configurations, and common look and feel (user interface) that allows rapid development of future capabilities within that construct. This effort eliminates duplicative or redundant implementations, simplifies future development efforts, and enhances interoperability and data sharing across multiple echelons. Acquisition Goals of the CPCE include: Acquisition Agility, Open System Architectures, Reduced Life Cycle Costs, and a Cyber-Hardened Foundation for applications and services.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: System Requirements Engineering	7.789	3.000	3.241	-	3.241
Description: Requirements analysis of multiple Joint Capabilities Integration Development System (JCIDS) documents and other sources to determine Minimal Essential Capabilities (MECs) and full capability requirements for CPCE. Requirements configuration management and adjudication, and overall management and conduct of the Requirements Configuration Control Board (CCB) process. Translation of requirements into lower-level (L2, L3) subrequirements and development of a System / Subsystem Specification (SSS), and multiple system requirements specifications (SRS). ***FY 2018 Plans:*** For FY18, will continue to ingest infrastructure requirements for incorporation into later versions of CPCE software. Will assist Programs of Record with determining overlapping requirements that are already satisfied by the CPCE core utilities. Maintain the MC SSS Requirements Verification Traceability Matrix (RVTM) and SSS/SRS. ***FY 2019 Base Plans:*** For FY19, will continue to ingest infrastructure requirements for incorporation into later versions of CPCE software. Will continue to refine a formal governance process for the incorporation of additional Program of					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Record (POR) functionality. Assist Programs of Record with determining overlapping requirements that are already satisfied by the CPCE core utilities. Maintain the MC SSS Requirements Verification Traceability Matrix (RVTM) and SSS/SRS. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No significant change in this category, as systems requirements engineering is a somewhat stable level of effort in the CPCE program.					
Title: SW Dev - Core Infrastructure	64.570	33.606	19.127	-	19.127
Description: Provides an integrated mission command capability across Command Post and Platforms, through all echelons, that provides simplicity, intuitiveness, core services and applications, common look and feel, and warfighter functionality in the areas of Fires, Logistics, Intelligence, Airspace Management and Maneuver. Primary software development efforts include development of a simple Common Operating Picture (COP), a Common Geospatial solution (map), a user interface with "common Look and Feel", and common Data Services, including an extensible database and data persistence. Software development efforts focus on designing the system to reduce the training burden on the Soldier, and the creation of an Integrated Software Development Kit (ISDK) that allows external Programs of Record the ability to integrate new capabilities without rebuilding common components. ***FY 2018 Plans:*** Continue integration of the CPCE v3 COTS underlying infrastructure, Core Utilities, backwards compatibility, and Warfighter Function (WfF) Applications into a holistic System of Systems and ensuring that those subsystems function together in accordance to Program requirements and specifications. These responsibilities include software engineering and development of DevOps, test engineering, and release management, Command, Control and Intelligence (C2I) Ultra Light, Open Routing, Data Flows, Hybrid Operating System, Extensible Map Platform (EMP) Renderer, Map Based Planning, Joint and Coalition Interoperability, and Tactical Server Infrastructure. ***FY 2019 Base Plans:*** Continue the final integration of the CPCE v3 COTS underlying infrastructure, Core Utilities, backwards compatibility, and Warfighter Function (WfF) Applications into a holistic System of Systems and ensuring that those subsystems function together in accordance to Program requirements and specifications. These responsibilities include software engineering and development of DevOps, test engineering, and release management, Command, Control and Intelligence (C2I) Ultra Light, Open Routing, Data Flows, Extensible					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Map Platform (EMP) Renderer, Map Based Planning, Joint and Coalition Interoperability, and Tactical Server Infrastructure. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Software development effort in support of CPCE V3.0 will be completed in FY19.					
Title: Hardware/Software Integration ***Description:*** Hardware / Software Integration within the Command Post Computing Environment consists of research, development, and engineering efforts required to select, engineer, and field a Commercial off the Shelf hardware server and related components. The CPCE software will reside on converged Tactical Server Infrastructure (TSI) v2 server stacks, which host multiple software infrastructure components including Microsoft Exchange, SharePoint, Defensive Cyber Operations (DCO) tools, SQL databases, Active Directory, and others. This enterprise software is tightly-coupled with, and engineered for, specific TSI hardware using virtual machine (VM) technology and must serve as the basis for all other warfighting functions and mission command system software loaded on the server. ***FY 2018 Plans:*** For FY18, primary effort includes continued development of VM structure of the TSI server architecture to incorporate more processing power and functionality in a reduced footprint. Potential switch from current VM vendor product to a different vendor hypervisor product, to save cost, will be investigated. Ongoing efforts to migrate Program of Record functionality to the CPCE will require TSI server stack accommodations and reengineering. ***FY 2019 Base Plans:*** For FY19, primary effort includes continued development of VM structure of the TSI server architecture to incorporate more processing power and functionality in a reduced footprint. Ongoing efforts to migrate Program of Record functionality to the CPCE will require TSI server stack accommodations and reengineering. This engineering includes server deployment script automation. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The majority Hardware/Software integration requirements and costs will be recognized in FY18. In FY19, engineering continues on the TSI Server, however previous versions will transition to sustainment, allowing the hardware team to focus on future consolidation, deployment, and utilization improvements.	4.728	4.800	4.050	-	4.050
Title: Joint & Coalition Interoperability	0.100	0.250	1.250	-	1.250

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ4 / *COMMAND POST COMPUTING ENVIRONMENT (CPCE)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Consists of efforts in support of Joint Interoperability and Coalition Partner Interoperability. (One of the goals of CPCE v3 is to improve the sharing of mission command capabilities among the US Armed Services and our Coalition partners in the Mission Partner Environment (MPE).) ***FY 2018 Plans:*** CPCE Joint and Coalition Interoperability plans for FY18 include continued participation in the PM-CEWG and SSG-A events. In addition, CPCE will provide Defense Information Systems Agency (DISA) with engineering requirements for integration and interfaces with the Global Command and Control System - Joint Enterprise (GCCS-JE) and specific requirements for Disconnected, Intermittent, or Limited (DIL) communications in a Denied Operational Environment. This effort will support the DISA's mission to release an RFP for the Global Command and Control System - Joint Enterprise (GCCS-JE) in FY18. ***FY 2019 Base Plans:*** CPCE Joint and Coalition Interoperability plans for FY19 include continued participation in the Program Manager-Computing Environment Working Group (PM-CEWG) and Senior Steering Group-Acquisition (SSG-A) events. In addition, CPCE will provide Defense Information Systems Agency (DISA) with engineering requirements for integration and interfaces with the Global Command and Control System - Joint Enterprise (GCCS-JE) and specific requirements for Disconnected, Intermittent, or Limited (DIL) communications in a Denied Operational Environment. This effort will support the DISA's mission to execute contract award for the Global Command and Control System - Joint Enterprise (GCCS-JE) in FY19. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase in funding of Joint and Coalition efforts reflects increased manpower to support CPCE to GCCS-JE linkage and Joint Planning Service (JPS).					
Title: Test and Evaluation ***Description:*** Test and evaluation efforts include the planning and conduct of Command Post Computing Environment (CPCE) / Mounted Computing Environment (MCE) T&E events including Developmental Test, Software Acceptance Testing, Integration Events, Risk Reduction Events, and Initial Operational Test and Evaluation (IOT&E). ***FY 2018 Plans:*** In FY18, Efforts are being done in coordination with MCE. CPCE/MCE will finalize planning and conduct the formal Initial Operational Test & Evaluation (IOTE) event. Leading up to IOTE, CPCE/MCE will conduct multiple	4.619	9.920	2.350	-	2.350

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Operational Test Readiness Reviews (OTRRs) and Lab-Based Risk Reduction events (LBRRs). Following OT, CPCE/MCE will participate in Army Interoperability Certification (AIC) testing for certification of IERs via Army Mission Threads. ***FY 2019 Base Plans:*** In FY19, CPCE/MCE will participate in formal Initial Operational Test & Evaluation (IOTE) after action reviews and adjudicate findings and observations from the formal test. Following IOTE, CPCE/MCE will participate in Army Interoperability Certification (AIC) testing for certification of IERs via Army Mission Threads. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Scope of testing decreased from FY18 to FY19.					
Title: Program Management ***Description:*** Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and IPTs. ***FY 2018 Plans:*** Provide overall management and oversight of the implementation of CPCE. Technical Area support of this effort includes System Development and engineering changes to hardware, software, and network), System Analysis of Program of Record (PoR) systems and future systems, Technical Readiness Assessments, and Stakeholder Technical Interchange Meetings/Events. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the Army Research and Development Center (ARDEC) CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY18 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts. ***FY 2019 Base Plans:*** Management and oversight funding for government support to be transitioned to OMA funding. Technical Area Contract support will continue for this effort which includes System Development and engineering changes to hardware, software, and network), System Analysis of Program of Record (PoR) systems and future systems, Technical Readiness Assessments, and Stakeholder Technical Interchange Meetings/Events. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the Army Research and Development Center (ARDEC)	8.448	8.500	3.500	-	3.500

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY19 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding for Core and Matrix Labor (management and oversight of CPCE) transitioned to OMA appropriation in FY19. Contract Technical support will remain.					
Title: Product Support ***Description:*** Product Support includes all efforts related to type classification, materiel release, provisioning, life cycle sustainment strategies, training development, and total package fielding. ***FY 2018 Plans:*** In FY18, CPCE will prepare training packages, continue efforts to define Basis of Issue Plan (BOIP), prepare for a logistics demonstration to verify and validate Technical Data Products and the formal Life Cycle Sustainment Plan (LCSP). ***FY 2019 Base Plans:*** In FY19, CPCE will conduct a logistics demonstration to verify and validate Technical Data Products and complete the formal Life Cycle Sustainment Plan (LCSP), oversee all aspects of total package fielding, common new equipment training and delivery of the final system to the First Unit Equipped (FUE).	-	1.500	1.500	-	1.500
Accomplishments/Planned Programs Subtotals	90.254	61.576	35.018	-	35.018

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

CPCE is not a Program of Record (PoR).

CPCE is being developed over time, with the initial set of v3 Minimum Essential Capabilities (MECs) being delivered in 4QFY19. Subsequent deliveries of capabilities are expected on a 5 year cycle (FY22, FY25, FY28), in accordance with the draft COE Information Systems Initial Capability Document (IS ICD). This cycle may be adjusted depending on many factors, including fielding priorities, effectiveness of backwards compatibility, and time required to develop and test new capabilities. The CPCE is a capability integration effort, based on a Commercial-Off-The-Shelf / Non-Developmental Item (COTS/NDI) software infrastructure package that allows

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for immediate third party development of warfighting capability applications in support of integrated Command Post, Mounted and Dismounted tactical computing capabilities.

Efforts are being accomplished through a Commercial-of-the-Shelf/based product that will provide the infrastructure foundation, along with a mixture of organic Government and industry partners whose services will enhance the capabilities to meet DoD requirements and security standards. Government partners to include the U.S. Army Armament Research, Development and Engineering Center (ARDEC) Weapons Software Engineering Center (WSEC), Communications-Electronics Command (CECOM) Software Engineering Center (SEC), Aviation and Missiles Research and Development Center (AMRDEC) Software Engineering Directorate (SED) and Communications-Electronics Research, Development and Engineering Center (CERDEC). Commercial suppliers are assigned efforts through GSA Mission Command Engineering Services vehicles and Multiple Award Task Order (MATO) contracts. Hardware, core software and associated licenses to support converged system architecture is Commercial-off-the-Shelf (COTS) and procured through existing vehicles from GSA, Common Hardware Systems (CHS) and the Army Computer Hardware Enterprise Software and Solutions (CHESS).

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support (Gov't-Core)	Sub Allot	PM Mission Command : APG, MD	2.500	2.250	Oct 2016	2.250		-		-		-	0.000	7.000	-
PM Support (Gov't-Matrix)	IA	Various Matrix Orgs incl CECOM SEC, LRC, G8, G2, PRD, et al) : APG, MD	2.679	1.400	Oct 2016	1.400		-		-		-	0.000	5.479	-
PM Support (SETA Contractor)	C/FFP	Multiple incl CSRA and others : APG, MD	3.000	4.798	Dec 2016	4.850		3.500	Nov 2018	-		3.500	0.000	16.148	-
		Subtotal	8.179	8.448		8.500		3.500		-		3.500	0.000	28.627	N/A

Remarks

Funding for Matrix (Management and Oversight of CPCE) transitions to OMA Appropriation in FY19.

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Requirements Engineering	Various	SW Dev Contractors and Multiple Matrix Orgs : Various Locations	10.841	7.789	Dec 2016	3.000		3.241	Oct 2018	-		3.241	0.000	24.871	-
Software Development - Core Infrastructure	Option/ Various	ARDEC, CERDEC, Systematic : Picatinny, NJ APG, MD Centerville, VA	41.508	64.570	Dec 2016	33.606		19.127	Oct 2018	-		19.127	0.000	158.811	-
Joint and Coalition Interoperability	Various	TBD : Various	0.126	0.100	Nov 2016	0.250		1.250	Nov 2018	-		1.250	0.000	1.726	-
Hardware / Software Integration	Various	multiple : APG Md	4.920	4.728	Feb 2017	4.800		4.050	Oct 2018	-		4.050	0.000	18.498	-
		Subtotal	57.395	77.187		41.656		27.668		-		27.668	0.000	203.906	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Software Development efforts will be managed through a combination of COTS Procurement, PM Mission Command technical staff, Matrix Organizations (CERDEC, AMRDEC) and software development contractor firms (contracts and task orders to be determined and competed as necessary).

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Support	C/FFP	SCCI : Austin, TX	-	-		1.500		1.500	Jun 2019	-		1.500	0.000	3.000	-
		Subtotal	-	-		1.500		1.500		-		1.500	0.000	3.000	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Develop and Conduct Tests and Assessments	MIPR	Multiple Test Agencies : Multiple Locations (Primary APG)	2.116	4.619	Dec 2016	9.920		2.350	Oct 2018	-		2.350	0.000	19.005	-
		Subtotal	2.116	4.619		9.920		2.350		-		2.350	0.000	19.005	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	67.690	90.254		61.576		35.018		-		35.018	0.000	254.538	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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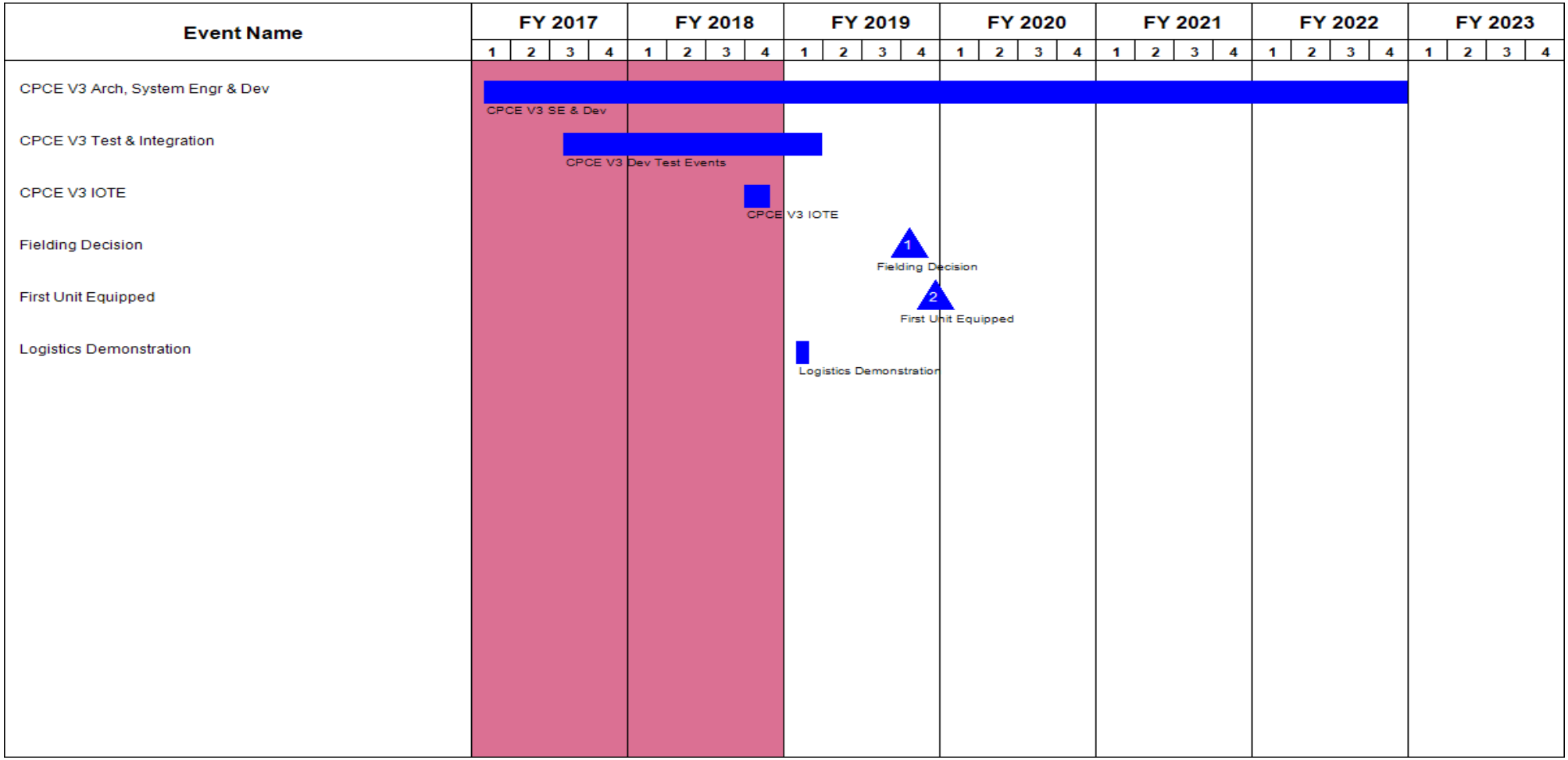

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CPCE V3 Arch, System Engr & Dev	1	2017	4	2022
CPCE V3 Test & Integration	3	2017	1	2019
CPCE V3 IOTE	4	2018	4	2018
Fielding Decision	4	2019	4	2019
First Unit Equipped	4	2019	4	2019
Logistics Demonstration	1	2019	1	2019

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
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COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EJ5: *MOUNTED COMPUTING ENVIRONMENT (MCE)*	-	16.202	16.949	19.190	-	19.190	8.200	0.000	0.000	0.000	0.000	60.541
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The MCE is one of the six computing environments (CEs) formalized by the AAE under the Common Operating Environment (COE) initiative. MCE standardizes end-user environments and enables streamlined deployment of new warfighting applications while leveraging existing hardware under the Joint Battle Command - Platform program. Requirements for the MCE are established in the draft Mounted Computing Environment Information System Initial Capabilities Document (MCE IS CDD). FY2018 funding provides the means to continue to manage and develop MCE in concert with CPCE.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Software Development	4.008	4.125	5.930	-	5.930
Description: Provides an integrated mission command capability across Platforms, through all echelons, that provides simplicity, intuitiveness, core services and applications, common look and feel, and warfighter functionality in the areas of Fires, Logistics, Intelligence, and Maneuver. Primary software development efforts include development of S/A functions and MC applications on a Common Geospatial solution [map], a user interface with "common look and feel", and common Data Services.					
FY 2018 Plans: Focus is on integrating existing capability and enabling new capability development in preparation for 4QFY19 fielding of the COE. These responsibilities include continued development of software architecture in conjunction with CPCE, Hybrid Operating System, test engineering, Map Based Planning, and Joint and Coalition Interoperability.					
FY 2019 Base Plans: Focus is on integrating existing capability and enabling new capability development in preparation for 4QFY19 fielding of the COE. These responsibilities include continued development of software architecture in conjunction with CPCE, foundational infrastructure, test engineering, Map Based Planning, and Joint and Coalition Interoperability.					
FY 2018 to FY 2019 Increase/Decrease Statement:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Efforts continue to support software development requirements.					
Title: Software/Systems Engineering	10.322	7.624	11.040	-	11.040
Description: Perform Software/Systems Engineering in support of the development of MCE capabilities, applications, and services, to include, but not limited to, conducting engineering studies, software architecture development, system analyses, technical readiness assessments, technical interchange meetings/events, and development of related reports and other deliverables. Coordinate the development of common infrastructure components with the CPCE. ***FY 2018 Plans:*** Development of software architecture constructs to sustain and integrate existing capability and enable new capability development. System engineering expertise in support of COE baselines, focusing on hardware/ software integration, engineering, and development of common services across platforms. Includes planning and engineering of future MCE capabilities using COTS, i.e.: Common Authentication; performance characterization on different HW/SW configurations using Mounted Family of Computer Systems (MFoCS); and coordination of interoperability between external CEs. Continue design efforts, to include integration and lab based developmental and system of systems testing, specifically, GPS updates for platform, platform/sensor integration for platform, Risk Management Framework (RMF)/Information Assurance (IA) certification, C2IUL integration, wireless integration into platform, and the Hybrid Operating System. ***FY 2019 Base Plans:*** Development of software architecture constructs to sustain and integrate existing capability and enable new capability development. System engineering expertise in support of COE baselines, focusing on hardware/ software integration, engineering, and development of common services across platforms. Includes planning and engineering of future MCE capabilities using COTS, i.e.: Common Authentication; performance characterization on different HW/SW configurations using Mounted Family of Computer Systems (MFoCS); and coordination of interoperability between external CEs. Continue design efforts, to include integration and lab based developmental and system of systems testing, specifically, GPS updates for platform, platform/sensor integration for platform, Risk Management Framework					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
(RMF)/Information Assurance (IA) certification, C2IUL integration, wireless integration into platform, and the Hybrid Operating System. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports planned systems engineering requirements.					
Title: Test and Evaluation ***Description:*** Test and evaluation efforts include the planning and conduct of combined Command Post/Mounted Computing Environment T&E events including Developmental Test, Software Acceptance Testing, Integration Events, Risk Reduction Events, and Initial Operational Test and Evaluation (IOT&E). ***FY 2018 Plans:*** In FY18, Efforts are being done in coordination with CPCE. CPCE/MCE will finalize planning and conduct the formal Initial Operational Test & Evaluation (IOTE) event. Leading up to IOTE, CPCE/MCE will conduct multiple Operational Test Readiness Reviews (OTRRs) and Lab-Based Risk Reduction events (LBRRs). Following OT, CPCE/MCE will participate in Army Interoperability Certification (AIC) testing for certification of IERs via Army Mission Threads. ***FY 2019 Base Plans:*** In FY19, MCE will participate in formal Initial Operational Test & Evaluation (IOTE) after action reviews and adjudicate findings and observations from the formal test. Following IOTE, MCE will participate in Army Interoperability Certification (AIC) testing for certification of IERs via Army Mission Threads. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Scope of testing decreased from FY18 to FY19.	0.604	4.000	1.000	-	1.000
Title: Program Management ***Description:*** Program management includes overall management of program execution, major events, reporting, funds execution, contract management, and logistical support. Includes participation in program planning meetings and Integrated Project Teams. ***FY 2018 Plans:*** Will continue to provide overall management and oversight of the implementation of MCE. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the CERDEC, and other PEOs, (e.g. PEO Soldier). Program	1.268	1.200	1.220	-	1.220

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Management efforts in the FY18 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts. ***FY 2019 Base Plans:*** Management and oversight funding to be transitioned to OMA funding. Technical Area support of this effort includes System Development and engineering changes to hardware, software, and network), System Analysis of Program of Record (PoR) systems and future systems, Technical Readiness Assessments, and Stakeholder Technical Interchange Meetings/Events. This support includes the creation and implementation of Functional Support Agreements between PM Mission Command and various Government support agencies such as the Army Research and Development Center (ARDEC) CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY19 timeframe will also include business area support to ensure funding and contracts are planned and available for all SW development, system engineering, and T&E efforts. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding for Core and Matrix Labor (management and oversight of CPCE) transitioned to OMA appropriation in FY19.					
Accomplishments/Planned Programs Subtotals	16.202	16.949	19.190	-	19.190

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

MCE is not a Program of Record (PoR).

MCE is being developed over time, with the initial set of v3 Minimum Essential Capabilities (MECs) being delivered in 4QFY19. Subsequent deliveries of capabilities are expected on a 5 year cycle (FY22, FY25, FY28), in accordance with the draft COE Information Systems Initial Capability Document (IS ICD). This cycle may be adjusted depending on many factors, including fielding priorities, effectiveness of backwards compatibility, and time required to develop and test new capabilities.

To accomplish the goals of the MCE, PEO C3T PM MC architects, designs, and develops the hardware, software, network solutions and capabilities required to achieve compliance with the COE. Primary systems architecture engineering is conducted by in-house Government engineering staff with support from CACI/Agile

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matrix elements and MITRE Corp, a Fully Funded Research and Development Centers. Test and Evaluation support is provided by in-house PM MC TMD staff, with support from contractor firms, for preparation and conduct of specific risk reduction events and test events. Developmental testing is being conducted by the software development teams with Government oversight and coordination. Hardware to support system architecture and software development is comprised of standardized equipment and is procured using existing contract vehicles such as Mounted Family of Computer Systems (MFoCS).

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support(Mixed support: Gov't-Core and Matrix; SETA Contractor)	Various	PM Mission Command : Aberdeen Proving Ground, MD	1.084	1.268		1.200		1.220		-		1.220	Continuing	Continuing	-
		Subtotal	1.084	1.268		1.200		1.220		-		1.220	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	3.711	4.008		4.125		5.930		-		5.930	Continuing	Continuing	-
Software/Systems Engineering	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	4.701	10.322		7.624		11.040		-		11.040	Continuing	Continuing	-
		Subtotal	8.412	14.330		11.749		16.970		-		16.970	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test, Evaluation and Integration	MIPR	Multiple Test Agencies; Multiple Locations : Aberdeen Proving Ground, MD	2.474	0.604		4.000		1.000		-		1.000	Continuing	Continuing	-
		Subtotal	2.474	0.604		4.000		1.000		-		1.000	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	11.970	16.202		16.949		19.190		-		19.190	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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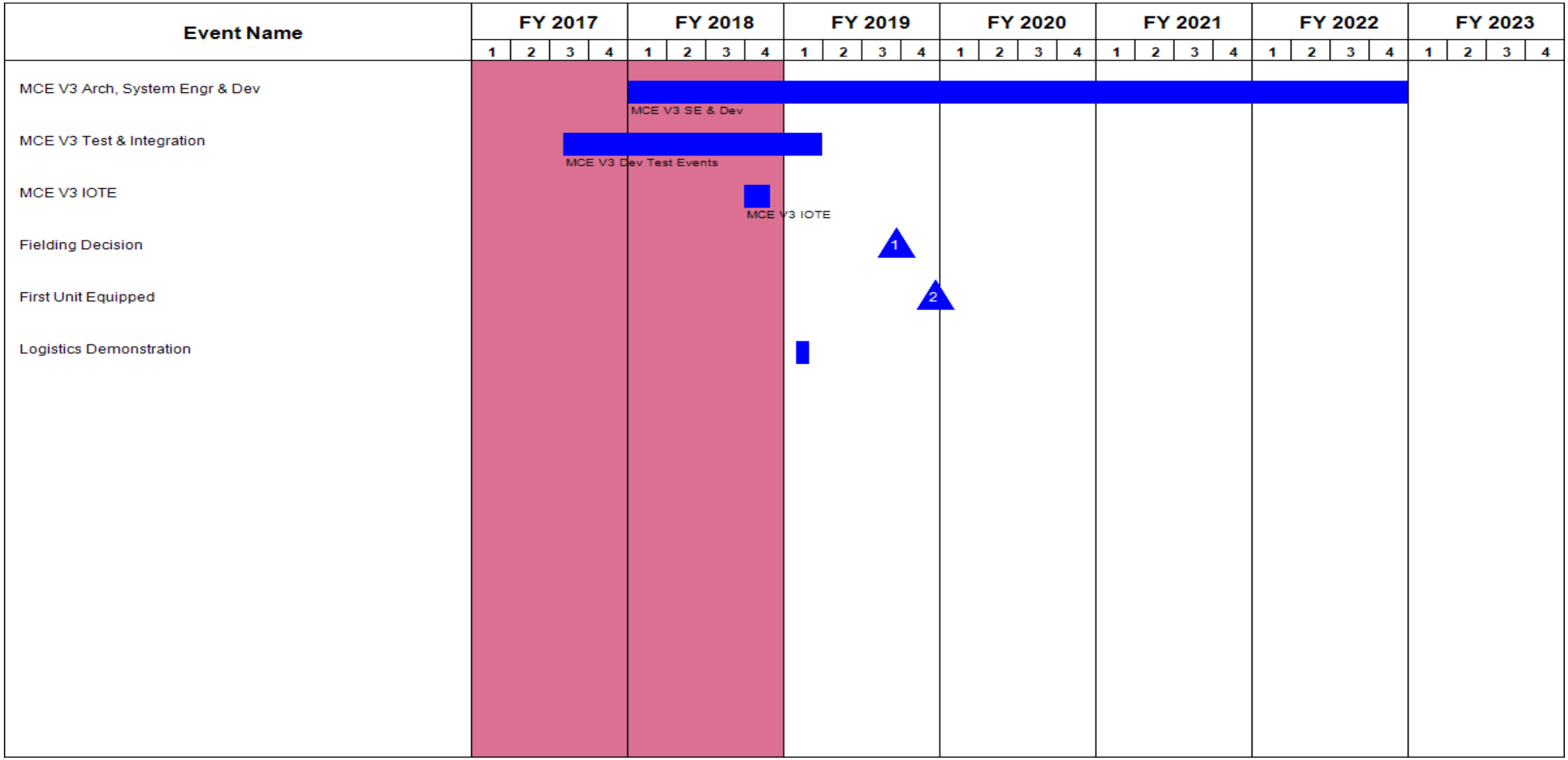

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ5 / *MOUNTED COMPUTING ENVIRONMENT (MCE)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MCE V3 Arch, System Engr & Dev	1	2018	4	2022
MCE V3 Test & Integration	3	2017	1	2019
MCE V3 IOTE	4	2018	4	2018
Fielding Decision	3	2019	3	2019
First Unit Equipped	4	2019	4	2019
Logistics Demonstration	1	2019	1	2019

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EJ6 / *TACTICAL ENHANCEMENT*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EJ6: *TACTICAL ENHANCEMENT*	-	12.907	0.000	17.873	-	17.873	11.862	9.884	0.000	0.000	0.000	52.526
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Enhancement supports the evaluation and testing requirements for Terrestrial Transmission (TRILOS) and Troposcatter Transmission (TROPO) capabilities procured and fielded under the Signal Modernization (SIGMOD) funding line, B00010. TRILOS and TROPO will provide redundancy communications in a Satellite denied environment by providing improved Line of Site and beyond line of sight radio systems. In addition this funding will support development of Network Centric Waveform-Resilient (NCW-R). NCW-R is a critical, near-term set of modifications to the current WIN-T SATCOM waveform that will provide limited protection against our adversaries' ability to jam tactical SATCOM Command and control communications on Wideband Global SATCOM (WGS) satellites. NCW-R will provide anti-jam capability and resiliency to WIN-T Program of Record satellite terminals in contested environments. The NCW-R waveform software will operate on currently fielded WIN-T satellite modems as well as those planned to be fielded for tech refresh in the near term. NCW-R will provide a bridging capability until the next generation protected satellite constellation is launched by the Air Force (projected FY28/29). The current anti-jam protection is limited to two SMART-T terminals per BCT, division and Corps HQs, leaving battalions vulnerable to being isolated during jamming events. FY19 funding begins the Army's concentrated effort for near term satellite anti-jam protection.

SIGMOD Capabilities:
TRILOS: Enables Mission Command in a Satellite Denied environment at higher throughput than the current High Capacity Line of Sight System (HCLOS). TRILOS will enable Army units to reduce reliance on costly satellite bandwidth. TRILOS will extend the network by utilizing a significantly reduced Size, Weight and Power (SWaP) radio verses the aging HCLOS system.
TROPO: Enables Mission Command in a Satellite Denied environment by providing Beyond Line of Site (BLOS) capability over longer ranges and at higher throughput than the current BLOS System. TROPO extends the network by utilizing a significantly reduced SWaP radio verses the current system. TROPO will enable Army units to reduce reliance on costly satellite bandwidth.
No FY18 funding: Testing requirements for TROPO moved from FY18 to FY19 due to a delay in requirements definition and availability of COTS products to meet the requirement.

FY19 funds support TROPO test requirement and NCW-R future development and developmental testing effort.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: IOT&E for TRILOS systems	11.407	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: IOT&E for terrestrial communications TRILOS Systems					
Title: IOT&E for TROPO systems ***FY 2019 Base Plans:*** FY19 $8.6M are needed for TROPO IOT&E testing ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No FY18 funds. FY19 funds are for TROPO test	-	-	8.600	-	8.600
Title: Development of NCW-R ***FY 2019 Base Plans:*** $9.273M are needed for NCW-R development. NCW-R is an improvement of the NCW waveform and provides a bridging Protected SATCOM capability for Army tactical formations until the Army and Air Force deploy the Protected Tactical Waveform (PTW) and its associated Infrastructure. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No FY18 funds. Funds in FY19 are for NCW-R	1.500	-	9.273	-	9.273
Accomplishments/Planned Programs Subtotals	12.907	-	17.873	-	17.873

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• B00010: *Signal Modernization*	58.250	97.618	150.777	-	150.777	127.867	139.682	147.278	176.801	0.000	898.273

Remarks

B00010 : OPA funding line for Signal Modernization (SIGMOD)

D. Acquisition Strategy

These funds will be used to conduct System Evaluation and Formal Testing of the various Signal Mod capabilities, specifically the TROPO and Terrestrial Transmission (TRILOS) systems. This is in order to facilitate integration into the WIN-T tactical ground networks. Testing and evaluation efforts will leverage the Network Integration Evaluation (NIE) events, specifically NIE 17.2 (TRILOS) events. TROPO test is anticipated in 3QFY19. These test events will meet all mandatory testing requirements with full ATEC oversight. This Acquisition Strategy will integrate proven Commercial-Off-The-Shelf (COTS) capabilities into existing WIN-T nodes to expand and enhance network capacity and user access. The TROPO and TRILOS capabilities will be acquired as ACAT III programs to replace legacy equipment in the field while utilizing DoDI 5000.02 standard acquisition approaches, starting with Milestone C Determination for TRILOS (3QFY17) and TROPO (2QFY18). The Army will continue

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ6 / *TACTICAL ENHANCEMENT*

NCW-R development in FY19 and conduct developmental testing in 4th quarter FY19, followed by certification for operational use over Wideband Global SATCOM (WGS) satellites by Army Space and Missile Defense Command. The Army projects to begin fielding this improved, resilient satellite communication waveform in 4th Quarter FY20.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EJ6 / *TACTICAL ENHANCEMENT*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NCW-R	Option/ CPFF	CODES1403AALION SCIENCE AND TECHNOLOGY CORPORATION : 202BURR RIDGE IL 60527-0849FACILITY	-	1.500	Apr 2017	-		9.273	Jan 2019	-		9.273	0.000	10.773	-
		Subtotal	-	1.500		-		9.273		-		9.273	0.000	10.773	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
N/A	Option/ CPFF	CODES1403AALION SCIENCE AND TECHNOLOGY CORPORATION : 202BURR RIDGE IL 60527-0849FACILITY	-	-		-		0.000		-		0.000	-	-	-
		Subtotal	-	-		-		0.000		-		0.000	-	-	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TRILOS Testing	MIPR	ATEC : Aberdeen Proving Ground, MD	8.416	11.407	May 2017	-		-		-		-	0.000	19.823	-
TROPO Testing	MIPR	ATEC : Aberdeen Proving Ground, MD	-	-		-		8.600	May 2019	-		8.600	0.000	8.600	-
		Subtotal	8.416	11.407		-		8.600		-		8.600	0.000	28.423	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EJ6 / *TACTICAL ENHANCEMENT*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.416	12.907		0.000		17.873		-		17.873	0.000	39.196	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ6 / *TACTICAL ENHANCEMENT*

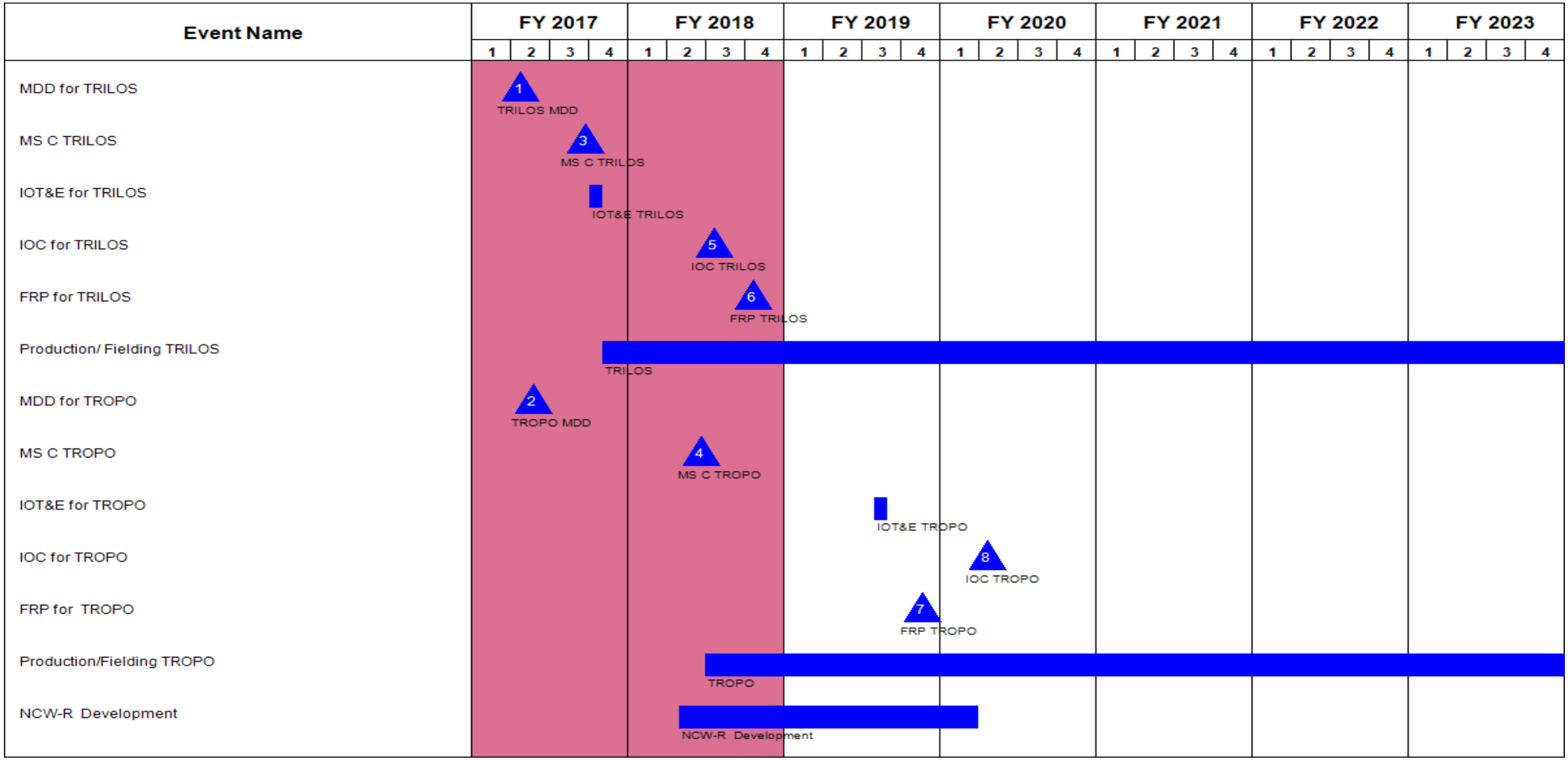

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ6 / *TACTICAL ENHANCEMENT*

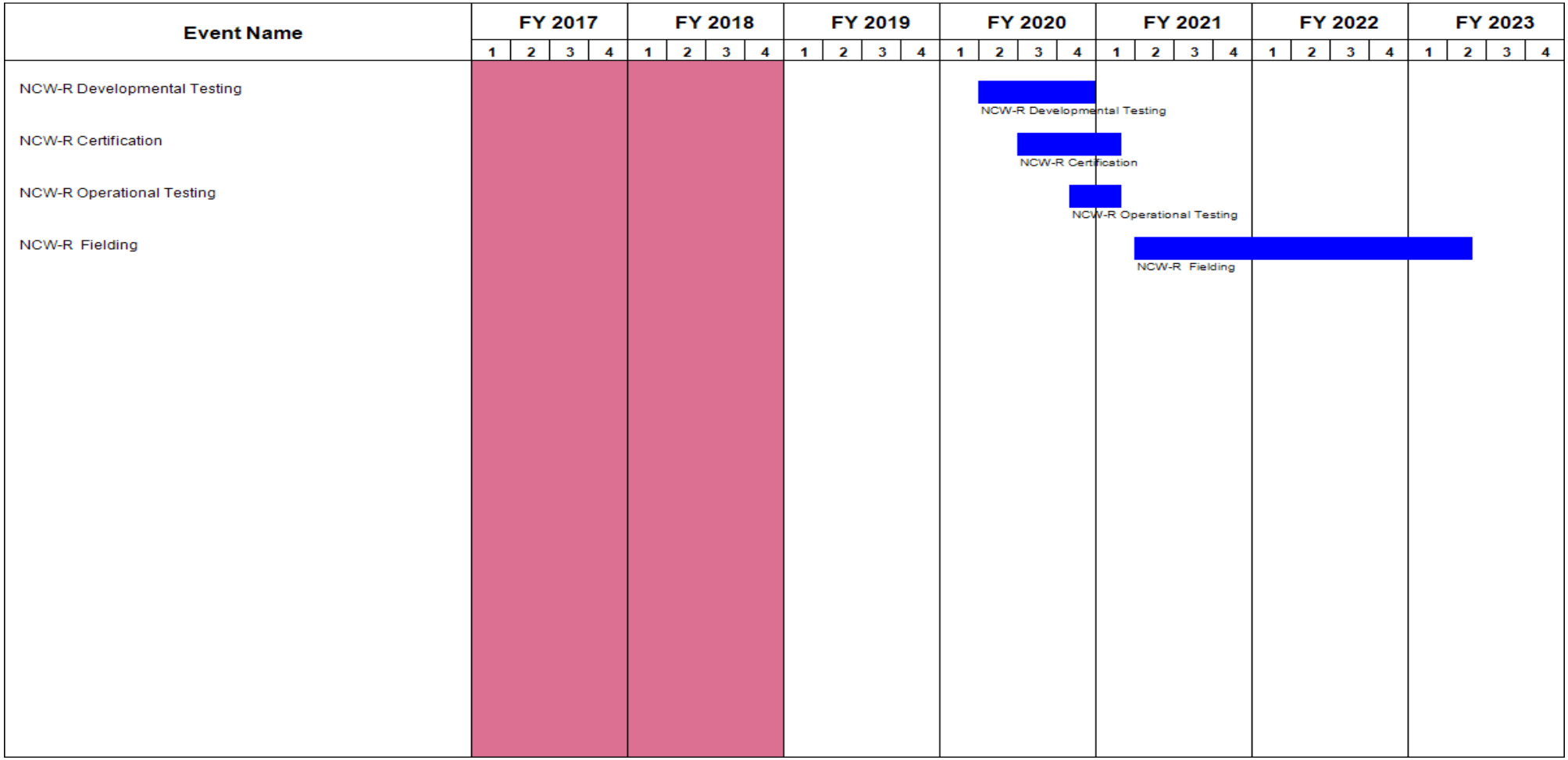

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ6 / *TACTICAL ENHANCEMENT*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MDD for TRILOS	2	2017	2	2017
MS C TRILOS	3	2017	3	2017
IOT&E for TRILOS	4	2017	4	2017
IOC for TRILOS	3	2018	3	2018
FRP for TRILOS	4	2018	4	2018
Production/ Fielding TRILOS	4	2017	1	2024
MDD for TROPO	2	2017	2	2017
MS C TROPO	2	2018	2	2018
IOT&E for TROPO	3	2019	3	2019
IOC for TROPO	2	2020	2	2020
FRP for TROPO	4	2019	4	2019
Production/Fielding TROPO	3	2018	1	2024
NCW-R Development	2	2018	1	2020
NCW-R Developmental Testing	2	2020	4	2020
NCW-R Certification	3	2020	1	2021
NCW-R Operational Testing	4	2020	1	2021
NCW-R Fielding	2	2021	2	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EJ7 / *TACTICAL DIGITAL MEDIA*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EJ7: *TACTICAL DIGITAL MEDIA*	-	1.572	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.572
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Digital Media (TDM) is comprised of photo, video and audio recording and editing equipment that will be assembled and issued as variant kits tailored to unit mission requirements. TDM kits address modernization gaps associated with all operational Combat Camera (COMCAM), Public Affairs (PA), and Military Information Support Operations (MISO) units. TDM provides essential imagery, multimedia products, and live interview capabilities that directly contribute to successful execution of a Commander's strategic engagement and communications strategy across the full range of military operations. TDM also provides specific imagery, video, and multimedia support to commanders through the National Command Authority (NCA) level to assist with operational planning, decision-making, combat adversary misinformation/disinformation, alter perceptions regarding coalition efforts, and provide accurate and timely information to national and international audiences. Proposed TDM equipment is entirely commercial off the shelf (COTS) which is currently in use by military organizations and commercial industry.

FY17 Base funding in the amount of $2.467 million will be used to procure and evaluate representative candidate commercial off the shelf (COTS) camera and video equipment for effectiveness, suitability, and reliability. FY17 efforts will include planning for full rate production decision, type classification, and award of a production delivery order to support future procurements.

No FY18 RDTE funding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Program Management ***Description:*** Program Management comprises overall management of program execution, major events, reporting, funds execution, and contract management. Includes participation in program planning meetings and IPTs.	0.295	-	-	-	-
Title: Test and Evaluation ***Description:*** Test and evaluation of COTS technologies to assess their ability to meet the TDM Capability Production Document (CPD) requirements.	0.536	-	-	-	-
Title: Procurement of Test Articles	0.741	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ7 / *TACTICAL DIGITAL MEDIA*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Photo, video, audio recording, and editing equipment necessary for purposes of evaluation, and testing against the TDM CPD requirements.					
Accomplishments/Planned Programs Subtotals	1.572	-	-	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• B68501: *B68501 Tactical Digital Media (OPA)*	1.191	4.441	4.958	-	4.958	5.500	5.592	5.874	-	0.000	27.556

Remarks

D. Acquisition Strategy

In accordance with the approved TDM Capabilities Production Document (CPD), the Army will be purchasing state-of-the-art COTS equipment to field media variant kits tailored to unit mission requirements. The equipment will be purchased on the Common Hardware Systems (CHS) contract, and will include warranties.

The program strategy for reaching full capability is to identify, and field a modern standardized set of digital media capabilities that enables the Army user community to acquire, and process digital media/visual information products able to be disseminated within a fully integrated Army tactical network operations environment, which includes commercial networks, and interfaces. The TDM program will replace legacy analog devices by providing state-of-the art COTS equipment supporting acquire and process operations that is centrally managed and resourced. New technologies and improvements of COTS equipment will be inserted as part of unit reset, New Equipment Fielding's or upgrades as necessary to provide users with state-of-art capabilities.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EJ7 / *TACTICAL DIGITAL MEDIA*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support(Gov't-Core)	Sub Allot	PM Mission Command : PM Mission Command	0.154	0.300		-		-		-		-	0.000	0.454	-
		Subtotal	0.154	0.300		-		-		-		-	0.000	0.454	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test Articles	C/IDIQ	FIFF and CHS : APG,. MD	0.240	1.022		-		-		-		-	0.000	1.262	-
		Subtotal	0.240	1.022		-		-		-		-	0.000	1.262	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	IA	Multiple Govt Agencies : Locations TBD	0.854	0.250		-		-		-		-	0.000	1.104	-
		Subtotal	0.854	0.250		-		-		-		-	0.000	1.104	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1.248	1.572		0.000		-		-		-	0.000	2.820	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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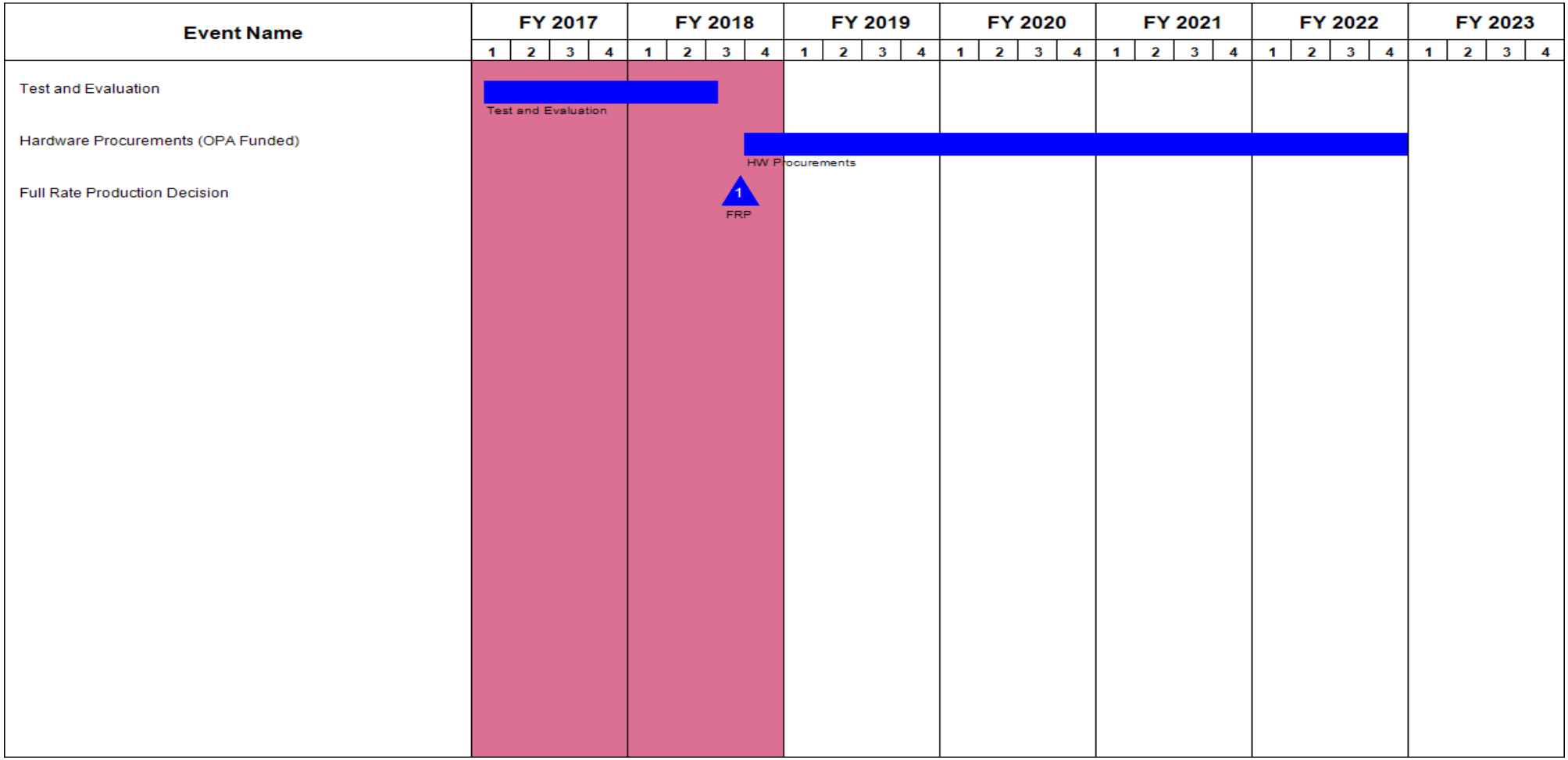

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EJ7 / *TACTICAL DIGITAL MEDIA*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Test and Evaluation	1	2017	3	2018
Hardware Procurements (OPA Funded)	4	2018	4	2022
Full Rate Production Decision	3	2018	3	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EK9: *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*	-	0.000	9.348	10.514	-	10.514	8.691	27.434	30.207	35.483	0.000	121.677
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Tactical Network Operations (NetOps) Management (TNOM) will support the development and integration of the Tactical NetOps software capabilities in support of NetOps Convergence, Army Objectives and emerging Cyber Center of Excellence (CCOE) requirements. The end state program is designed to synchronize LandWarNet, Network-enabled Mission Command, and Global Information Grid 2.0 Network Operations (NetOps) efforts in an integrated and interoperable framework, spanning all echelons of command and supporting the full range of military operations for Army, Joint, and Coalition Forces in order to ensure converged NetOps. The initial mission is convergence of DoD Information Network (DoDIN) functions into a single integrated set of Tactical NetOps and Management software. This integrated solution provides NetOps capability to manage Tactical Networks from the Soldier to the Enterprise network entry point and supports the implementation of integrated NetOps for Unified Network Operations (UNO). UNO will deliver a standardized visualization capability (integrating both Upper and Lower Tactical Internet NetOps) in order to reduce complexity and inform the military decision making processes. UNO will also provide enhanced capability to detect, respond, and restore from cyber incidents.

FY19 funding will continue supporting the Analysis of Alternatives (AoA) to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. FY19 funding will continue supporting NetOps capability enhancements via an adapt and buy strategy. The UNO Program Office Management will utilize FY19 funding in support of requisite milestone documentation preparation prior to a projected 4QFY20 milestone decision. FY19 funding will continue supporting the NetOps capability enhancements via an adapt and buy strategy. The NetOps capability enhancements that will be developed through the adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Product Development	-	7.348	8.241	-	8.241
Description: Network Operations Development					
FY 2018 Plans: FY18 funding will support the Analysis of Alternatives (AoA) to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network,					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. ***FY 2019 Base Plans:*** FY19 funding will complete support to the Analysis of Alternatives (AoA) to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. FY19 funding will continue supporting NetOps capability enhancements via an adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase from FY18 to FY19 is due to continued AoA development and NetOps capability enhancements via an adapt and buy OTA prototyping strategy. The NetOps capability enhancements that will be developed through the adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes.					
Title: Management Services ***Description:*** Program Management Support ***FY 2018 Plans:*** FY18 funding will support Program Office Management, AoA development and supporting System Engineering for NetOps with subsequent efforts for capability development documentation. ***FY 2019 Base Plans:*** FY19 funding will support Program Office Management, AoA development, leveraging the UNO Information Systems Initial Capability Document (IS ICD) to prepare milestone documentation in support of a Milestone B decision anticipated for 4th Quarter FY20, and supporting System Engineering for NetOps with subsequent efforts for capability development documentation. FY19 funding will continue supporting NetOps capability enhancements via an adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint	-	2.000	2.273	-	2.273

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes.. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** The increase from FY18 to FY19 is due to continued AoA development and NetOps capability enhancements via an adapt and buy OTA prototyping strategy. The NetOps capability enhancements that will be developed through the adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes.					
Accomplishments/Planned Programs Subtotals	-	9.348	10.514	-	10.514

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Tactical Network Operations (NetOps) Management (TNOM) is built to deliver the capabilities described in the LandWarNet, Network-enabled Mission Command, and Global Information Grid 2.0 Initial Capabilities Documents (ICD) as refined by the Analysis of Alternatives (AoA). The AoA is replacing the ITNO Capability Production Document (CPD) strategy to align with Army priorities. An AROC decision followed by MDD is anticipated in 3rd Quarter 2018 to initiate the AoA. FY19 will complete AoA development to include supporting efforts for the development of Network Operations software, enhancing Network Visualization and Monitoring of the tactical network, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. FY19 will also include Program Office Management support and subsequent efforts for capability development documentation.

The AoA will scope an integrated solution which provides NetOps capabilities to manage Tactical Networks from the Soldier to the Theater network entry point and supports the implementation of integrated NetOps for Unified Network Operations (UNO). After AoA completion, anticipate an UNO Information Systems Initial Capability Document (IS ICD) to support a Milestone B decision anticipated for 4th Quarter FY20 with a contract award immediately following approval to enter Engineering and Manufacturing Development Phase. The program plans to develop and deliver software, and conduct developmental and operational tests. A Limited Fielding Decision will follow testing.

In FY18-FY20, TNOM will continue supporting the NetOps capability enhancements via an adapt and buy OTA prototyping strategy. The NetOps capability enhancements that will be developed through the adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/TBD	Various : Various	-	-		2.000		2.273	Apr 2019	-		2.273	Continuing	Continuing	Continuing
		Subtotal	-	-		2.000		2.273		-		2.273	Continuing	Continuing	N/A

Remarks

AoA Support, MS B Support, capability enhancements via an adapt and buy strategy, Program Office Management and System Engineering Management and Services

The NetOps capability enhancements that will be developed through the adapt and buy strategy supporting Unit Task Reorganization (UTR) prototypes, Joint Enterprise Network Manager (JENM) prototypes, Commercial Net Management System (NMS) prototypes, and Initiating Planner Consolidation prototypes.

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/TBD	TBD : TBD	-	-		7.348		8.241	Nov 2018	-		8.241	0.000	15.589	-
		Subtotal	-	-		7.348		8.241		-		8.241	0.000	15.589	N/A

Remarks

Supports development of Analysis of Alternatives and subsequent System Engineering of NetOps in support of follow on capability documentation.

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		9.348		10.514		-		10.514	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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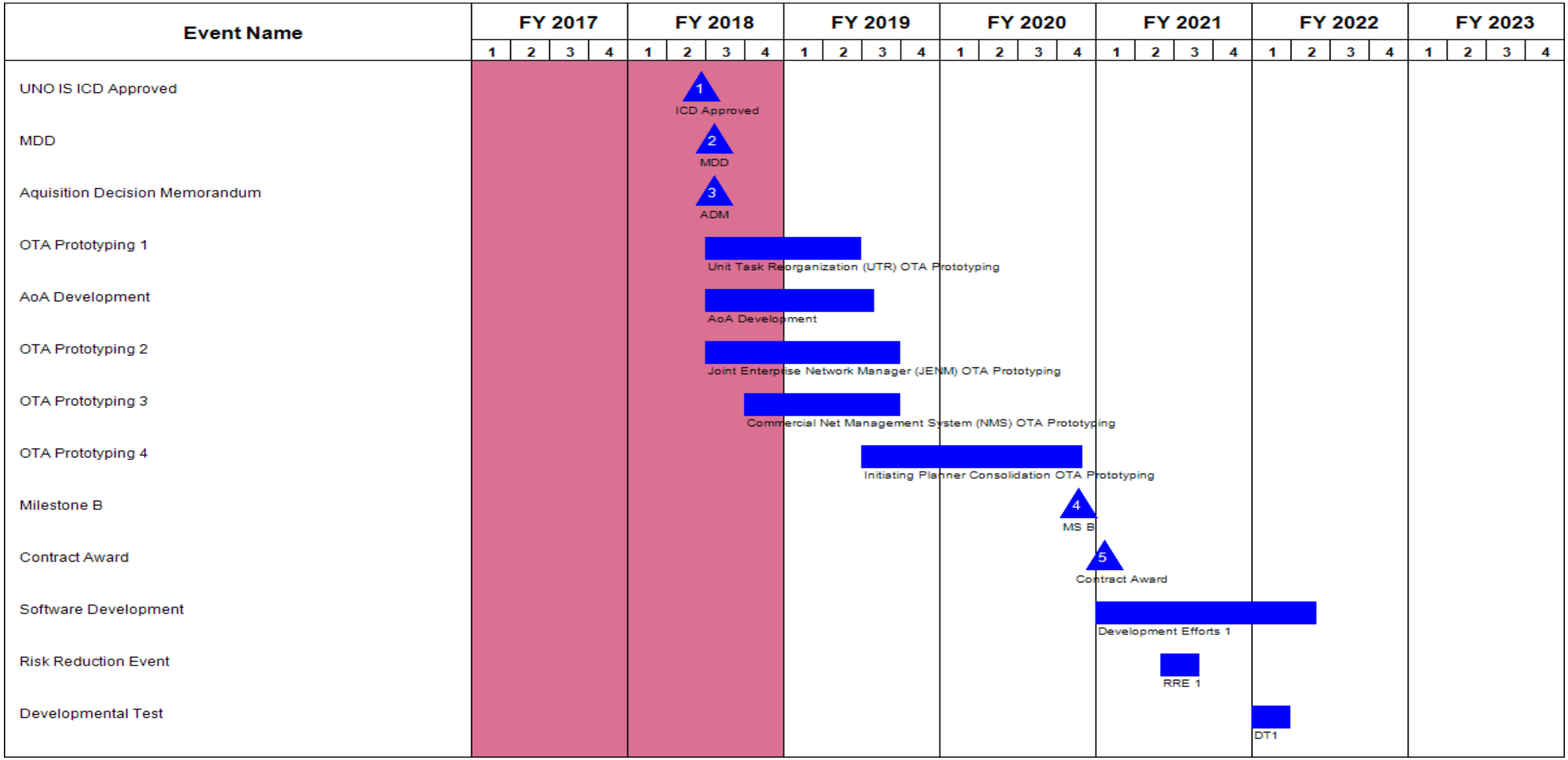

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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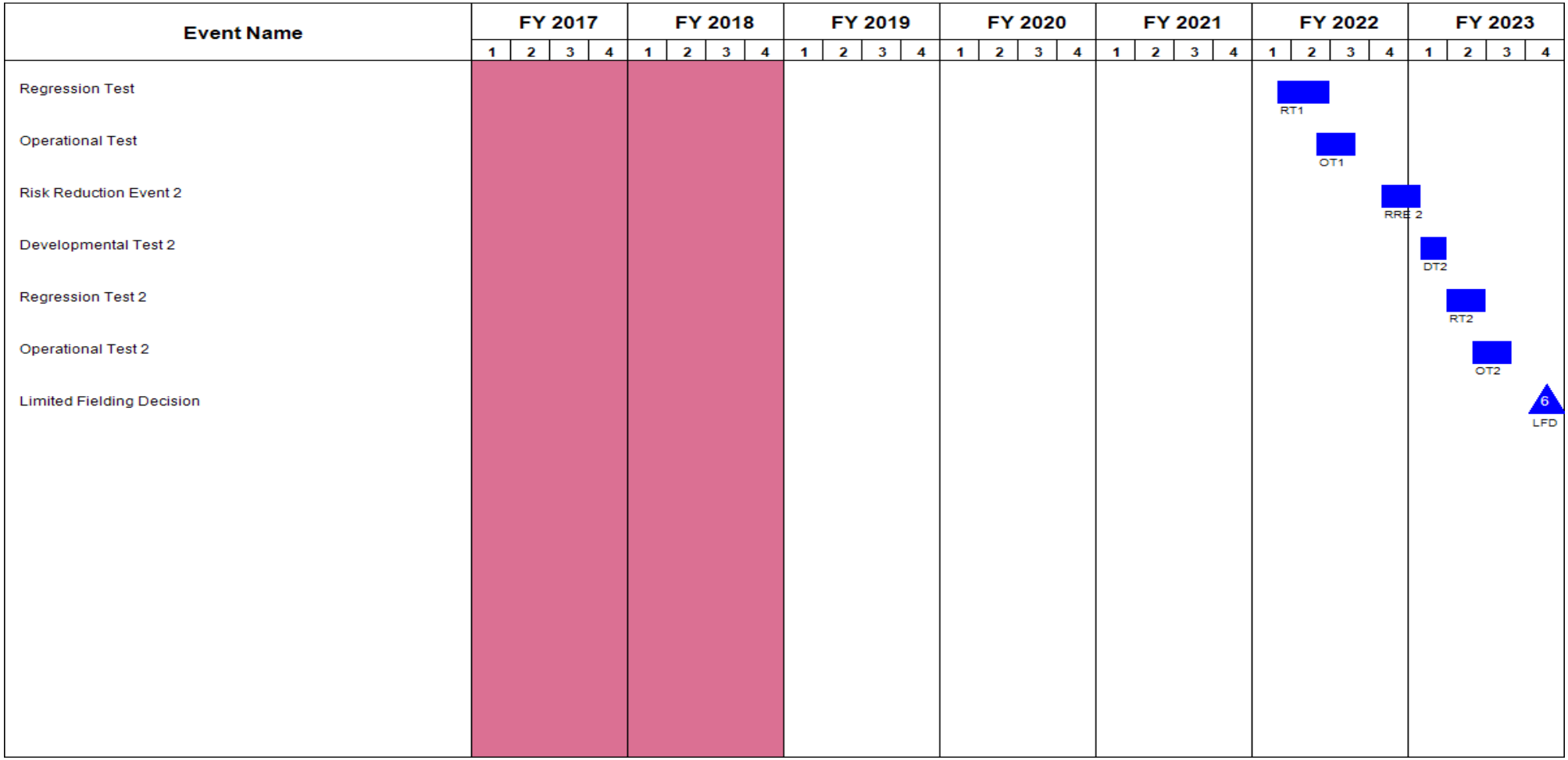

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
UNO IS ICD Approved	2	2018	2	2018
MDD	3	2018	3	2018
Aquisition Decision Memorandum	3	2018	3	2018
OTA Prototyping 1	3	2018	2	2019
AoA Development	3	2018	3	2019
OTA Prototyping 2	3	2018	3	2019
OTA Prototyping 3	4	2018	3	2019
OTA Prototyping 4	3	2019	4	2020
Milestone B	4	2020	4	2020
Contract Award	1	2021	1	2021
Software Development	1	2021	2	2022
Risk Reduction Event	2	2021	3	2021
Developmental Test	1	2022	1	2022
Regression Test	1	2022	2	2022
Operational Test	2	2022	3	2022
Risk Reduction Event 2	4	2022	1	2023
Developmental Test 2	1	2023	1	2023
Regression Test 2	2	2023	2	2023
Operational Test 2	2	2023	3	2023
Limited Fielding Decision	4	2023	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EK9 / *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*

Note

Program projects AoA will scope entering the Engineering and Manufacturing Development phase with initial software development efforts supporting developmental and operational tests for a limited fielding decision.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*				Project (Number/Name) EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
EQ8: *Mobile/Handheld Computing Environment (M/HHCE)*	-	17.680	11.850	9.489	-	9.489	9.562	9.765	8.874	8.107	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Nett Warrior (NW) Program (named in honor of Medal of Honor recipient Colonel Robert C. Nett), also known as the Ground Soldier System (GSS) Program, leverages commercial smart devices and secure Army tactical radios to provide the dismounted leader an integrated mission command and situational awareness system for use during combat operations. The NW system provides leaders electronic real-time information on friendly positions; information about enemy activity and movement; navigational data and map imagery; a collaborative planning tool; and other mission related graphics which effectively puts the power of the entire Army tactical network in the hands of the dismounted leader. The NW system also provides the same integrated mission command capability to the tactical vehicle-mounted leaders so that when dismounted, the leader still maintains the common operating picture (COP) and has continuous situational awareness. This capability provides unparalleled situational awareness and enhanced communications to the dismounted leader allowing for faster, more accurate decisions and reduced fratricide in the tactical fight. Includes integration and interface of products on Soldiers.

The continued development and integration of the NW program also integrates applications from other programs aimed at considerably reducing the weight and bulk of the dismounted Soldier's load by using a single End User Device. The NW program harnesses Soldiers' experience in combat operations and employs combat veterans for Soldier feedback enhancing human factors design and fightability of the system. This project funds the following: 1) Incorporation of additional new hardware applications and capabilities into Nett Warrior, 2) Yearly developmental and operational tests of the NW with continually advancing commercial smart device technology inserted, 3) Software development for planned updates, 4) Integration of new End User Devices with the existing and re-competed Army Tactical Radios, including vehicle power integration, 5) Government led integration and system engineering and program management, and 6) Integration with emerging transport systems.

Note: FY16 and prior funding for Nett Warrior resided in 0604827A (Soldier Systems - Warrior Dem/Val) Project S75 (Ground Soldier Ensemble).

B. Accomplishments/Planned Programs ($ in Millions)	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**
Title: Test and Evaluation	2.119	2.139	1.971	-	1.971
Description: Test and Evaluation including annual Network Integration Evaluation (NIE) and Army Warfighting Assessment (AWA) to gain Soldier feedback.					
FY 2018 Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Continue NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification. Support NW as a baseline CIE and JWA system including: Brigade level support, equipping, training, and spares for NW; conduct yearly Army Interoperability Certification; environmental testing; and Information Assurance penetration prevention testing for new commercial smart devices, software and accessories. Support Army Expeditionary Warrior Experiment (AEWE) testing. ***FY 2019 Base Plans:*** Continue NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification. Conduct a planned Follow-on Test and Evaluation (FOT&E). Support NW as a baseline CIE and JWA system including: Brigade level support, equipping, training, and spares for NW; conduct yearly Army Interoperability Certification; environmental testing; and Information Assurance penetration prevention testing for new commercial smart devices, software and accessories. Support Army Expeditionary Warrior Experiment (AEWE) testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Reduction is due to reduced operational test events in FY19.					
Title: Hardware and Software Integration and Evaluation for Capability Improvements ***Description:*** Hardware and Software Integration and Evaluation for Capability Improvements ***FY 2018 Plans:*** Continue to evaluate next End User Devices (EUD) and associated hardware components to stay aligned with commercial and Army evolving requirements. Provide NW software / hardware updates to support incorporation of 3rd party applications onto NW EUD platform, Army Interoperability Certification (AIC) and cyber security testing. Support DARPA Squad X integration and transition. ***FY 2019 Base Plans:*** Continue to evaluate next End User Devices (EUD) and associated hardware components to stay aligned with commercial and Army evolving requirements. Provide NW software / hardware updates to support incorporation of 3rd party applications onto NW EUD platform, Army Interoperability Certification (AIC) and cyber security testing. Support DARPA Squad X integration and transition. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increased hardware/software integration required.	4.323	3.496	3.758	-	3.758
Title: Software Development & Integration	1.333	2.744	1.002	-	1.002

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Description: Funding is provided for the following efforts. ***FY 2018 Plans:*** Continue to evaluate next generation NW map engine and Operating System (OS) trade studies and initiate assured Position, Navigation and Timing (PNT) software development efforts with NW. Update NW Software Development Kit (SDK) with new functionality. Continue incorporating the Army?s Common Operating Environment (COE) 3.0 Cross-Cutting Capabilities into NW software. Continue development of NW?s next generation Service Oriented Architecture. ***FY 2019 Base Plans:*** Continue to evaluate next generation NW map engine and Operating System (OS) trade studies and assured Position, Navigation and Timing (PNT) software development efforts with NW. Update NW Software Development Kit (SDK) with new functionality. Continue incorporating the Army?s Common Operating Environment (COE) 3.0 Cross-Cutting Capabilities into NW software. Continue development of NW?s next generation Service Oriented Architecture. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Reduction is due to reconfiguration of personnel and associated duties at the Software Integration Lab (SIL).					
Title: Conduct SEPM Support to NW ***Description:*** Conduct Systems Engineering and Program Management Support to Nett Warrior ***FY 2018 Plans:*** Continue to conduct government systems / software engineering and program management support for NW program. Will collect input from Soldiers to improve NW size, weight, power, fightability, safety and effectiveness via surveys. Will manage system configuration, and execute test, development and integration planning including investigation and analysis of emerging innovative commercial technologies to lower the size, weight, power, cost and increase Nett Warrior functionality. ***FY 2019 Base Plans:*** Continue to conduct government systems / software engineering and program management support for NW program. Will collect input from Soldiers to improve NW size, weight, power, fightability, safety and effectiveness via surveys. Will manage system configuration, and execute test, development and integration planning	2.405	2.699	2.086	-	2.086

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
including investigation and analysis of emerging innovative commercial technologies to lower the size, weight, power, cost, and increase Nett Warrior functionality. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY19 SEPM reduced to align with the reduced operational test events.					
Title: MHHCE Governance ***FY 2018 Plans:*** Provide Mobile Handheld Computing Environment (MHH/CE) governance and standards development for external program integration to eliminate separate handheld devices and reduce Soldier load. ***FY 2019 Base Plans:*** Continue to provide Mobile Handheld Computing Environment (MHH/CE) governance and standards development for external program integration to eliminate separate handheld devices and reduce Soldier load. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding supports planned MHHCE governance requirements.	-	0.772	0.672	-	0.672
Title: Soldier Borne Sensor (FY17 Congressional Increase)	7.500	-	-	-	-
Accomplishments/Planned Programs Subtotals	17.680	11.850	9.489	-	9.489

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• R80501: *Ground Soldier System*	32.419	38.219	92.487	1.725	94.212	36.976	35.708	60.447	63.488	0.000	361.469

Remarks

D. Acquisition Strategy

The Nett Warrior (NW) program provides unparalleled situational awareness and mission command to dismounted combat leaders through a secure commercial smart device, power source, cables and tactical radio. The NW is focused on Team Leader and higher echelons and provides an integrated secure information-centric Commercial-Off-The Shelf (COTS) mobile application-based computation platform with data collection, enhanced SA, mission planning, and navigational aid functions overlaid on geo-referenced maps and high resolution imagery throughout a brigade. The NW enables real-time ground tactical-level knowledge sharing and command and control (C2), directly impacting combat effectiveness and decision-making. The NW also improves lower echelon intelligence production and analysis capabilities which are central to efficient and effective counter-insurgency warfare. NW program completed LRIP/MS C in 2012 followed by two LRIP decisions in 2013-14 in preparation for IOT&E under DOT&E oversight in 4QFY14-1QFY15. This IOT&E event led to an additional NW Low Rate Initial Production (LRIP) decision in 2015 and

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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a Full Rate Production Decision is planned for early FY18. From this decision NW will complete annual production and fielding events based on yearly development, integration and testing of emerging advanced smart devices to lower cost, weigh and power. To capitalize on commercial industry's investment in advanced smart device technology as well as innovation and changes within Army, NW requires annual RDT&E funding for integration and evaluation. Through this process and at low cost, the Army is able to integrate and evaluate for combat utility the hundreds of millions spent in product development by the major commercial device manufactures.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering & Program Management Support	Various	Various : Various	-	2.405		2.699		2.086		-		2.086	Continuing	Continuing	-
		Subtotal	-	2.405		2.699		2.086		-		2.086	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware/Software Integration & Evaluation	Various	Various : Various	-	4.323		3.496		3.578		-		3.578	Continuing	Continuing	-
Soldier Borne Sensor	MIPR	Various : Various	-	7.500		0.772		1.752		-		1.752	0.000	10.024	-
		Subtotal	-	11.823		4.268		5.330		-		5.330	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development and Integration	Various	Various : Various	-	1.333		2.744		1.002		-		1.002	Continuing	Continuing	-
		Subtotal	-	1.333		2.744		1.002		-		1.002	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Various Testing Organizations	Various	Various : Various	-	2.119		2.139		1.071		-		1.071	Continuing	Continuing	-
		Subtotal	-	2.119		2.139		1.071		-		1.071	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	17.680		11.850		9.489		-		9.489	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

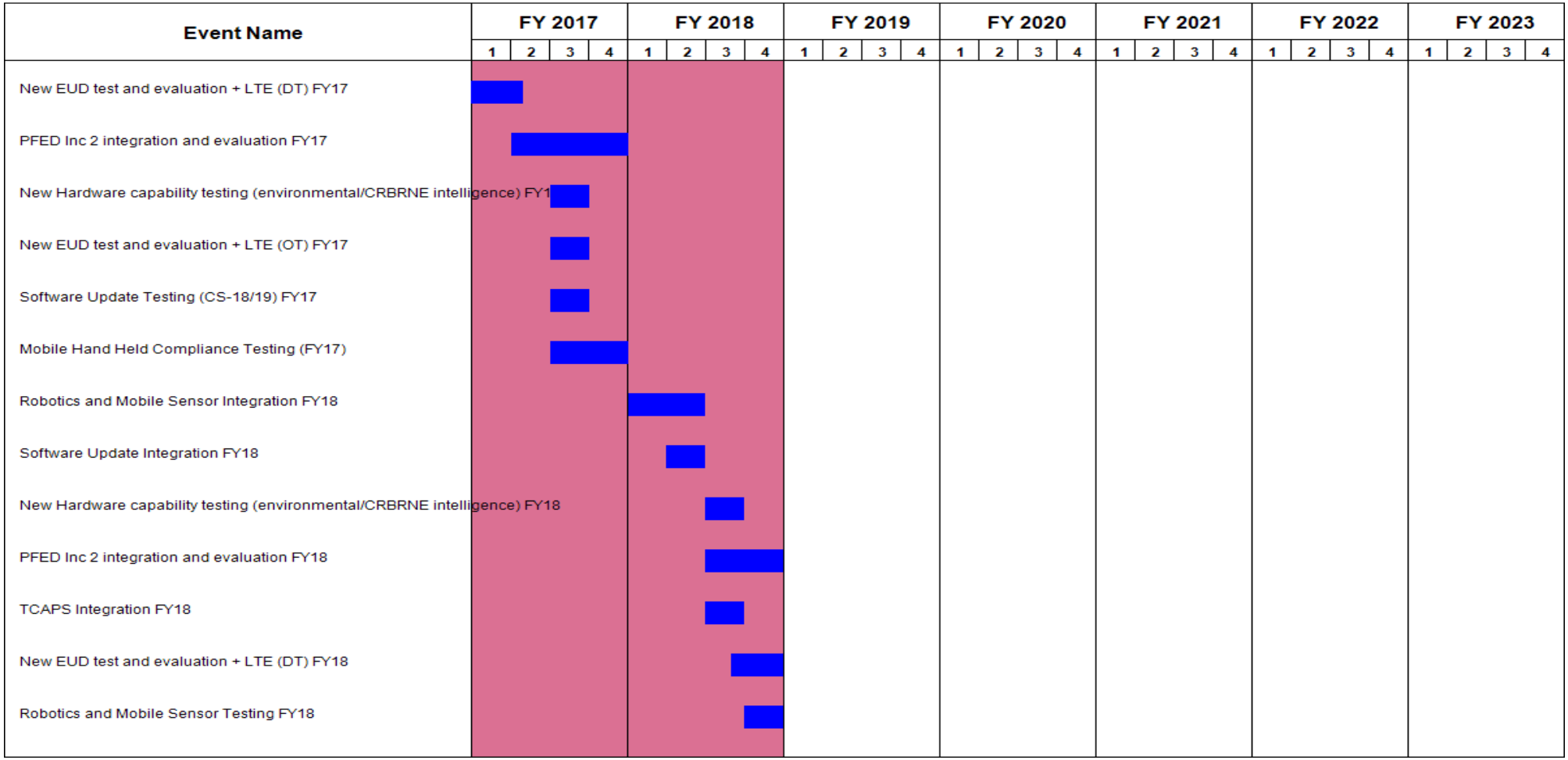

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

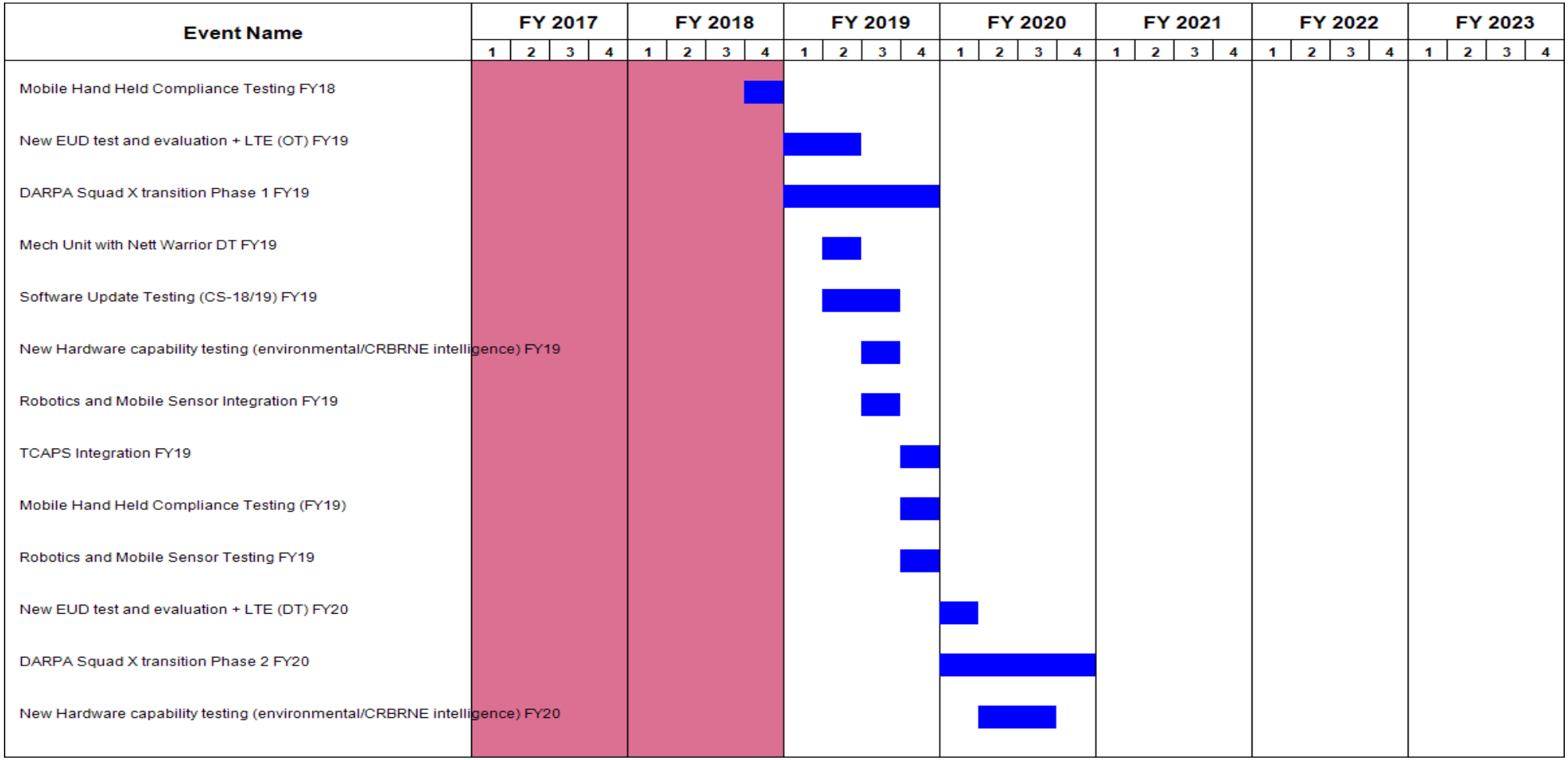

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
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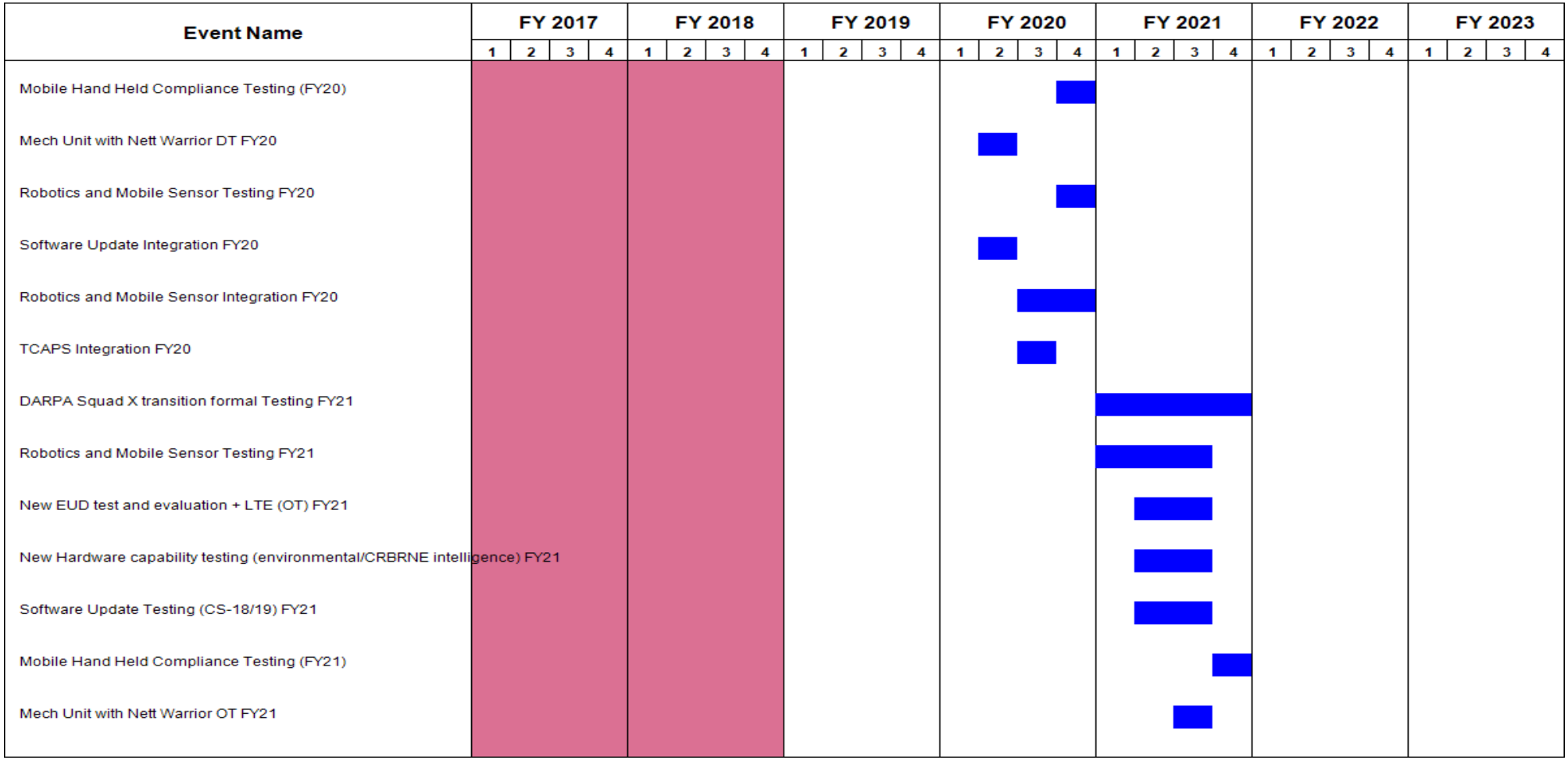

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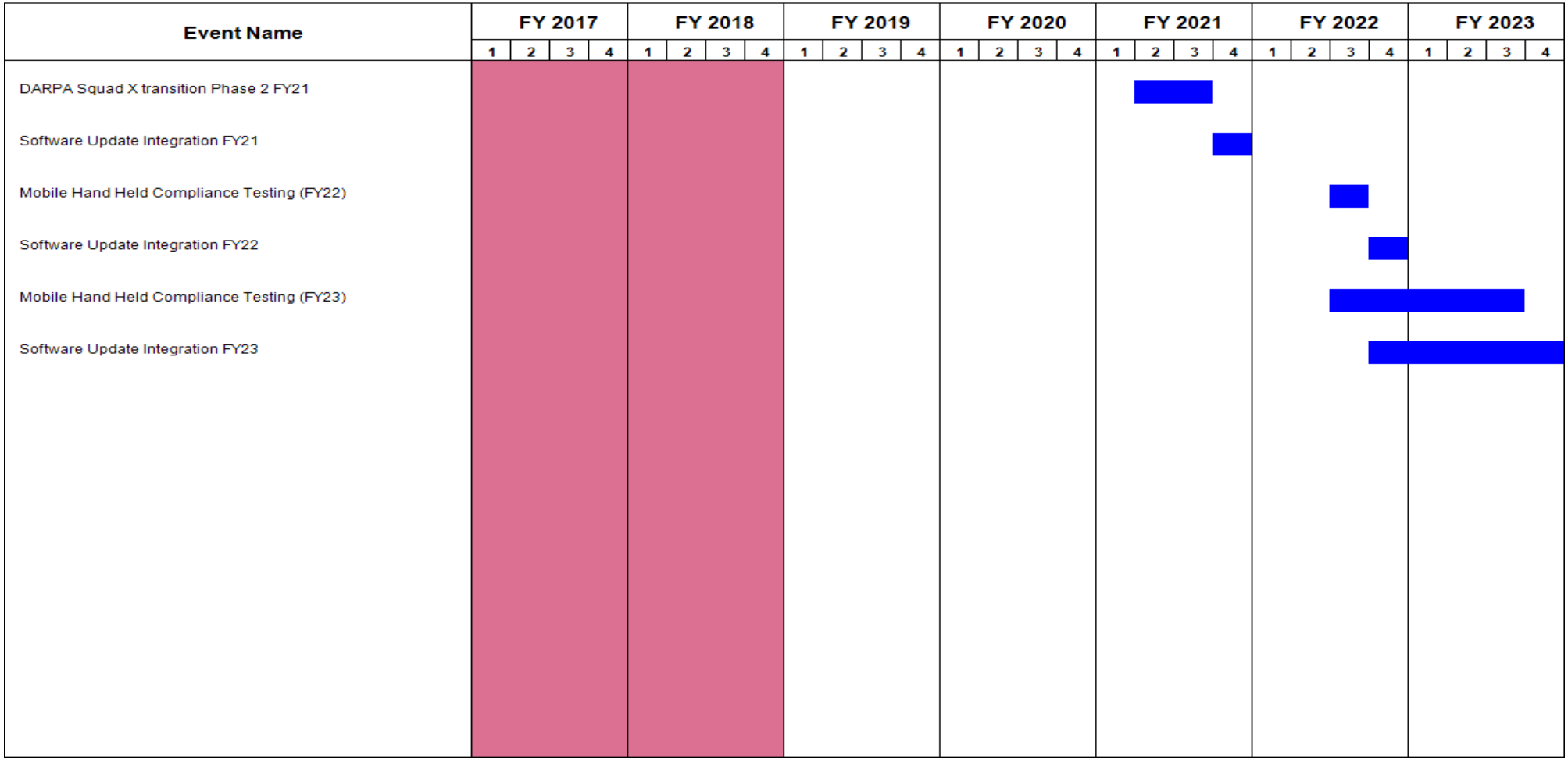

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
New EUD test and evaluation + LTE (DT) FY17	1	2017	1	2017
PFED Inc 2 integration and evaluation FY17	2	2017	4	2017
New Hardware capability testing (environmental/CRBRNE intelligence) FY17	3	2017	3	2017
New EUD test and evaluation + LTE (OT) FY17	3	2017	3	2017
Software Update Testing (CS-18/19) FY17	3	2017	3	2017
Mobile Hand Held Compliance Testing (FY17)	3	2017	4	2017
Robotics and Mobile Sensor Integration FY18	1	2018	2	2018
Software Update Integration FY18	2	2018	2	2018
New Hardware capability testing (environmental/CRBRNE intelligence) FY18	3	2018	3	2018
PFED Inc 2 integration and evaluation FY18	3	2018	4	2018
TCAPS Integration FY18	3	2018	3	2018
New EUD test and evaluation + LTE (DT) FY18	3	2018	4	2018
Robotics and Mobile Sensor Testing FY18	4	2018	4	2018
Mobile Hand Held Compliance Testing FY18	4	2018	4	2018
New EUD test and evaluation + LTE (OT) FY19	1	2019	2	2019
DARPA Squad X transition Phase 1 FY19	1	2019	4	2019
Mech Unit with Nett Warrior DT FY19	2	2019	2	2019
Software Update Testing (CS-18/19) FY19	2	2019	3	2019
New Hardware capability testing (environmental/CRBRNE intelligence) FY19	3	2019	3	2019
Robotics and Mobile Sensor Integration FY19	3	2019	3	2019
TCAPS Integration FY19	4	2019	4	2019
Mobile Hand Held Compliance Testing (FY19)	4	2019	4	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Robotics and Mobile Sensor Testing FY19	4	2019	4	2019
New EUD test and evaluation + LTE (DT) FY20	1	2020	1	2020
DARPA Squad X transition Phase 2 FY20	1	2020	4	2020
New Hardware capability testing (environmental/CRBRNE intelligence) FY20	2	2020	3	2020
Mobile Hand Held Compliance Testing (FY20)	4	2020	4	2020
Mech Unit with Nett Warrior DT FY20	2	2020	2	2020
Robotics and Mobile Sensor Testing FY20	4	2020	4	2020
Software Update Integration FY20	2	2020	2	2020
Robotics and Mobile Sensor Integration FY20	3	2020	4	2020
TCAPS Integration FY20	3	2020	3	2020
DARPA Squad X transition formal Testing FY21	1	2021	4	2021
Robotics and Mobile Sensor Testing FY21	1	2021	3	2021
New EUD test and evaluation + LTE (OT) FY21	2	2021	3	2021
New Hardware capability testing (environmental/CRBRNE intelligence) FY21	2	2021	3	2021
Software Update Testing (CS-18/19) FY21	2	2021	3	2021
Mobile Hand Held Compliance Testing (FY21)	4	2021	4	2021
Mech Unit with Nett Warrior OT FY21	3	2021	3	2021
DARPA Squad X transition Phase 2 FY21	2	2021	3	2021
Software Update Integration FY21	4	2021	4	2021
Mobile Hand Held Compliance Testing (FY22)	3	2022	3	2022
Software Update Integration FY22	4	2022	4	2022
Mobile Hand Held Compliance Testing (FY23)	3	2022	3	2023
Software Update Integration FY23	4	2022	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) ER9 / *Command Post Integrated Infrastructure*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
ER9: *Command Post Integrated Infrastructure*	-	0.000	20.000	44.685	-	44.685	15.391	12.453	25.317	27.339	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Command Post is line of effort 4 of the Army Modernization strategy. Program Executive Office for Command, Control and Communications - Tactical (PEO C3T) will develop mobile Command Post solutions by integrating supporting mission command and communications systems in accordance with a Directed Requirement (14 Dec 2017) and Capability Development Document. CPI2 replaces legacy command post systems at Corps, Division, and Brigade Combat Team and below command post formations with more capable, survivable, agile, and scalable command post solutions. It will ensure information and support systems are introduced into the Command Post through physical integration allowing the commander to tailor the Command Post as missions dictate. CPI2 was established to meet the emerging threat environment to improve the survivability and mobility of current Command Posts. The Directed Requirement First Unit Equipped is in FY20.

FY19 funding provides for acquiring platforms for System Design, Prototyping and integration solutions for select Mission Command Platforms (MCP) and Command Post Support Vehicles (CPSV). The CPSV is a formation appropriate vehicle that hosts mission command servers, radios, local area network systems and unified voice management capability and secure wireless in support of the Integrated Command Post at the Halt. The MCP is a formation appropriate vehicle that provides a digitally connected workspace to support commanders and staff at the Corps/Division Command Group, Main and Tactical Command Posts and at the Brigade and Battalion Command Posts and Command Groups. FY19 funding will also support the procurement of two brigade sets of coalition gateways to prototype and assess existing solutions to provide the Army a seamless information network exchanges and integration of Joint and legacy radios as an interim solution toward the future transport layer. It will provide commanders a rugged and portable air-to-ground command and control capability that enables Link 16, a simultaneous line-of-sight and/or satellite communication. The Army seeks an integrated message translation capability to form incompatible messages from disparate networks into a clear common operating picture, improving the prevention of fratricide and collateral damage while also raising ISR visibility.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Product Development	-	16.885	16.000	-	16.000
FY 2018 Plans: Product Development supports Directed Requirement for System Design and Prototyping, Platform Integration, Assembly, Test and Checkout of M1087 Mission Command Platform and M1079 and JLTV variants of the Command Post Support Vehicle, and required certifications for safety and transportability.					
FY 2019 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** ER9 / *Command Post Integrated Infrastructure*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Product Development supports Directed Requirement for acquiring select platforms for System Design, Prototyping, Platform Integration, Assembly, and test for Mission Command Platform (MCP), Command Post Support Vehicle, ISO Containers, and required certifications for safety and transportability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Nominal cost delta between FY18 and FY19.					
Title: Coalition Gateway Experimentation ***FY 2019 Base Plans:*** FY19 funding support the procurement of two brigade sets of coalition gateways to prototype and assess existing solutions to provide the Army a seamless information network exchanges and integration of Joint and legacy radios. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** New effort in FY19	-	-	21.455	-	21.455
Title: Systems Test and Evaluation ***FY 2018 Plans:*** Supports development of the Developmental Test plan ***FY 2019 Base Plans:*** Continue development of the Test & Evaluation Master Plan (TEMP) and execute Developmental Test (DT). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Inflation and test documentation efforts.	-	1.115	1.375	-	1.375
Title: Program Office Management ***FY 2018 Plans:*** Program Office Management and Support ***FY 2019 Base Plans:*** Program management and support necessary to perform CPI2 mission. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** FY19 staffing ramps up to include addition of Logistical staff necessary to facilitate CPI2 mission to include Fielders, Training Manager, Logisticians, and Tech Writers.	-	2.000	5.855	-	5.855
Accomplishments/Planned Programs Subtotals	-	20.000	44.685	-	44.685

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** ER9 / *Command Post Integrated Infrastructure*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• B29801: *CPI2*	-	-	2.855	-	2.855	38.980	48.587	21.735	49.403	Continuing	Continuing

Remarks

D. Acquisition Strategy

FY18-FY21 Directed Requirement for CPI2 will leverage existing contracts managed by Project Manager (PM) Joint Light Tactical Vehicle (JLTV) and Project Manager (PM) Stryker Brigade Combat Team (SBCT) for integration efforts associated with JLTV and Stryker. CPI2 will use a Functional Support Agreement for the prototype development of the M1079 Command Post Support Vehicle (CPSV) and an Other Transaction Authority (OTA) contract for the prototype development of the M1087 Mission Command Platform (MCP). One Early User Test (EUT) will be executed with the intended First Unit Equipped (FUE) unit to allow feedback into the initial Command Post (CP) design. A Request For Proposal (RFP) will be released for a production contract for the M1079 CPSV in 1QFY20 with a projected award in 3QFY20 to produce four brigade sets. The OTA contract will be used to produce four brigade sets of M1087 MCPs.

The CPI2 Capability Development Document (CDD) is projected for Army Requirements Oversight Council (AROC) approval in FY18 with a Milestone B projected for 1QFY20. Competitive contract award planned for 1QFY21 based on Request For Proposal (RFP) responses and source selection process. This contract will be a 5-year Firm Fixed Priced/Cost Plus Fixed Fee (FFP/CPFF) contract for the design, engineering, prototyping, Developmental Test (DT), new equipment training, one Limited User Test (LUT), and one Operational Test (OT) which will encompass CPI2 variants at Division HQ and BCT echelons with Option Years for production. CPI2 will leverage existing contracts managed by PM JLTV and PM SBCT for integration efforts associated with JLTV and Stryker.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Office Management	Allot	Various : Various	-	-		2.000		5.855	Oct 2018	-		5.855	Continuing	Continuing	Continuing
		Subtotal	-	-		2.000		5.855		-		5.855	Continuing	Continuing	N/A

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/TBD	TBD : TBD	-	-		16.885		-		-		-	0.000	16.885	-
CPSV Design/Fabrication/ Integration (FSA)	MIPR	CERDEC : Aberdeen	-	-		-		7.500	Jan 2019	-		7.500	Continuing	Continuing	-
MCP Design/Fabrication/ Integration (OTA)	C/TBD	TBD : TBD	-	-		-		8.500	Jan 2019	-		8.500	Continuing	Continuing	-
		Subtotal	-	-		16.885		16.000		-		16.000	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Test and Evaluation	C/TBD	TBD : TBD	-	-		1.115		1.375	Apr 2019	-		1.375	Continuing	Continuing	Continuing
Coalition Gateway Prototyping and assesment	TBD	TBD : TBD	-	-		-		21.455	Jan 2019	-		21.455	0.000	21.455	-
		Subtotal	-	-		1.115		22.830		-		22.830	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		20.000		44.685		-		44.685	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** ER9 / *Command Post Integrated Infrastructure*

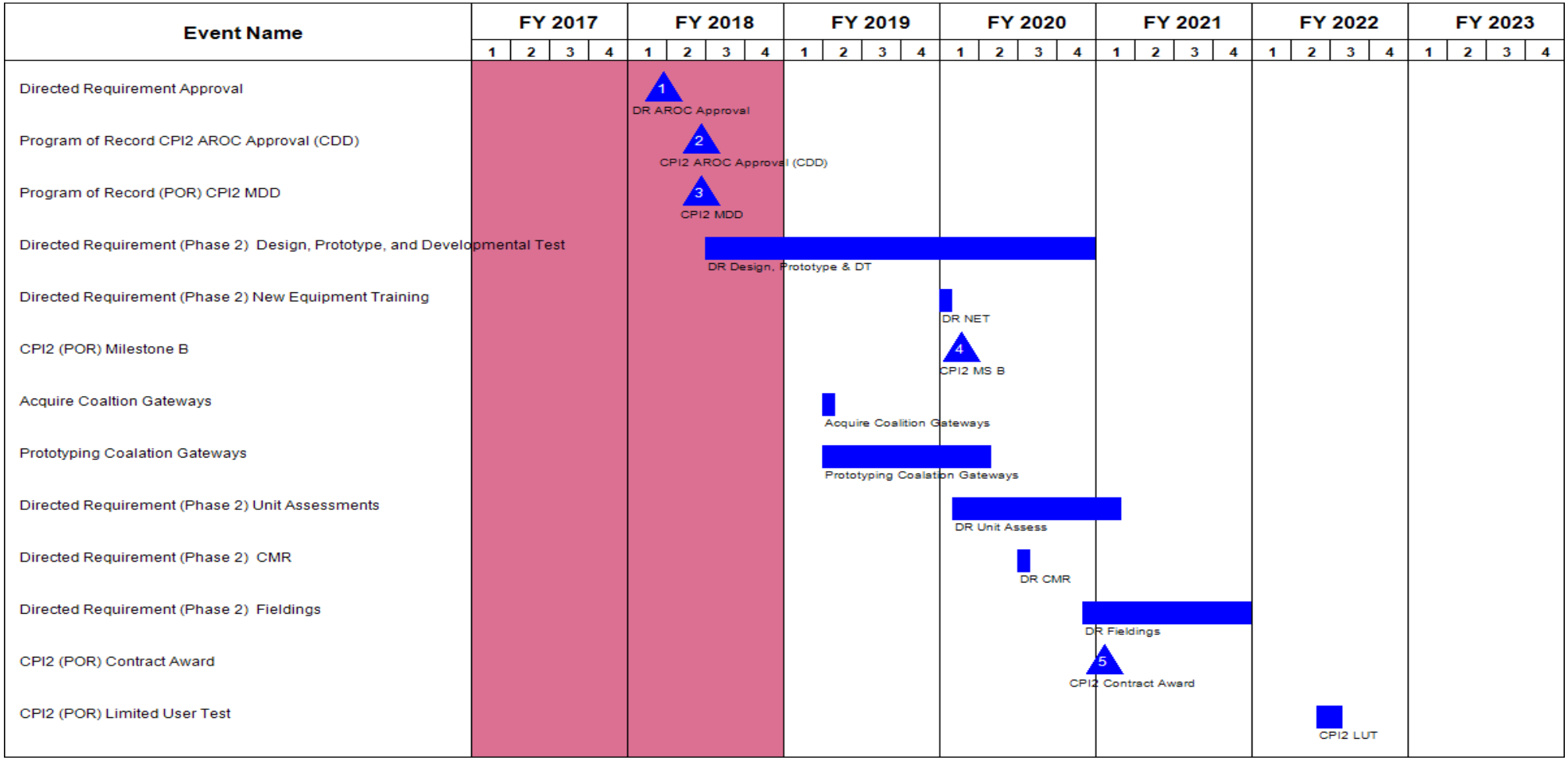

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** ER9 / *Command Post Integrated Infrastructure*

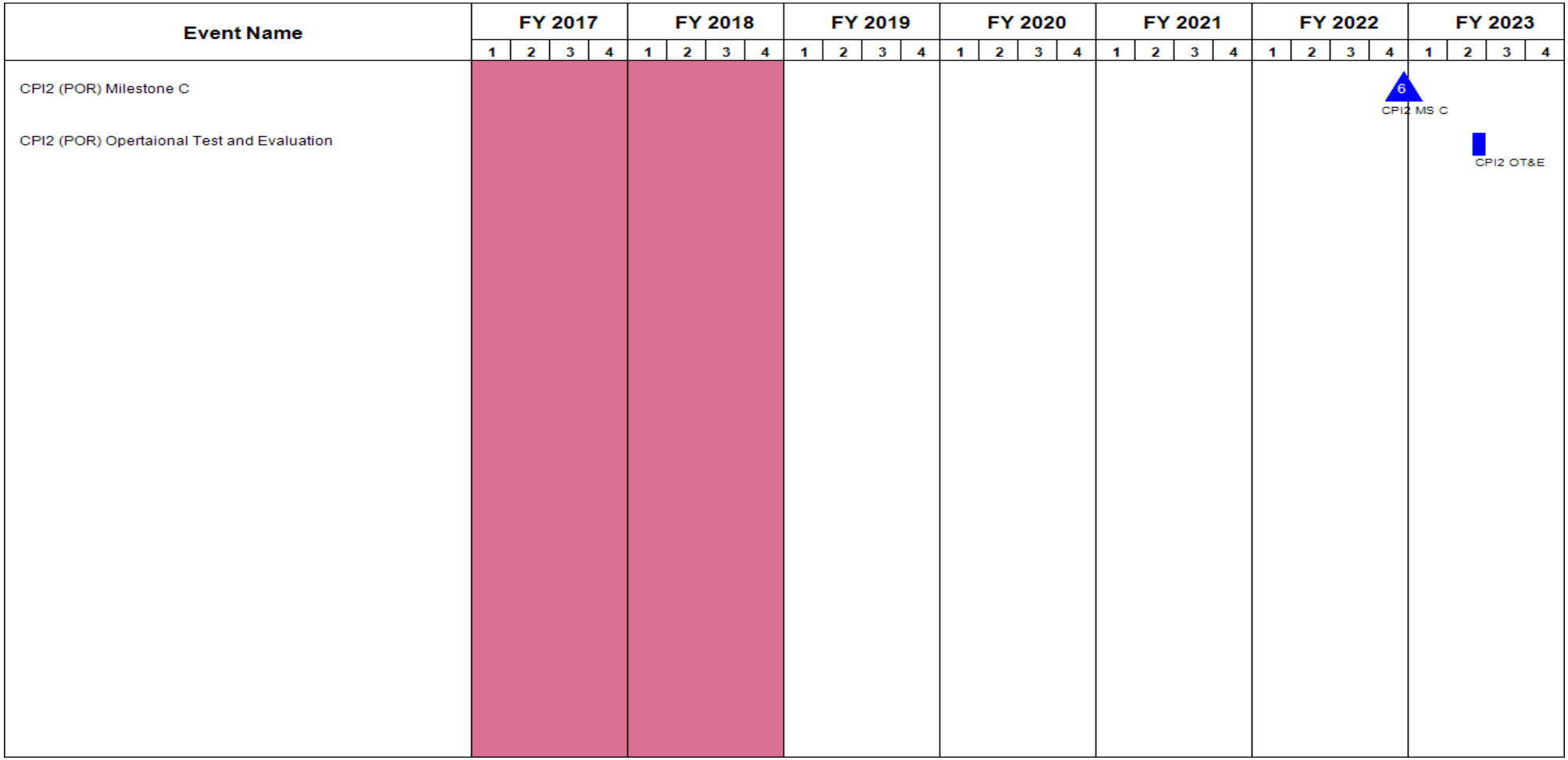

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** ER9 / *Command Post Integrated Infrastructure*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Directed Requirement Approval	1	2018	1	2018
Program of Record CPI2 AROC Approval (CDD)	2	2018	2	2018
Program of Record (POR) CPI2 MDD	2	2018	2	2018
Directed Requirement (Phase 2) Design, Prototype, and Developmental Test	3	2018	4	2020
Directed Requirement (Phase 2) New Equipment Training	1	2020	1	2020
CPI2 (POR) Milestone B	1	2020	1	2020
Acquire Coaltion Gateways	2	2019	2	2019
Prototyping Coalation Gateways	2	2019	2	2020
Directed Requirement (Phase 2) Unit Assessments	1	2020	1	2021
Directed Requirement (Phase 2) CMR	3	2020	3	2020
Directed Requirement (Phase 2) Fieldings	4	2020	4	2021
CPI2 (POR) Contract Award	1	2021	1	2021
CPI2 (POR) Limited User Test	2	2022	3	2022
CPI2 (POR) Milestone C	4	2022	4	2022
CPI2 (POR) Opertaional Test and Evaluation	2	2023	2	2023

Note

Directed Requirement FY18-FY21. RDTE activities FY18-FY20/Procurement activities FY20-FY21.
Program of Record to begin FY20. RDTE activities FY20-FY24/Procurement activities to begin in FY23

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EW3 / *Unit Task Reorganization (UTR) Development*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
EW3: *Unit Task Reorganization (UTR) Development*	-	11.777	25.969	18.835	-	18.835	30.539	28.821	25.333	20.517	0.000	161.791
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The FY 2019 funding request was reduced by 5.393 million to account for the availability of prior year execution balances.

A. Mission Description and Budget Item Justification

The Unit Task Reorganization (UTR) effort leverages and integrates existing PEO C3T systems for the S3 and Signal Soldiers that enables them to visualize their current network, make adjustments to support the mission, determine what and how changes need to be made, and then, make the changes to the network over the air. The UTR effort supports the Army's modernization strategy number 4: an "Army Network with hardware, software and infrastructure - sufficiently mobile and expeditionary - that can fight in any environment where the electromagnetic spectrum is denied or degraded." The program sub-divides UTR into Network Sustainment, Network Planning, and Network Re-Establishment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: Network Management ***Description:*** Efforts to create dynamic display of the runtime network ***FY 2019 Base Plans:*** Tactical Radio Management, Identity and Access Management, Network Configuration Management, Help Desk/ Incident Management ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of FY18 operational capabilities (Crypto Management, Tactical Radio Management, IP Address Management, Network Configuration Management, Signal Running Estimate) to Network Management in FY19.	6.541	-	6.876	-	6.876
Title: IP Address Management ***Description:*** A SoS capability to dynamically track Internet Protocol address space used in a network. IPAM automatically assigns IP addresses to communications assets authenticating with the network, tracks IP block allocations to subordinates, assignments to communications assets, changes to assignments, multicast groups and assignments, etc. It enables and tracks requests to HHQ for more IP space when required. ***FY 2018 Plans:***	-	0.675	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
A SoS capability to dynamically track Internet Protocol address space used in a network. IPAM automatically assigns IP addresses to communications assets authenticating with the network, tracks IP block allocations to subordinates, assignments to communications assets, changes to assignments, multicast groups and assignments, etc. It enables and tracks requests to HHQ for more IP space when required. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of effort to Network Management in FY19.					
Title: Tactical Radio Management ***Description:*** A dynamic SoS capability that tracks the status of operational nets (i.e. Command, Fires, Ops and Intel, Admin and Log, aviation nets, etc.) ***FY 2018 Plans:*** A dynamic SoS capability that tracks the status of operational nets (i.e. Command, Fires, Ops and Intel, Admin and Log, aviation nets, etc.) ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of effort to Network Management in FY19.	-	3.544	-	-	-
Title: Cryptographic Management ***Description:*** SoS capability to create a COMSEC plan that meets the mission requirements using the COMSEC assets assigned ***FY 2018 Plans:*** SoS capability to create a COMSEC plan that meets the mission requirements using the COMSEC assets assigned ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of effort to Network Management in FY19.	-	1.802	-	-	-
Title: Network Configuration Management ***Description:*** SoS capability that dynamically tracks which devices are on the network, how they?re configured, how they are connected, provides authoritative and accurate data at each echelon, provides its data as a service to Enterprise systems, and maintains multiple last known good baseline configurations for all communications assets	-	0.621	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: SoS capability that dynamically tracks which devices are on the network, how they?re configured, how they are connected, provides authoritative and accurate data at each echelon, provides its data as a service to Enterprise systems, and maintains multiple last known good baseline configurations for all communications assets ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No FY19 requirement.					
Title: Signal Running Estimate ***Description:*** Capability that provides one of the Mission Command Essential Capabilities (MCEC) for the BDE and BN S6s, integrated with other dynamic Network Sustainment capabilities to enable the S6s to more effectively support MDMP, and to enable the MDMP process to more effectively drive changes to the network. ***FY 2018 Plans:*** Capability that provides one of the Mission Command Essential Capabilities (MCEC) for the BDE and BN S6s, integrated with other dynamic Network Sustainment capabilities to enable the S6s to more effectively support MDMP, and to enable the MDMP process to more effectively drive changes to the network. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of effort to Network Management in FY19.	-	0.808	-	-	-
Title: Network Planning ***Description:*** Efforts to translate orders into configurations ***FY 2018 Plans:*** This is required to execute workflows involving KEYMAT. KMI funding only addresses delivery of KEYMAT from a central repository to the BDE. While OTNK and the KMI-Aware specification provide mechanisms for further dissemination, funding for adoption of those specifications is not covered by KMI. TNOM funding is not planned for prior to FY19. Engineering work is being performed under the KM WG tracing back to the UTR IPT. ***FY 2019 Base Plans:*** Efforts to provide Crypto Planning interface and analysis of mission threads to create workflow charts for UTR automation using Rapid Provisioning System (RPS) and other tactical capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.188	5.488	0.650	-	0.650

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Reprioritization from significant Cryptographic Planning efforts to Infrastructure and Network Management capability.					
Title: Network Re-Establishment ***Description:*** Capability to load new configurations on a communications asset or set of communications assets either locally or remotely over the network (OTN), including over the air (OTA). Also includes activation of configurations when required, and verification that the loads and activations have taken, as well as error checking and correction prompts to reduce mistakes throughout the planning, establishment, and sustainment of the network. ***FY 2018 Plans:*** A SoS capability used to ?seamlessly? and ?remotely? load and activate configurations of communications assets over-the-network (OTN), including over-the-air (OTA). This is the first release extending ODIN to other waveforms and parameters and integrating with JENM, extending eOTAM, and extending RPS. Manual loaders will still be part of this capability, but only as a contingency. ***FY 2019 Base Plans:*** FY 2019 Plans: Enterprise Over-The-Air Management (eOTAM) automation of data exchanges between JENM and appropriately equipped SDR radios. eOTAM automates key radio management processes (COMSEC Rollover, Radio Configuration File (RCF) loading, Preset Changes, Radio Silence.) Upgrade eOTAM OSS to add RPCs to configure and query health status (for UTR required configuration parameters, not telemetry data), and a new radio health service will be developed (for TRAP-like functionality). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of effort to Network Re-Establishment in FY19.	2.941	6.669	5.600	-	5.600
Title: Infrastructure ***Description:*** Development of visualization services, data dissemination and synchronization services, repository services, initialization services,Configuration Management Database (CMDB), and data standards. ***FY 2018 Plans:*** Development of visualization services, data dissemination and synchronization services, repository services, initialization services, and data standards. ***FY 2019 Base Plans:***	1.493	1.191	4.047	-	4.047

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Data model development, architecture and data analysis associated with NetOps Federated Repository, implementation of Identity Store Orchestration Tool, Modularization of embedded device code, deployment of Master CMDB software ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Reprioritization of efforts to focus on RPS infrastructure, including but not limited to an extensible IdAM framework, development of a hardware/software licensing management framework.					
Title: System of Systems Engineering and Portfolio Management ***Description:*** Architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering ***FY 2018 Plans:*** Architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering ***FY 2019 Base Plans:*** Architecture, Portfolio Management Plan, Risk Management Plan, Rapid Prototyping, IPT/Working Group Management, Requirements Engineering ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Leveraging PM funded efforts to maintain SoS engineering progress.	0.614	3.078	1.662	-	1.662
Title: System of Systems Program Management ***Description:*** Work Breakdown Structures, Schedules, Project Plans, Project Budgets, Quality Management Plans ***FY 2018 Plans:*** Work Breakdown Structures, Schedules, Project Plans, Project Budgets, Quality Management Plans ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Alignment of effort to System of Systems Engineering/Portfolio Management in FY19.	-	1.107	-	-	-
Title: System of Systems Test and Evaluation ***Description:*** Lab based risk reduction	-	0.675	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
FY 2018 Plans: Lab based risk reduction ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No FY19 request.					
Title: System of Systems Training ***Description:*** Development of Systems of Systems training plans. ***FY 2018 Plans:*** Development of Systems of Systems training plans. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** No FY19 request.	-	0.311	-	-	-
Accomplishments/Planned Programs Subtotals	11.777	25.969	18.835	-	18.835

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Unit Task Reorganization (UTR) is the process performed by the S6 and their staff to affect change on the network in order to support the operational mission and dynamic nature of the Army. Currently network challenges exist during this process with regard to: maintaining accurate and up to date information, distributing configuration files and activating / re-establishing the network. UTR strives to make authoritative NETOPS available across all systems, reduce cognitive burden for soldiers to plan and manage the network and reduce manual touch labor.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
IP address Management	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	-		0.675		-		-		-	0.000	0.675	-
Tactical Radio Management	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	-		3.544		-		-		-	0.000	3.544	-
Cryptographic Management	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	-		1.802		-		-		-	0.000	1.802	-
Network Configuration Management	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	-		0.621		-		-		-	0.000	0.621	-
Signal Running Estimate	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	-		0.808		-		-		-	0.000	0.808	-
Network Management	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	6.541	Jul 2017	-		6.876	Nov 2018	-		6.876	Continuing	Continuing	Continuing
Network Planning	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	0.188	Jul 2017	5.488		0.650	Nov 2018	-		0.650	Continuing	Continuing	Continuing
Network Re-Establishment	Various	Microsoft-Redmond,WA; G2-San Diego; MITRE : APG, MD	-	2.941	Jul 2017	6.669		5.600	Nov 2018	-		5.600	Continuing	Continuing	Continuing
Infrastructure	Various	Microsoft-Redmond,WA; G2-	-	1.493	Jul 2017	1.191		4.047	Nov 2018	-		4.047	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604818A / *Army Tactical Command & Control Hardware & Software*	Project (Number/Name) EW3 / *Unit Task Reorganization (UTR) Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		San Diego; MITRE : APG, MD													
System of Systems Engineering And Portfolio Management	Various	MITRE; Bowhead : APG, MD	-	0.614	Jul 2017	3.078		1.662	Nov 2018	-		1.662	Continuing	Continuing	Continuing
System of Systems Program Management	Various	TBD : APG	-	-		1.107		-		-		-	0.000	1.107	-
System of Systems Training	TBD	TBD : APG	-	-		0.311		-		-		-	0.000	0.311	-
		Subtotal	-	11.777		25.294		18.835		-		18.835	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems of Systems Test and Evaluation	TBD	TBD : APG	-	-		0.675		-		-		-	0.000	0.675	-
		Subtotal	-	-		0.675		-		-		-	0.000	0.675	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	11.777		25.969		18.835		-		18.835	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

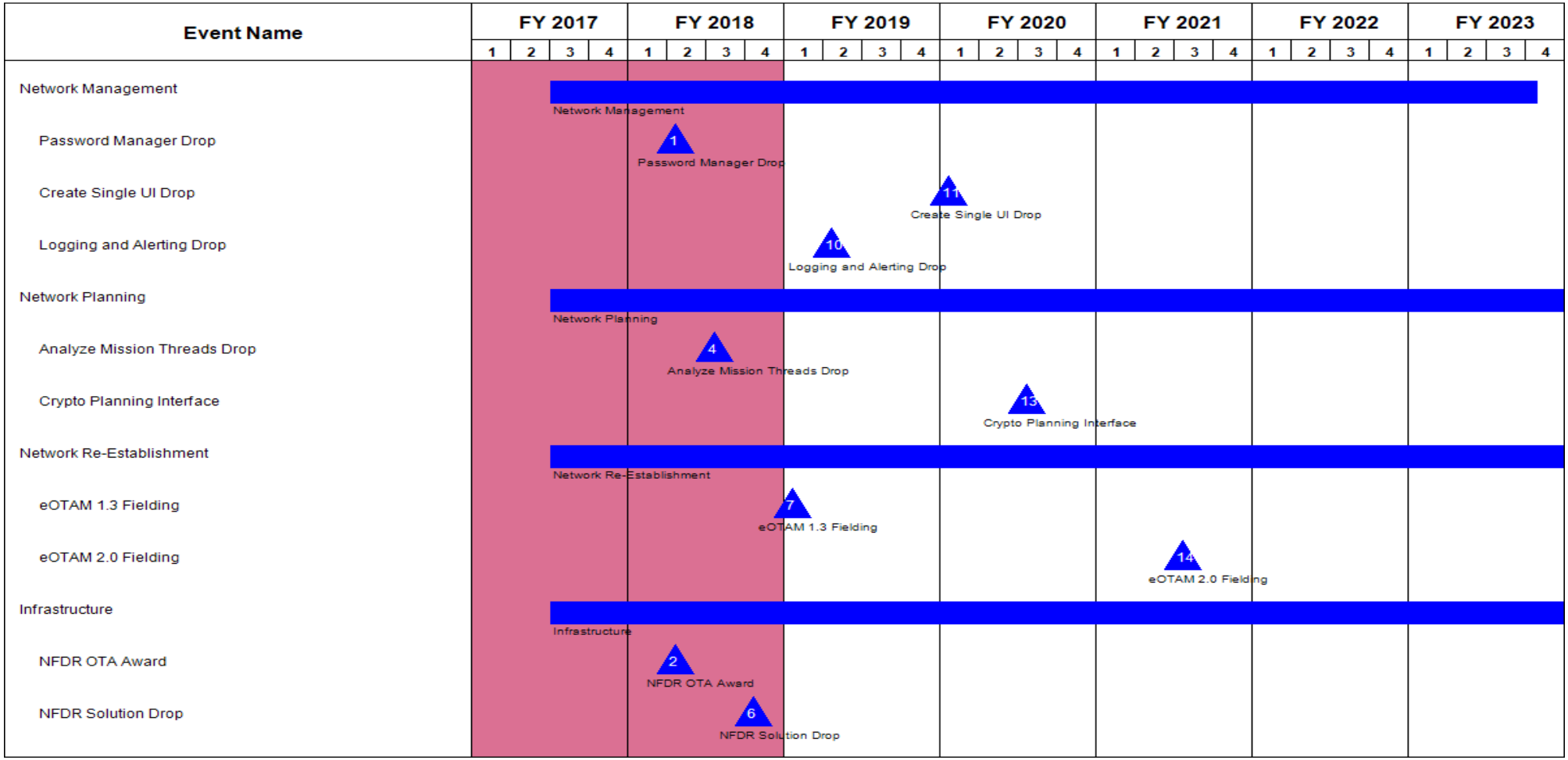

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

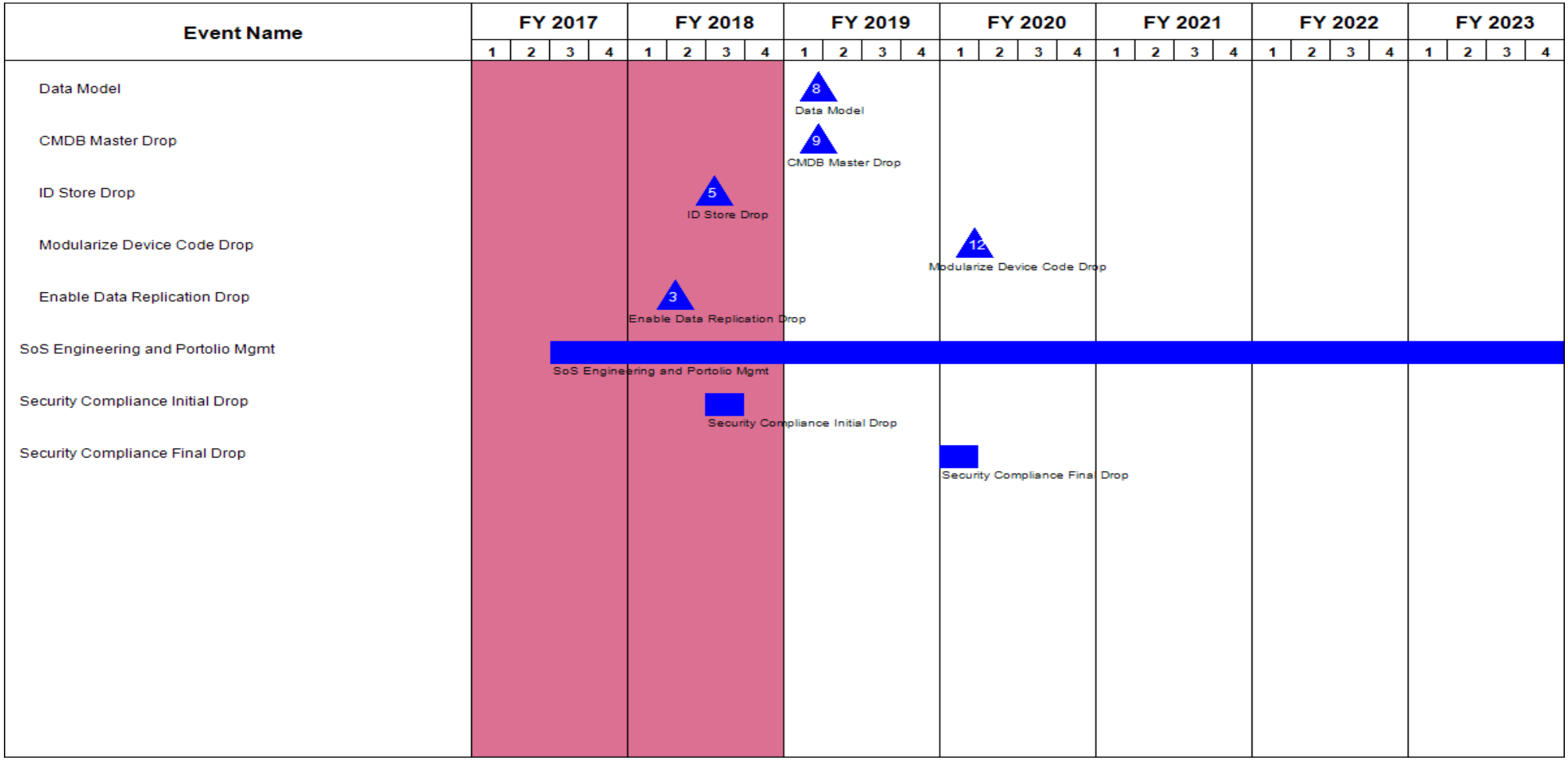

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Network Management	3	2017	4	2023
Password Manager Drop	2	2018	2	2018
Create Single UI Drop	1	2020	1	2020
Logging and Alerting Drop	2	2019	2	2019
Network Planning	3	2017	4	2023
Analyze Mission Threads Drop	3	2018	3	2018
Crypto Planning Interface	3	2020	3	2020
Network Re-Establishment	3	2017	4	2023
eOTAM 1.3 Fielding	1	2019	1	2019
eOTAM 2.0 Fielding	3	2021	3	2021
Infrastructure	3	2017	4	2023
NFDR OTA Award	2	2018	2	2018
NFDR Solution Drop	4	2018	4	2018
Data Model	1	2019	1	2019
CMDB Master Drop	1	2019	1	2019
ID Store Drop	3	2018	3	2018
Modularize Device Code Drop	1	2020	1	2020
Enable Data Replication Drop	2	2018	2	2018
SoS Engineering and Portolio Mgmt	3	2017	4	2023
Security Compliance Initial Drop	3	2018	3	2018
Security Compliance Final Drop	1	2020	1	2020