Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army											Date: May 2017	
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 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	-	125.107	205.590	164.409	-	164.409	189.277	144.987	157.093	181.734	Continuing	Continuing
323: *Common Hardware Systems*	-	4.639	4.771	5.190	-	5.190	5.538	6.246	5.772	4.863	Continuing	Continuing
334: *Common Software*	-	16.273	3.303	0.842	-	0.842	0.991	0.330	0.165	9.887	Continuing	Continuing
C29: *Centralized Technical Support Facility (CTSF)*	-	6.203	2.617	4.918	-	4.918	6.618	6.531	6.236	5.728	Continuing	Continuing
C34: *Army Tac C2 Sys Eng*	-	8.668	8.881	7.767	-	7.767	7.790	7.865	8.071	8.313	Continuing	Continuing
EJ4: *COMMAND POST COMPUTING ENVIRONMENT (CPCE)*	-	67.690	82.091	61.576	-	61.576	36.512	7.511	1.617	1.630	Continuing	Continuing
EJ5: *MOUNTED COMPUTING ENVIRONMENT (MCE)*	-	11.970	15.271	16.949	-	16.949	16.824	5.451	2.829	2.190	0.000	71.484
EJ6: *TACTICAL ENHANCEMENT*	-	8.416	11.864	0.000	-	0.000	8.600	0.319	0.000	0.000	0.000	29.199
EJ7: *TACTICAL DIGITAL MEDIA*	-	1.248	2.467	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.715
EK9: *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*	-	0.000	39.264	9.348	-	9.348	40.823	55.417	80.415	84.281	Continuing	Continuing
EQ8: *Mobile/Handheld Computing Environment (M/HHCE)*	-	0.000	10.563	11.850	-	11.850	11.920	12.089	12.385	12.577	Continuing	Continuing
ER9: *Command Post Integrated Infrastructure*	-	0.000	0.000	20.000	-	20.000	29.230	15.570	12.600	26.630	Continuing	Continuing
EW3: *Unit Task Reorganization (UTR) Development*	-	0.000	24.498	25.969	-	25.969	24.431	27.658	27.003	25.635	Continuing	Continuing

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, and system design / 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.

Common Software (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 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.

This program element also includes the Central Technical Support Facility (CTSF) which 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.

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

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. 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). FY2018 funding provides the means to continue to manage and develop MCE in concert with CPCE.

The Command Post Computing Environment (CPCE), one of the computing environments under the Common Operating Environment (COE), provides a common foundation (Common Infrastructure / Common Services) for Warfighter Capabilities. The CPCE establishes a Common Core Software Baseline and Hardware Configuration upon which future Warfighter capabilities can be built. The CPCE targets Command and Control (C2) capability development at tactical echelons that span from the company to all Army Service Component Commands (ASCC). The CPCE will be the most critical computing environment developed to support the command posts and combat operations.

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

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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 FY18 RDTE funding.

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); Program Executive Office for Command, Control and Communications - Tactical (PEO C3T) 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.

As the ARMY's tactical network continues to evolve from a loose federation of stove-piped systems to a single, integrated, service-oriented and standards-based environment, Unit Task Reorganization (UTR) development capabilities must also evolve in the same manner. Today, UTR is a complex, manually intensive, and time-consuming process. This is due in part to the large increase in network-enabled nodes within the tactical network. In addition, tools employed by the G/S-6 staff to conduct UTR are designed, developed, and fielded by various program and product managers, each with discrete requirements, developmental schedules, and funding lines. This impedes the G/S-6 Staff's ability to conduct UTR in an integrated manner. To enhance UTR, we will address five fundamental challenges to improve UTR. Efficient data sharing is a fundamental characteristic of modern-day integrated systems. The ability to read, modify, and exchange data in a uniform and efficient manner is essential to achieve an integrated UTR System.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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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:

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 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.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	131.639	205.590	210.427	-	210.427
Current President's Budget	125.107	205.590	164.409	-	164.409
Total Adjustments	-6.532	0.000	-46.018	-	-46.018
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.467	-			
• Adjustments to Budget Years	0.000	0.000	-46.018	-	-46.018
• Other Adjustments 1	-2.065	0.000	0.000	-	0.000

Change Summary Explanation

FY 2018 Overall Base funding decrease of (46.018) million is driven by the following program changes and project funding realignments:

- Project 323 / Common Hardware Systems was increased by .148 million
- Project 334 / Common Software was decreased by (.008) million
- Project C29 / Centralized Technical Support Facility (CTSF) was increased by 3.571 million
- Project C34 / Army Tactical C2 Systems Engineering was decreased by (1.327) million
- Project EJ4 / Command Post Computing Environment (CPCE) was decreased by (36.502) million
- Project EJ5 / Mounted Computing Environment (MCE) was decreased by (1.657) million
- Project EJ6 / Tactical Enhancement had no changes/funding in FY 2018

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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- Project EJ7 / Tactical Digital had no changes/funding in FY 2018
- Project EK9 / Tactical Network Operations and Management was decreased by (57.240) million
- Project EQ8 / Mobile/Handheld Computing Environment (M/HHCE) was increased by 1.028 million
- Project ER9 / Expeditionary Army Command Post is a New Start Program with initial funding in the amount of 20.000 million
- Project EW3 / Unit Task Reorganization (UTR) Development was increased by 25.969 million

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
323: *Common Hardware Systems*	-	4.639	4.771	5.190	-	5.190	5.538	6.246	5.772	4.863	Continuing	Continuing
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, and system design / 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 2018 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 pre-award activities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 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 ***FY 2016 Accomplishments:*** Managed the acquisition/delivery, System/ Configuration Management, and technical evaluation and testing of CHS equipment in support of customer requirements. ***FY 2017 Plans:*** Will continue the management of the acquisition/delivery, System/ Configuration Management, implementing Army initiatives, supporting sustainment of items procured, and technical evaluation and testing of CHS equipment in support of customer requirements.	3.804	3.729	-	-	-
Title: CHS Technology Insertion in support of program capability requirements	0.603	0.800	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Funding is provided for the following effort. ***FY 2016 Accomplishments:*** Provided CHS Technology Insertion in support of program capability requirements. ***FY 2017 Plans:*** Continue CHS Technology Insertion in support of program capability requirements.					
Title: Non Recurring Engineering (NRE) Costs for CHS-5 Products ***Description:*** Funding is provided for the following effort. ***FY 2016 Accomplishments:*** Provided Non Recurring Engineering (NRE) Costs for CHS-5 Products. ***FY 2017 Plans:*** Non Recurring Engineering (NRE) Costs for New CHS-5 Products.	0.232	0.242	-	-	-
Title: Program Support and Acquisition Support for CHS and customer programs ***Description:*** Funding is provided for the following effort. ***FY 2018 Base Plans:*** Will continue CHS program support and acquisition support for CHS and customer programs.	-	-	3.010	-	3.010
Title: Logistical service support for customer programs ***Description:*** Funding is provided for the following effort. ***FY 2018 Base Plans:*** Will continue CHS Logistical service support for customer programs.	-	-	0.623	-	0.623
Title: Technical and Test Support for customer programs ***Description:*** Funding is provided for the following effort. ***FY 2018 Base Plans:*** Will continue CHS Technical and Test Support for customer programs.	-	-	1.557	-	1.557
Accomplishments/Planned Programs Subtotals	4.639	4.771	5.190	-	5.190

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
334: *Common Software*	-	16.273	3.303	0.842	-	0.842	0.991	0.330	0.165	9.887	Continuing	Continuing
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 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.

FY17 funding supports backwards compatibility with previous versions of Common Software products implementations. Products include Data Dissemination Services (DDS) and C2 Infrastructure Virtual Machine as foundation for machine-to-machine (M2M) messaging, Unit Task Organization, Universal Chat Bridge and Command and Control Registry hosted on Tactical Server Infrastructure (TSI). Simply put, CS provides the "glue" that makes the rest of the C4ISR products interoperate.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Common Software development in support of the C4ISR community	3.556	1.955	0.613	-	0.613
Description: Interoperability and Backwards Compatibility efforts ***FY 2016 Accomplishments:*** Common Software development efforts for infrastructure development, messaging standards integration, addressing development, remote configuration, management and widget services ***FY 2017 Plans:*** Funding is provided for Common Software development efforts for backwards compatibility and design of future efforts with messaging standards integration, addressing development, remote configuration and management and widget services ***FY 2018 Base Plans:*** Funding is provided for Common Software transition efforts and development of MOA with SEC to ensure all programmatic requirements are accounted for.					
Title: Joint and Coalition interoperability efforts	2.274	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Provide software for interoperability of Joint and Coalition efforts ***FY 2016 Accomplishments:*** Will continue to provide software for interoperability of Joint and Coalition efforts including development, JITC Certification and Assessment, and exercise support					
Title: Integration of previously developed and design of future required mission command software services and common software solutions into the Army CP CE versions ***Description:*** Funding is provided for the following effort ***FY 2016 Accomplishments:*** Technical evaluation of previously developed software capabilities for integration with the computing environments of the Army Common Operating Environment (COE) architecture to include appropriate Mounted and Mobile/Handheld computing environments. Efforts will include assessment of software applicability to the core infrastructure, development/modification of software necessary to integrate, integration with common computing environments, and validation	2.711	-	-	-	-
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 ***FY 2016 Accomplishments:*** TSI software application and infrastructure development ***FY 2017 Plans:*** TSI software application and infrastructure development	4.558	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 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	1.474	0.300	0.174	-	0.174

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Test and Evaluation required for Common Software and Battle Command Common Services (BCCS). Software testing documentation and training and AIC ***FY 2017 Plans:*** Test and Evaluation required for Common Software and Battle Command Common Services (BCCS). Software testing documentation and training and AIC ***FY 2018 Base Plans:*** Test and Evaluation required for Common Software. Software testing documentation and training and AIC					
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 2016 Accomplishments:*** Program Management - Includes Core, Matrix, and Contractor support ***FY 2017 Plans:*** Program Management - Includes Core, Matrix, and Contractor support ***FY 2018 Base Plans:*** Program Management - Includes Core, Matrix, and Contractor support	1.700	0.335	0.055	-	0.055
Accomplishments/Planned Programs Subtotals	16.273	3.303	0.842	-	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.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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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 (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-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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)*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
C29: *Centralized Technical Support Facility (CTSF)*	-	6.203	2.617	4.918	-	4.918	6.618	6.531	6.236	5.728	Continuing	Continuing
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Army Interoperability Certification (AIC) Testing	5.111	0.885	3.494	-	3.494
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 2016 Accomplishments: Continued SWB11-12, and COE v1.1 and beyond test planning, test case development, test environment architecture set-up, to include information assurance software compliance and software test tools. Conducted interoperability testing for the SWB11-12 systems that comprise the LWN/MC baseline. Supported the ASA(ALT)					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
led Interoperability and Integration Event (I2E) for COE 1.1 baseline. Continued work to define the testing methodology as part of the Army transition to a COE strategy, while working to incrementally implement and utilize distributed Control Point (CP) test processes and test architectures that will comprise the Federated Integration Environment (FIE). ***FY 2017 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 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 2018 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).					
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. Develop/Maintain Applications for CTSF in-house programs. ***FY 2016 Accomplishments:***	0.145	0.139	0.159	-	0.159

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Supported AIC Integration and Testing. Continued Network Integration Checkout prior to each AIC. Continued support to PMs for integration of future COE insertions and for COE V3.0 integration. Identified and incorporated software tools to monitor performance and assisted in issue resolution. Integrated and implemented HBSS technology. Assisted PMs in the development of HBSS policies. Assisted 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. Provided CTSF network and systems engineering for validation of end-to-end sensor and platform communications and interoperability. Provided 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. Provided PMs and CTSF Configuration Management (CM) with a Virtualization Suite and assisted in virtualizing software. Planned and conducted 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. Supported Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and interoperability demonstrations. Continued development and refinement of Control Point and distributed testing. Assisted Assistant Secretary of the Army (Acquisition, Logistics and Technology) [ASA(ALT)] in developing and refining Control Point Testing for COE v3.0 and distributed testing between the Computing Environments. Assisted the CEs in Federation of Net-Centric Sites (FaNS) accreditation for distributed testing. Assisted ASA(ALT) in defining the COE architectures and services. Assisted in interoperability issues for multiple Combatant Commands. Conducted radio Verification and Validation. Application Programmers maintained and sustained CMTSIII and migrated front-end web based server to the Ft. Hood NEC. ***FY 2017 Plans:*** Support AIC Integration and Testing. Continue Network Integration Checkout prior to each AIC. Support to PMs for COE V3.0 and follow-on 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 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 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 NIE/CIE to leverage the					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
operational environment and NIE/CIE resources. Support Army Warfare Assessment (AWA), Joint Users Interoperability Communications Exercise (JUICE), and Bold Quest technology and coalition interoperability demonstrations. Continue development and refinement of Control Point and distributed testing. Assist ASA(ALT) in developing and refining Control Point Testing for COE v3.0 and distributed testing between the Computing Environments (CE). Assist the CEs in FaNS accreditation for distributed testing. Assist ASA(ALT) in defining the COE architectures and services. Assist in coalition partner interoperability issues for multiple Combat Commands. Conduct radio Verification and Validation. Application Programmers develop new cost model in CMTSIII and replace the existing ABC Cost Model that will be shutdown with Army Data Center Consolidation Program. ***FY 2018 Base Plans:*** Support AIC Integration and Testing. Continue Network Integration Checkout prior to each AIC. Support to PMs for COE V3.0 and follow-on integration. Support to backward compatibility testing between CS11-12/ COE V3.0. 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 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 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 NIE/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 coalition interoperability demonstrations. Continue development and refinement of Control Point and distributed testing. Assist ASA(ALT) in developing and refining Control Point Testing for COE v3.0 and distributed testing between the Computing Environments. Assist the CEs in FaNS accreditation for distributed testing. Assist ASA(ALT) in defining the COE architectures and services. Assist in coalition partner interoperability issues for multiple Combat Commands. Conduct radio Verification and Validation. Application Programmers maintain and sustain CMTSIII.					
Title: Configuration Management ***Description:*** 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	0.139	0.358	0.499	-	0.499

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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 2016 Accomplishments: Provided 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. Provided baseline reconciliation to the four quarterly CIO/G6 AICFB reports, which identified to commanders and their G-3/G-6 staff the Army's AIC certified Interoperability Capability and Limitations (IC&L) assessed, AIC waivered, and AIC exempted system software that is authorized to connect to the Army's network. Assisted the CIO/G6 in conducting accreditation inspections and training for Federation of Net-centric Sites (FaNS) locations. Improved CMTSIII functionality by implementing parent—child relationships within CMTSIII data products and data sets, and developing authoritative reports of relationships. Performed data normalization within CMTSIII and incorporated the Family of Systems (FoS) into submissions and reporting functions. Built separate CMTSIII modules for enhanced traceability of ASA(ALT) Integration and Interoperability Events (I2E), Observation Reporting, and HQDA CIO/G-6 monitoring and reporting of CMTSIII AIC Events.					
FY 2017 Plans: 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					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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. Revise CMTSIII Cybersecurity Security module, incorporating new Network Vulnerability Assessment, Host Based System Security, Information Assurance Vulnerability Assessment, and internal CTSF requirements. Define and establish the CM Continuity of Operations Plan (COOP) requirements. ***FY 2018 Base Plans:*** 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 2016 Accomplishments:*** Continued assisting development of CMTSIII Resource Management Module and Reporting in programming and execution of funds/manpower/contracting requirements. Tracked testing schedules, prepared/coordinated/ tracked reimbursements for tests [e.g. COE V1.1 and Beyond tests and Bi-Annual Army Interoperability Certification (AIC) test events, CS 11-12 Tri-Annual AIC test events, SWB2 AIC test events, Joint, Coalition],	0.808	1.235	0.766	-	0.766

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
and future systems test events; developed and implemented new cost model for FY17. Provided field support coordination for unit training and exercises. Maintained facility and test infrastructure; began planning for transition to permanent facility on installation. Continued exemplary physical security and access control programs; developed and implemented force protection program for CTSF. Instituted re-energized Continuity of Operations Program (COOP) and implemented Emergency Action Program (EAP). Implemented human resources development programs to strengthen core leadership. ***FY 2017 Plans:*** Assist development and implementation of CMTSIII Resource Management Module and Reporting; 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 Base Plans:*** Assist development and implementation of CMTSIII Resource Management Module and Reporting; 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.					
Accomplishments/Planned Programs Subtotals	6.203	2.617	4.918	-	4.918

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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C. Other Program Funding Summary ($ in Millions)

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 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-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
C34: *Army Tac C2 Sys Eng*	-	8.668	8.881	7.767	-	7.767	7.790	7.865	8.071	8.313	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

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) systems engineering and integration, experimentation, acquisition management, testing, fielding and sustainment support to ensure interoperability and affordability among the PEO C3T suite for Army Capability Sets (CS). 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 2017 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 CS validation at Network Integration Evaluations (NIE); integration of tactical Networked capabilities for all CS, initiative 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 capability set fieldings.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Continue Army Tactical Battle Command and Network Synchronization and Integration Support	0.133	0.137	0.120	-	0.120
Description: . ***FY 2016 Accomplishments:*** Supported 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 2017 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					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
are synchronized and redundancies and overlapping capabilities are reduced across the network and in synchronization with Common Operating Environment. ***FY 2018 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.					
Title: Continue Developmental Testing & Integration Testing between Programs of Record (PORs) and platforms / Command Posts (CPs) to execute System-of-Systems (SoS) and Interoperability ***Description:*** . ***FY 2016 Accomplishments:*** Conducted 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. Provided training and continued development of current engineers. ***FY 2017 Plans:*** Continue to conduct 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. Provide training and continued development of current engineers. ***FY 2018 Base Plans:*** Continue to conduct 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. Provide training and continued development of current engineers.	1.298	1.329	1.163	-	1.163
Title: Continue Tactical Network Engineering ***Description:*** . ***FY 2016 Accomplishments:***	0.744	0.762	0.666	-	0.666

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Developed effective engineering strategies to integrate tactical applications for use across the C3T enterprise network. Continued to perform network planning and integration activities across all cross-domain system-of-systems future capabilities and technologies. ***FY 2017 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 2018 Base 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.					
Title: Conduct and Support System Interoperability Engineering and Development of System-of-Systems (SoS) Architectural Products ***Description:*** . ***FY 2016 Accomplishments:*** Within the PEO C3T portfolio, continued to assess Emerging Technologies, identified critical integrated test points, conducted developmental testing at integration points, developed architectural data process/tool kits, and facilitated the transition of Network capabilities to the warfighter. ***FY 2017 Plans:*** Within the PEO C3T portfolio, continue to assess Emerging Technologies, identify critical integrated test points, conduct developmental testing at integration points, develop architectural data process/tool kits, and facilitate the transition of Network capabilities to the warfighter. ***FY 2018 Base Plans:*** Within the PEO C3T portfolio, continue to assess Emerging Technologies, identify critical integrated test points, conduct developmental testing at integration points, develop architectural data process/tool kits, and facilitate the transition of Network capabilities to the warfighter.	1.670	1.711	1.497	-	1.497
Title: Continue Development and Implementation of Tactical Information Assurance (IA) ***Description:*** .	0.252	0.259	0.226	-	0.226

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
FY 2016 Accomplishments: Implemented CIO/G6 and CYBERCOM guidance for execution of Information Assurance policies and procedures at the tactical level. Continued 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. Continued to plan and design security measures and IA requirements across the tactical network for future capabilities. ***FY 2017 Plans:*** Implement 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 Base Plans:*** Implement 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.					
Title: Continue System of Systems Development ***Description:*** . ***FY 2016 Accomplishments:*** Continued to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs. ***FY 2017 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. ***FY 2018 Base Plans:***	2.974	3.047	2.665	-	2.665

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to effectively manage overall System-of-Systems Engineering, Enterprise, and Integration efforts for the PEO C3T portfolio of technology and capability enhancement programs.					
Title: System of Systems (SoS) Engineering and Integration Evolution of the Network ***Description:*** . ***FY 2016 Accomplishments:*** Continued 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 Joint Coalition partners. Also continued to implement cross PEO System of Systems Engineering and Integration processes to ensure successful development Engineering and Testing. ***FY 2017 Plans:*** 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 Joint Coalition partners. Also continue to implement cross PEO System of Systems Engineering and Integration processes to ensure successful development Engineering and Testing. ***FY 2018 Base Plans:*** 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 Joint Coalition partners. Also continue to implement cross PEO System of Systems Engineering and Integration processes to ensure successful development Engineering and Testing.	1.597	1.636	1.430	-	1.430
Accomplishments/Planned Programs Subtotals	8.668	8.881	7.767	-	7.767

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

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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

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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ4: *COMMAND POST COMPUTING ENVIRONMENT (CPCE)*	-	67.690	82.091	61.576	-	61.576	36.512	7.511	1.617	1.630	Continuing	Continuing
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. CPCE enables Mission Command capability development at echelons from dismounted command nodes to echelons above corps and thus, is the most employed and critical computing environment developed to support the command posts and combat operations. 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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Requirements Engineering	10.841	7.789	3.000	-	3.000
Description: Requirements analysis of multiple 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 CCB process. Translation of requirements into lower-level (L2, L3) subrequirements and development of a System / Subsystem Specification (SSS). ***FY 2016 Accomplishments:*** In FY16, CPCE ingested over 36 requirements sources including draft JCIDS documents, PoR Requirements documents, working group findings, cyber policies, and distilled to approximately 1600 level 1 common requirements. Developed database tracking system for all requirements and began decomposition of all requirements into lower level, development tasks. ***FY 2017 Plans:*** In FY17, developed Minimal Essential Capabilities recommendations and provided to TRADOC for staffing to support FY18 Test measures of performance and measures of effectiveness (MOPs/MOEs). Developed					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Mission Command Requirements Management Plan, began development of Information Support Plan (ISP), and developed use cases, epics, and user stories for software developers. Supported the establishment and provided guidance for the Capability Assessment Package (CAP) SW development process. Developed draft System Requirements Specification (SRS) with Level 2 requirements. ***FY 2018 Base 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.					
Title: SW Dev - Core Infrastructure ***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 2016 Accomplishments:*** FY16 efforts included the initial development of Command and Control Interoperability Ultralight (C2IUL), the SW component that brings backwards compatibility to CPCE, establishment of the DI2E Dev Ops environment, and development of Engineering Release 1.1, the first major (internal) release of CPCE. Initial design efforts for the Standard and Shareable Geospatial Foundation (SSGF) infrastructure were begun. Completed design and initial implementation of infrastructure components necessary to provide for the COE-directed Cross-Cutting Capabilities (CCC) and Control Points. ***FY 2017 Plans:*** FY17 efforts in support of the Core Infrastructure software development include the integration of multiple software components with a Commercial off the Shelf battle management system which serves as the underlying framework of CPCE, allowing for rapid integration of new warfighting function applications. Efforts continue in the	41.508	56.407	35.106	-	35.106

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
areas of backwards compatibility (C2IUL), Di2E development environment, Integrated SDK (released for external stakeholders), development of the Reference Implementation (Prototype system), the hybrid operating system that powers the mounted Smart Client component, and core utilities and apps development. Of note, the army is leveraging a COTS based infrastructure solution to insulate the government from the burden of ownership and maintenance of developed software. ***FY 2018 Base Plans:*** 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, C2I Ultra Light, Open Routing, Data Flows, Hybrid Operating System, EMP Renderer, Map Based Planning, Joint and Coalition Interoperability, and Tactical Server Infrastructure.					
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 2016 Accomplishments:*** Conducted planning and engineering of Tactical Server Infrastructure (TSI) virtual machine strategy and analysis of server stack requirements. Development of TSI v1 to replace legacy Battle Command Common Services (BCCS) stacks was primary effort. ***FY 2017 Plans:*** For FY17, the CPCE hardware/software integration team focused efforts on technical analysis, engineering, and scalability determinations for the TSI v1, v1.1, and v2, which will host the first version of CPCE v3 in FY19. Development of TSI v2 included reconfiguring virtual machine allotments and resources to allow physical downsizing of the actual server footprint. The TSI v2 will weigh less than 300lbs whereas the previous TSIv1.1	4.920	4.728	4.800	-	4.800

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
stack weighed approximately 1200lbs, with no loss of computing power. Reductions in size, weight, and power will allow a more expeditionary Army force. ***FY 2018 Base 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.					
Title: Joint & Coalition Interop ***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 2016 Accomplishments:*** FY16 CPCE efforts included the architecture design of the initial Joint Interoperability strategy. CPCE participated in the Joint Program Manager - Chief Engineer Working Group (PM-CEWG), a DISA-led effort that coordinates the information sharing amongst the services and sets the roadmap that serves as guidance to developers working on future Mission Command systems. In FY16 CPCE funded a successful Joint experiment, led by the Navy, that test specific cross-service data sharing. ***FY 2017 Plans:*** FY17 efforts included a formal analysis of Multi-Lateral Interoperability Programme (MIP) standards to the proposed CPCE technical solution to identify gaps and further refine data sharing. CPCE continues to participate in the Joint Program Manager - Chief Engineer Working Group (PM-CEWG), and briefed the Army's Joint and Coalition roadmap at the Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics (USD AT&L) convened Senior Steering Group for Acquisition (SSG-A) for the Joint C2 Capability Area. ***FY 2018 Base 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 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	0.126	0.100	0.250	-	0.250

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
effort will support the DISA's mission to release an RFP for the Global Command and Control System - Joint Enterprise (GCCS-JE) in FY18.					
Title: Test and Evaluation	2.116	4.619	9.920	-	9.920
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 2016 Accomplishments:*** In FY16 CPCE testing included Software Acceptance Testing of Engineering Release 1 and 1.1, and a formal lab-based Integration Event to evaluate the performance and interoperability of ER 1.1. with other Mission Command systems. The CPCE T&E team also participated in the planning and conduct of User Juries, Vulnerability testing, and Army Interoperability Certification (AIC) testing. Additionally, CPCE funded an Independent Assessment task conducted by the Johns Hopkins University on the feasibility of the technical approach. ***FY 2017 Plans:*** Efforts are being done in coordination with MCE. Test events during FY17 include Software Acceptance Testing of Engineering Release 2 (ER2) and ER3, and formal lab-based Integration Events to evaluate the performance and interoperability of each ER with other Mission Command systems. FY17 efforts also include formal Developmental Test events including DT1 and DT2, and the Interoperability Integration Event (I2E). Planning and conduct of a Limited Objective Experiment (LOE) at the Mission Command Battle Lab is also in progress to gain user feedback from the initial system prototype. Cyber vulnerability testing is ongoing at the National Cyber Range (NCR). FY17 will conclude with planning for Operational Test and planning for Joint Warfighting Activity (JWA). CPCE/MCE has also begun the development of a Test Instrumentation application that will reside on the developed end-state system of record data during test events, saving future formal Test Instrumentation costs. Additionally, development of the Test and Evaluation Master Plan (TEMP) is a major FY17 effort. ***FY 2018 Base 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 Operational Test Readiness Reviews (OTRRs) and Lab-Based Risk Reduction events (LBRRs). Following OT,					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
CPCE/MCE will participate in Army Interoperability Certification (AIC) testing for certification of IERs via Army Mission Threads.					
Title: Program Management	8.179	8.448	8.500	-	8.500
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 2016 Accomplishments:*** Provide overall management and oversight of the implementation of CPCE. Technical Area support of this effort includes System Development (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 CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY16 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 2017 Plans:*** During this timeframe, will provide overall management and oversight of the implementation of CPCE. Technical Area support of this effort includes System Development (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 CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO IEW&S). Program Management efforts in the FY17 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 Base 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					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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.					
Accomplishments/Planned Programs Subtotals	67.690	82.091	61.576	-	61.576

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 3 year cycle (FY22, FY25, FY28), in accordance with the draft CPCE IS CDD. 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 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. Govt 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: FY 2018 Army			Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PM Support (Gov't-Core)	Sub Allot	PM Mission Command : APG, MD	0.000	2.500	Oct 2015	2.250	Oct 2016	2.250	Oct 2017	-		2.250	0.000	7.000	0.000
PM Support (Gov't-Matrix)	IA	Various Matrix Orgs incl CECOM SEC, LRC, G8, G2, PRD, et al) : APG, MD	0.000	2.679	Oct 2015	1.400	Oct 2016	1.400	Oct 2017	-		1.400	0.000	5.479	0.000
PM Support (SETA Contractor)	C/CPFF	Multiple incl CSC and others : APG, MD	0.000	3.000	Dec 2015	4.798	Dec 2016	4.850	Dec 2017	-		4.850	0.000	12.648	0.000
		Subtotal	0.000	8.179		8.448		8.500		-		8.500	0.000	25.127	0.000

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Requirements Engineering	Various	SW Dev Contractors and Multiple Matrix Orgs : Various Locations	0.000	10.841	Dec 2015	7.789	Dec 2016	3.000	Dec 2017	-		3.000	0.000	21.630	0.000
Software Development - Core Infrastructure	Option/ Various	ARDEC, CERDEC, Systematic : Picatinny, NJ APG, MD Centerville, VA	0.000	41.508	Dec 2015	56.407	Dec 2016	35.106	Dec 2017	-		35.106	0.000	133.021	0.000
Joint and Coalition Interoperability	Various	TBD : Various	0.000	0.126	Dec 2015	0.100	Dec 2016	0.250	Feb 2018	-		0.250	0.000	0.476	0.000
Hardware / Software Integration	Various	multiple : APG Md	0.000	4.920	Jan 2016	4.728	Feb 2017	4.800	Jan 2018	-		4.800	0.000	14.448	0.000
		Subtotal	0.000	57.395		69.024		43.156		-		43.156	0.000	169.575	0.000

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).

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army			Date: May 2017
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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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)	0.000	2.116	Dec 2015	4.619	Dec 2016	9.920	Dec 2017	-		9.920	0.000	16.655	0.000
		Subtotal	0.000	2.116		4.619		9.920		-		9.920	0.000	16.655	0.000

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	67.690		82.091		61.576		-		61.576	0.000	211.357	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
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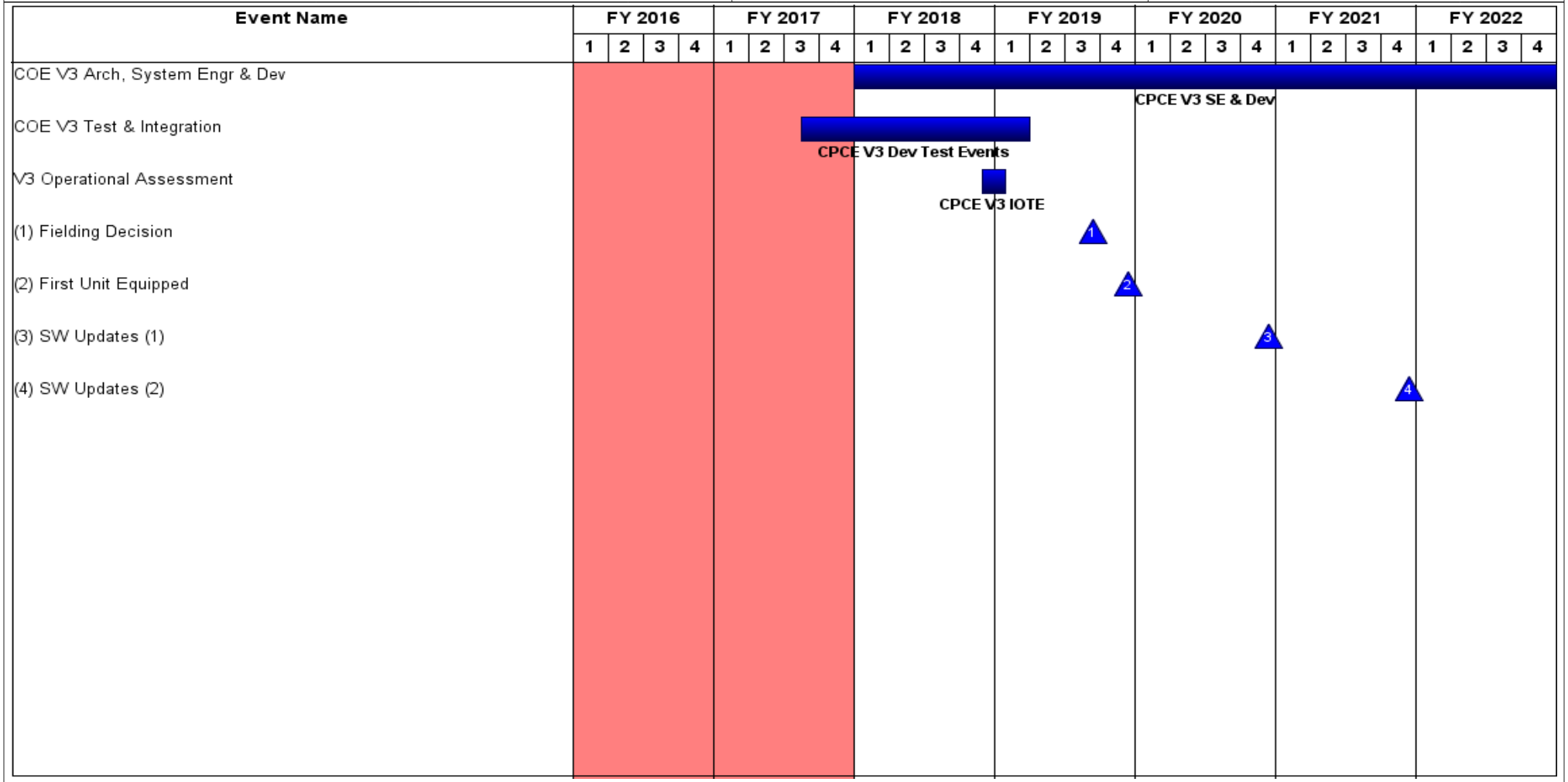

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
COE V3 Arch, System Engr & Dev	1	2018	4	2022
COE V3 Test & Integration	3	2017	1	2019
V3 Operational Assessment	4	2018	1	2019
Fielding Decision	3	2019	3	2019
First Unit Equipped	4	2019	4	2019
SW Updates (1)	4	2020	4	2020
SW Updates (2)	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ5: *MOUNTED COMPUTING ENVIRONMENT (MCE)*	-	11.970	15.271	16.949	-	16.949	16.824	5.451	2.829	2.190	0.000	71.484
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

PM Mission Command (MC), under PEO C3T, manages both the Command Post Computing Environment (CPCE) and Mounted Computing Environment (MCE) efforts associated to the Army's Common Operating Environment (COE) initiative. In an attempt to streamline work on the COE, at the end of 1QFY2017, PM MC assigned the CPCE team to lead the COE effort and reassigned the MCE's management of engineering efforts from JBC-P to CPCE. The two CEs under PM MC are now working in concert with one another, developing their related capabilities in the same environment, with the common goal of ensuring a successful roll out of COE in 4QFY19.

Mounted Computing Environment (MCE) efforts began under Proj/PE 0604805A/593 – Joint Battle Command – Platform (JBC-P), in support of the platform aspect of the Common Operating Environment (COE) directive. Effective FY2016, the Army established MCE, Proj/PE 604818.EJ5 as a separate funding line to segregate the costs of MCE from JBC-P.

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. The MFoCS is the foundational hardware element of the MCE. MCE enables Mission Command capability development to echelons from mounted command posts nodes, 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). FY2018 funding provides the means to continue to manage and develop MCE in concert with CPCE.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Software Development	4.945	4.373	4.125	-	4.125
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 2016 Accomplishments: Follow-on efforts, begun under the Joint Battle Command-Platform (JBC-P), were successful in maturing the MCE infrastructure in concert with the CPCE which included development of software architecture constructs					

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
to sustain and integrate existing capability and enable new capability development. Further refined the design for MCE specific common components to ensure seamless data sharing between CEs. Developed Simplified Battalion Command Post Development. Developed the MCE foundational 'plug-in' framework, inherently interoperable with the CPCE 'plug-in' framework, providing an extended development environment for other mounted environment Program of Records PoRs to easily develop and integrate their capabilities on top of an infrastructure that inherits the cyber-hardened mission command on-the-move enhancements. Continued the development and integration of approved Cross Cutting Capabilities (CCC) [Common Geospatial, Email, and Chat]; specific efforts included initial development of the Smart Client, single sign on capability, and the Hybrid Operating System. ***FY 2017 Plans:*** Begin the application of integrating mission command capabilities on the platform using the Hybrid Application Operating system. Mature the MCE infrastructure based on emerging standards including continued development of automated tools to support compliance with COE standards, development of MCE COE services and bridging services to other CEs. Develop and integrate approved Cross Cutting Capabilities (CCC) (i.e.: Common Geospatial, Service Discovery over Networks, and Security Services). Continue design efforts, to include integration and lab based developmental and system of system testing of collaboration, specifically, Network Operations Center development integration, smart client development support, and Command and Control Interoperability UltraLight (C2IUL) design. ***FY 2018 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, Hybrid Operating System, test engineering, Map Based Planning, and Joint and Coalition Interoperability.					
Title: Software/Systems Engineering ***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 2016 Accomplishments:***	4.754	8.885	7.624	-	7.624

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conducted systems engineering efforts in support of the core software platform (infrastructure), MCE, specifically in support of COE baselines, focusing on hardware/software integration, engineering, and development of common services across platforms. Included planning and engineering of future MCE capabilities using Commercial Off The Shelf (COTS) items, i.e.: Common Authentication; performance characterization on different Hardware/Software configurations using Mounted Family of Computer Systems (MFoCS) hardware, and coordination of interoperability between external CEs. Specific efforts included work on remote maintenance, adaptive and responsive user interface, wireless integration, initial integration of the smart client, Vehicular Integration for Command, Control, Communication, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) / Electronic Warfare (EW) Interoperability, sensor integration and data engineering. Of note, they Army is leveraging COTS solutions to insulate the US Government from the burden of ownership and maintenance of developed software.					
FY 2017 Plans: Development of software architecture constructs to sustain and integrate existing capability and enable new capability development in conjunction with CPCE. 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 continuing to use COTS, i.e.: Common Authentication; performance characterization on different Hardware/Software 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, Command and Control Interoperability UltraLight (C2IUL) integration, wireless integration into platform, and the Hybrid Operating System.					
FY 2018 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.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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.					
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 2016 Accomplishments:*** Tested software capability of the core MCE infrastructure, as well as established tools and processes for 3rd party application testing and accreditation. Test and Evaluation efforts included the planning of Test, Evaluation, including User Jurys and Integration events in support of MCE development. ***FY 2017 Plans:*** Test events in coordination with CPCE during FY17 include Software Acceptance Testing of Engineering Release 2 (ER2) and ER3, and formal lab-based Integration Events to evaluate the performance and interoperability of each ER with other Mission Command systems. FY17 efforts also include DT and the Interoperability Integration Event (I2E). Planning and conduct of a Limited Objective Experiment (LOE) at the Mission Command Battle Lab is also in progress to gain user feedback from the initial system prototype. Cyber vulnerability testing is ongoing at the National Cyber Range (NCR). FY17 will conclude with planning for Operational Test and planning for Joint Warfighting Activity (JWA). MCE has also begun the development of a Test Instrumentation application that will reside on the developed end-state system to record data during test events, saving future formal Test Instrumentation costs. Additionally, development of the Test and Evaluation Master Plan (TEMP) is a major FY17 effort. ***FY 2018 Base Plans:*** In FY18, MCE, in coordination with CPCE, 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 the Operational Test, CPCE/ MCE will participate in Army Interoperability Certification (AIC) testing for certification of Information Exchange Requirements (IERs) via Army Mission Threads.	1.280	0.992	4.000	-	4.000
Title: Program Management	0.991	1.021	1.200	-	1.200

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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 2016 Accomplishments:*** Provided overall management and oversight of the implementation of MCE. This support included the creation and implementation of Functional Support Agreements between PM Mission Command (MC) and various Government support agencies such as the CECOM Research Development and Engineering Command (CERDEC), and other PEOs (e.g. PEO Soldier). Program Management efforts in the FY16 timeframe included business area support to ensure funding and contracts were planned and available for all SW development, system engineering, and T&E efforts. ***FY 2017 Plans:*** Providing overall management and oversight of the implementation of MCE. This support includes the creation and implementation of Functional Support Agreements between PM MC and various Government support agencies such as the CERDEC, and other PEOs, (e.g. PEO Soldier). Program Management efforts in the FY17 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 Base 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 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.					
Accomplishments/Planned Programs Subtotals	11.970	15.271	16.949	-	16.949

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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D. Acquisition Strategy

MCE is not a Program of Record (PoR), it is executed by PM Mission Command (PM MC) which coordinates requirements and efforts with all stakeholders for associated capabilities that are part of this CE. 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 3 year cycle (FY22, FY25, FY28), in accordance with the draft MCE IS CDD. 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 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: FY 2018 Army			Date: May 2017
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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	0.000	1.084		1.021		1.200		-		1.200	Continuing	Continuing	0.000
		Subtotal	0.000	1.084		1.021		1.200		-		1.200	-	-	0.000

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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	0.000	3.711		4.373		4.125		-		4.125	Continuing	Continuing	0.000
Software/Systems Engineering	Various	PM Mission Cmd, Multiple Matrix Orgs and SW Dev Contractors : Aberdeen Proving Ground, MD	0.000	4.701		8.885		7.624		-		7.624	Continuing	Continuing	0.000
		Subtotal	0.000	8.412		13.258		11.749		-		11.749	-	-	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 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	0.000	2.474		0.992		4.000		-		4.000	Continuing	Continuing	0.000
		Subtotal	0.000	2.474		0.992		4.000		-		4.000	-	-	0.000

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army			Date: May 2017
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	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	11.970		15.271		16.949		-		16.949	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
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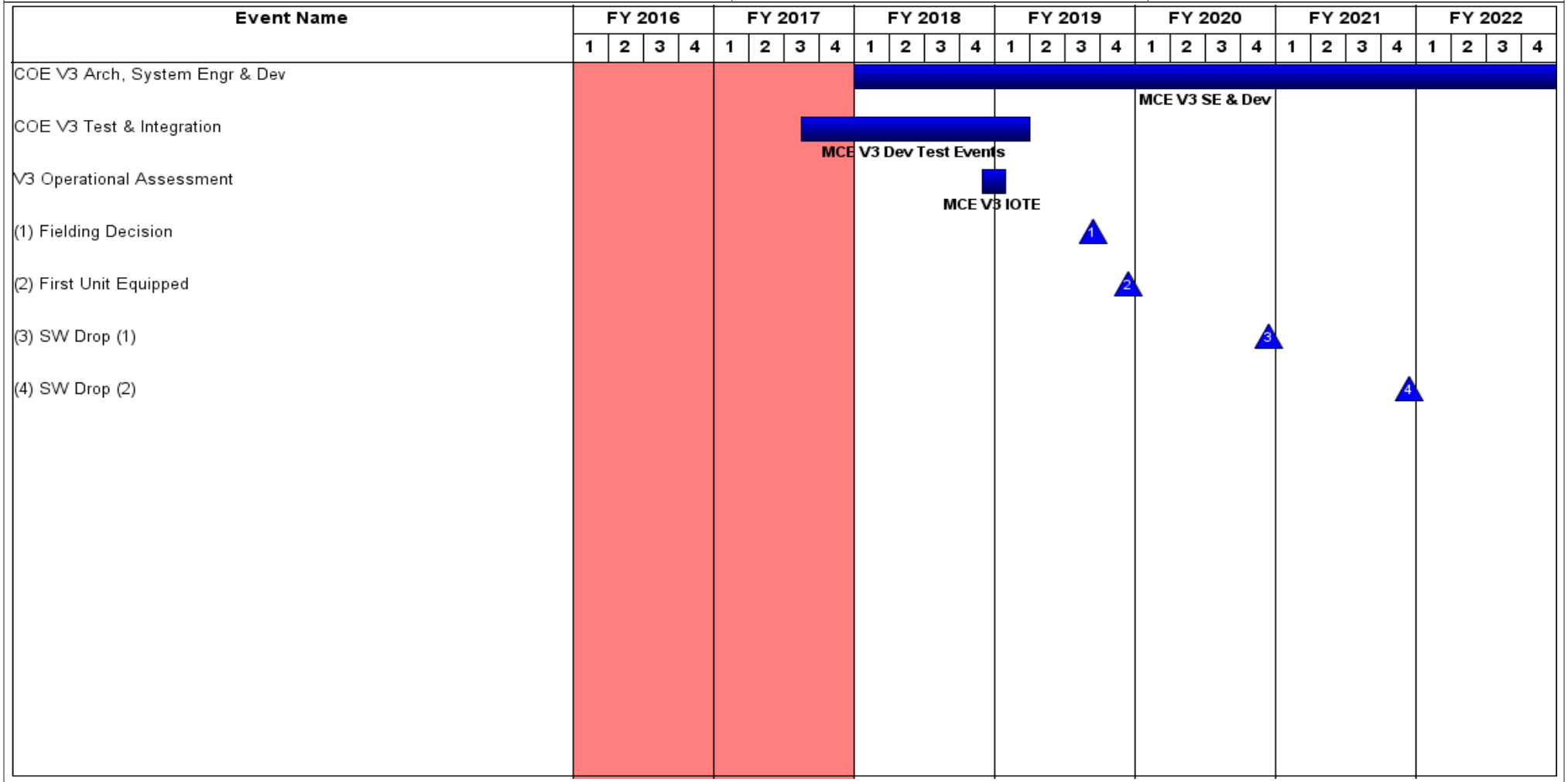

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
COE V3 Arch, System Engr & Dev	1	2018	4	2022
COE V3 Test & Integration	3	2017	1	2019
V3 Operational Assessment	4	2018	1	2019
Fielding Decision	3	2019	3	2019
First Unit Equipped	4	2019	4	2019
SW Drop (1)	4	2020	4	2020
SW Drop (2)	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ6: *TACTICAL ENHANCEMENT*	-	8.416	11.864	0.000	-	0.000	8.600	0.319	0.000	0.000	0.000	29.199
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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:
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 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 FY19/20 due to a delay in requirements definition and availability of COTS products to meet the requirement.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Under Evaluation (SUE) for TS-SCI Security Enclave (MCN-AE) ***Description:*** Testing requirement ***FY 2016 Accomplishments:*** SUE for TS-SCI (MCN-AE) during NIE16.2	8.416	-	-	-	-
Title: IOT&E for TRILOS systems ***Description:*** IOT&E for terrestrial communications TRILOS Systems ***FY 2017 Plans:***	-	11.864	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
IOT&E for terrestrial communications TRILOS Systems; BCT SUT for MCN-AE					
Accomplishments/Planned Programs Subtotals	8.416	11.864	-	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• B00010: *Signal Modernization*	47.024	58.250	92.718	4.900	97.618	127.074	160.681	137.475	122.153	0.000	750.275

Remarks

D. Acquisition Strategy

These funds will be used to conduct System Evaluation and Formal Testing of the various Signal Mod capabilities, specifically the MCN-AE, 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 16. 2 (MCN-AE), and 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 (2QFY17) and TROPO (2QFY18).

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EJ7: *TACTICAL DIGITAL MEDIA*	-	1.248	2.467	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.715
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Program Management	0.121	0.295	-	-	-
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.					
FY 2016 Accomplishments: Provided Program Management, technical, logistics, and business oversight for TDM evaluation and testing activities to support Milestone C.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Provide technical, logistics, and business oversight for TDM evaluation and testing activities. Program management functions include oversight, planning, funds execution and contract mangement support to TDM RDT&E activities.					
Title: Test and Evaluation ***Description:*** Test and evaluation of COTS technologies to assess their ability to meet the TDM Capability Production Document (CPD) requirements. ***FY 2016 Accomplishments:*** Partnered with the Aberdeen Proving Ground (APG), Electronics Proving Ground (EPG) to develop the TDM Product Prove-out Test (PPT) plan, where COTS components will be evaluated for effectiveness, suitability, and reliability. ***FY 2017 Plans:*** Photo, video, audio recording and editing equipment will be evaluated and tested in order to assess components of variant kits that support multiple mission requirements across multiple visual information (VI) disciplines.	0.930	1.431	-	-	-
Title: Procurement of Test Articles ***Description:*** Photo, video, audio recording, and editing equipment necessary for purposes of evaluation, and testing against the TDM CPD requirements. ***FY 2016 Accomplishments:*** TDM procured representative Kit components from various COTS manufactures for PPT evaluation against the CPD requirements. TDM partnered with Communications-Electronics Research, Development and Engineering Center (CERDEC), Space and Terrestrial Communications Directorate (S&TCD) to conduct a Feasibility Study analyzing various COTS methods of securing digital media in order to process and transmit on NIPRnet and SIPRnet. The results of this study will inform the procurement of additional test articles necessary for evaluation to meet the Net Ready Key Performance Parameter. ***FY 2017 Plans:*** Test article procurement (limited quantities to support evaluation and testing).	0.197	0.741	-	-	-
Accomplishments/Planned Programs Subtotals	1.248	2.467	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• B68501 Tactical Digital Media (OPA): *B68501 Tactical Digital Media (OPA)*	-	1.191	4.441	-	4.441	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-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EK9: *TACTICAL NETWORK OPERATIONS AND MANAGEMENT*	-	0.000	39.264	9.348	-	9.348	40.823	55.417	80.415	84.281	Continuing	Continuing
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 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.

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, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios. FY18 funding will support Program Office Management and subsequent efforts for capability development documentation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development	-	30.895	7.348	-	7.348
Description: Network Operations Development ***FY 2017 Plans:*** FY17 planned to initiates the Engineering Design and Development of Network Operations software in support of the Integrated Tactical Network Operations (ITNO) Increment 1 Capability Production Document which enhances Network Visualization and Monitoring of the tactical network, standardizes the data definitions and storage to support Common Operational Picture, and simplifies the planning and configuration process for multiple network devices and radios, delivering high level design and specification documents that guide					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
subsequent development and test planning. An Analysis of Alternatives (AoA) is replacing the ITNO Capability Production Document (CPD) strategy to align with Army priorities and Materiel Development Decision to support AoA initiation is planned for 1QFY18. ***FY 2018 Base 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, standardizing data definition and storage to support Common Operational Picture, and simplify planning and configuration process for multiple network devices and radios.					
Title: Test and Evaluation ***Description:*** Testing and Evaluating NetOps ***FY 2017 Plans:*** FY17 planned to fund T&E planning, updates to Test and Evaluation Master Plan, and integration and oversight by Government Test Organization with ongoing Contractor test events. An Analysis of Alternatives (AoA) is replacing the Integrated Tactical Network Operations (ITNO) Capability Production Document (CPD) strategy to align with Army priorities and a Materiel Development Decision to support AoA initiation is planned for 1QFY17. No testing efforts in FY17 to conduct.	-	4.442	-	-	-
Title: Management Services ***Description:*** Program Management Support ***FY 2017 Plans:*** Program Management Support and System Engineering for NetOps ***FY 2018 Base Plans:*** FY18 funding will support Program Office Management, AoA development and supporting System Engineering for NetOps with subsequent efforts for capability development documentation.	-	3.927	2.000	-	2.000
Accomplishments/Planned Programs Subtotals	-	39.264	9.348	-	9.348

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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*

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. A Materiel Development Decision is anticipated in 1st Quarter 2018 to initiate the AoA. FY18 will lead 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. FY18 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 a UNO Information Systems Capability Development Document (IS CDD) to support a Milestone B decision anticipated for 2nd 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.

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E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EQ8: *Mobile/Handheld Computing Environment (M/HHCE)*	-	0.000	10.563	11.850	-	11.850	11.920	12.089	12.385	12.577	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) Conduct NW Operational Test and Evaluation with Mechanized and Infantry units in FY16/17.

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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Test and Evaluation	-	2.119	2.139	-	2.139
Description: Test and Evaluation including annual Network Integration Evaluation (NIE) and Army Warfighting Assessment (AWA) to gain Soldier feedback.					
FY 2017 Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification through a planned Follow-on Test and Evaluation (FOT&E) operational assessment to support FY17 Full Rate Production (FRP) decision. Support NW as a baseline NIE and AWA 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. ***FY 2018 Base Plans:*** Continue NW test and 3rd party applications evaluation for technical verification at developmental test events and user verification through a planned Follow-on Test and Evaluation (FOT&E) operational assessment. Support NW as a baseline NIE and AWA 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.					
Title: Hardware and Software Integration and Evaluation for Capability Improvements ***Description:*** Hardware and Software Integration and Evaluation for Capability Improvements ***FY 2017 Plans:*** Evolve the NW system architecture and 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. ***FY 2018 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.	-	4.323	3.496	-	3.496
Title: Software Development & Integration ***Description:*** Funding is provided for the following efforts. ***FY 2017 Plans:*** Add additional Variable Message Format (VMF) messages to NW software. Evaluate next generation NW map engine and Operating System (OS) trade studies. Initiate assured Position, Navigation and Timing (PNT)	-	1.333	2.744	-	2.744

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
software development efforts with NW. Update NW Software Development Kit (SDK) with new functionality. Establish a full/open competitive source for NW software development and integration support team. Start incorporating the Army's Common Operating Environment (COE) 3.0 Cross-Cutting Capabilities into NW software. ***FY 2018 Base 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 to incorporate the Army's Common Operating Environment (COE) 3.0 Cross-Cutting Capabilities into NW software.					
Title: Conduct SEPM Support to NW ***Description:*** Conduct Systems Engineering and Program Management Support to Nett Warrior ***FY 2017 Plans:*** Conduct government systems engineering and program management support for NW program including documentation preparation for a planned Full Rate Production decision in FY17. Manage the integration of the latest commercial smart devices, software applications and technology for test and evaluation. Collect input from Soldiers at semi-annual NIE events that improve NW size, weight, power, fightability, safety and effectiveness via surveys and electronic data monitoring from Developmental and Operational Testing (DT/OT) events. Facilitates NW compliance to M/HH CE standards. ***FY 2018 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 including investigation and analysis of emerging innovative commercial technologies to lower the size, weight, power, cost and increase Nett Warrior functionality.	-	2.788	2.699	-	2.699
Title: MHHCE Governance ***FY 2018 Base 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.	-	-	0.772	-	0.772
Accomplishments/Planned Programs Subtotals	-	10.563	11.850	-	11.850

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• RDT&E, PE 0604827A S75,: *Ground Soldier Ensemble*	11.963	-	-	-	-	-	-	-	-	0	11.963
• OPA 3, R80501: *OPA 3, R80501, Ground Soldier System*	49.798	32.419	38.219	-	38.219	38.642	39.171	37.926	41.739	Continuing	Continuing

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 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: FY 2018 Army			Date: May 2017
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)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
System Engineering & Program Management Support	Various	Various : Various	0.000	-		2.787		2.699		-		2.699	Continuing	Continuing	0.000
MHHCE Governance	MIPR	Multiple : Multiple	0.000	-		-		0.772		-		0.772	Continuing	Continuing	0.000
		Subtotal	0.000	-		2.787		3.471		-		3.471	-	-	0.000

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware/Software Integration & Evaluation	Various	Various : Various	0.000	-		4.323		3.496		-		3.496	Continuing	Continuing	0
		Subtotal	0.000	-		4.323		3.496		-		3.496	-	-	0.000

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development and Integration	Various	Various : Various	0.000	-		1.334		2.744		-		2.744	Continuing	Continuing	0
		Subtotal	0.000	-		1.334		2.744		-		2.744	-	-	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Various Testing Organizations	Various	Various : Various	0.000	-		2.119		2.139		-		2.139	Continuing	Continuing	0
		Subtotal	0.000	-		2.119		2.139		-		2.139	-	-	0.000

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army			Date: May 2017
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 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		10.563		11.850		-		11.850	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
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)*

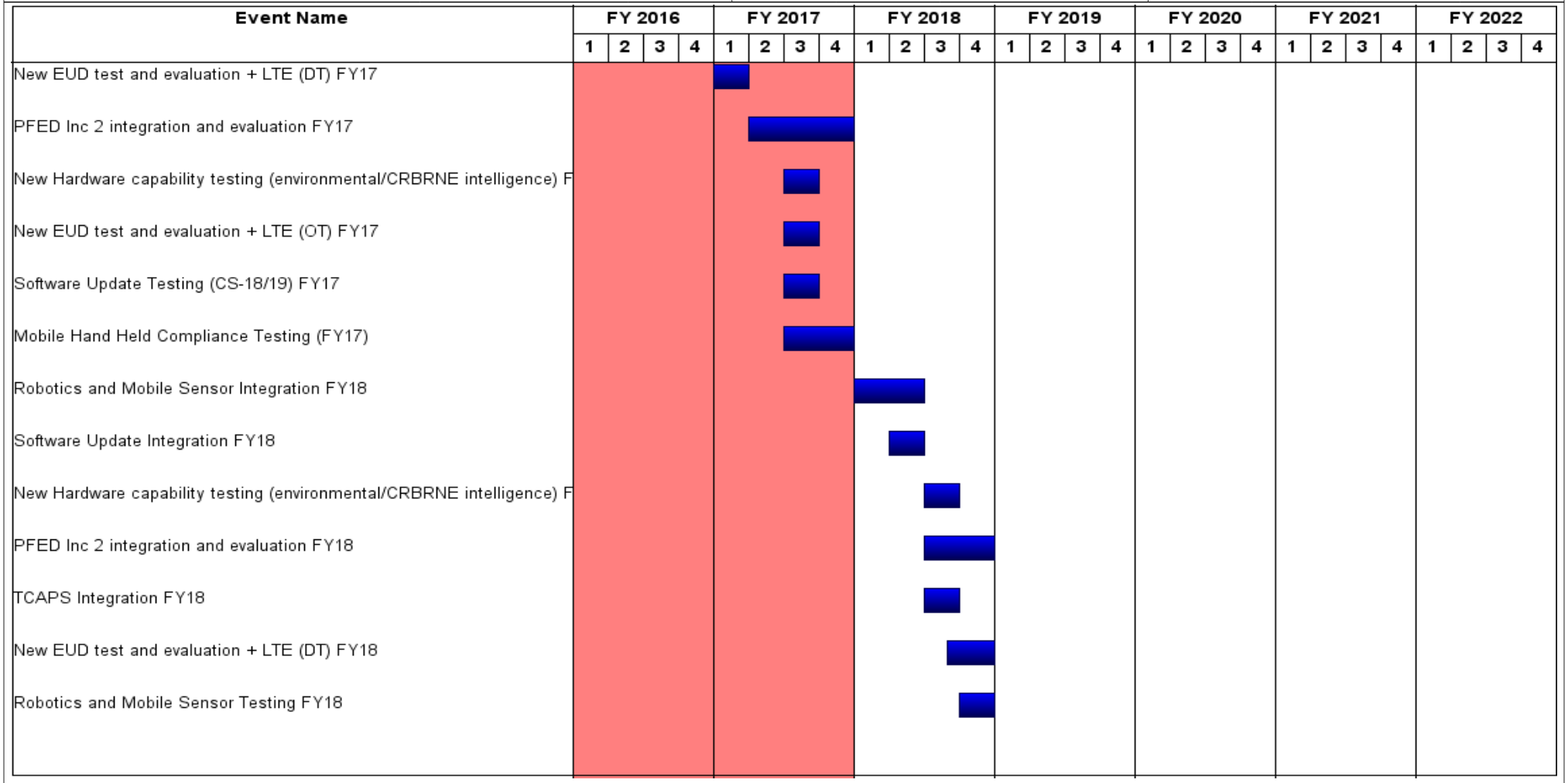

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

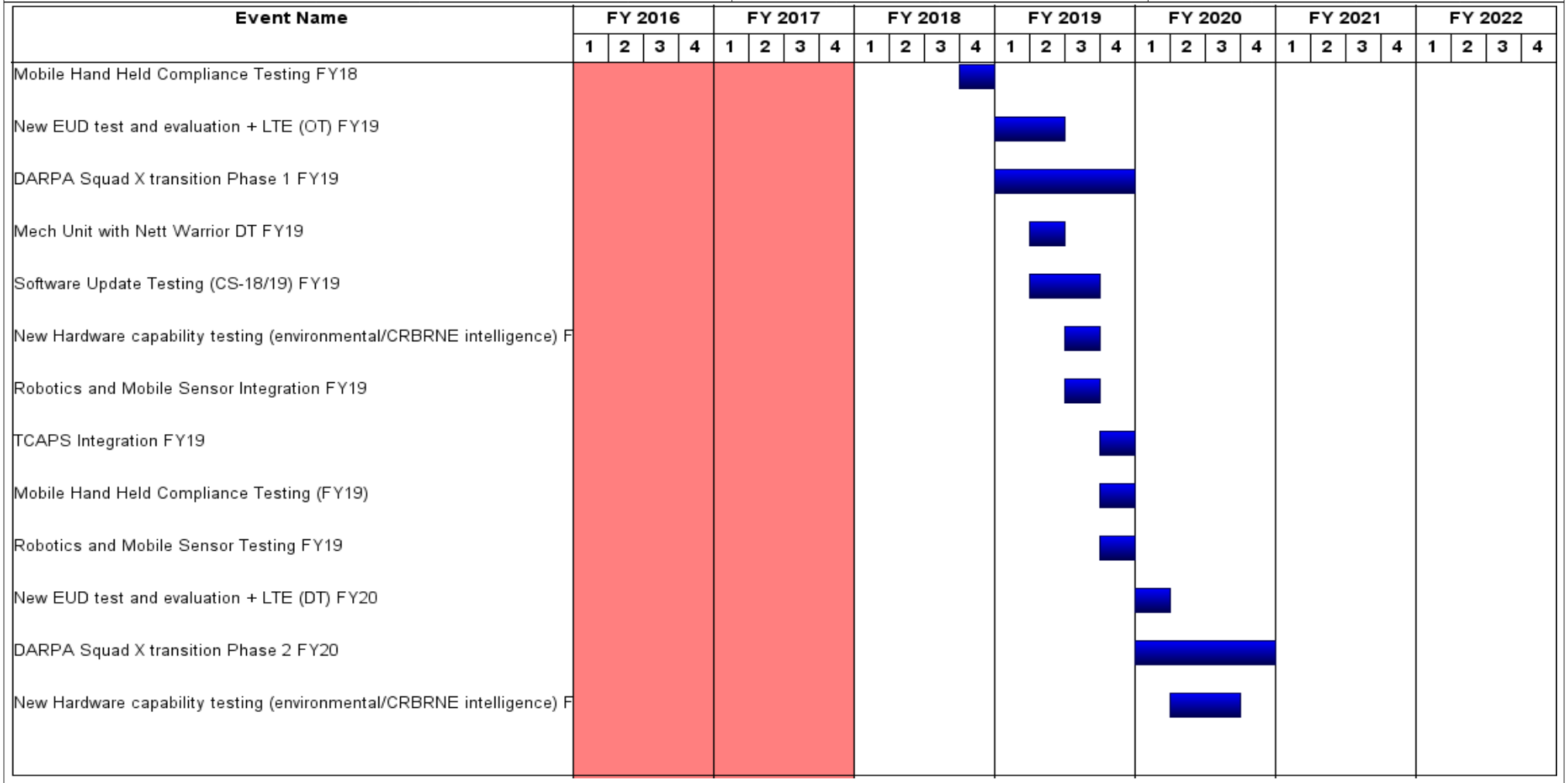

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

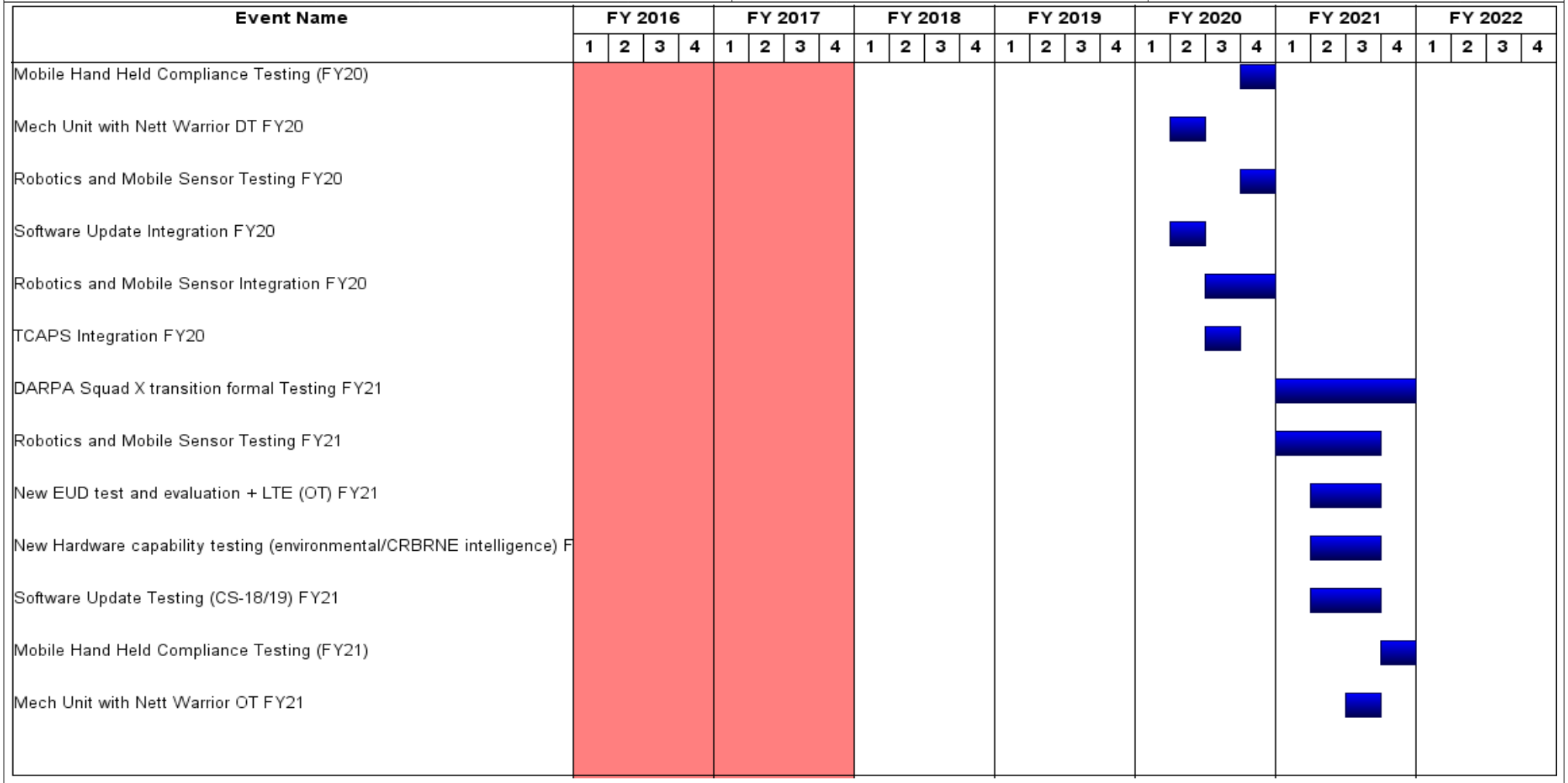

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

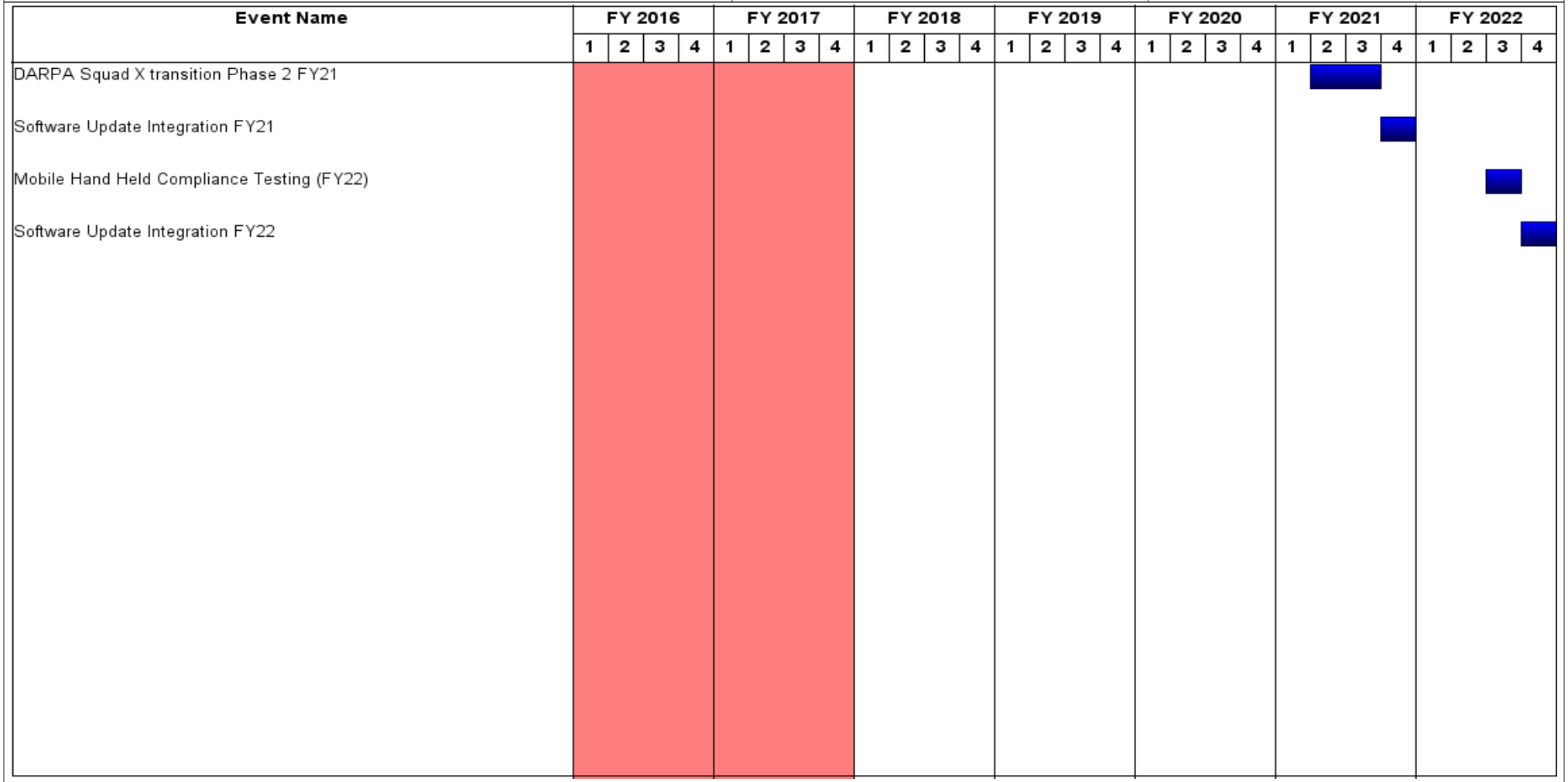

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EQ8 / *Mobile/Handheld Computing Environment (M/HHCE)*

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: FY 2018 Army		Date: May 2017
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)*

	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

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
ER9: *Command Post Integrated Infrastructure*	-	0.000	0.000	20.000	-	20.000	29.230	15.570	12.600	26.630	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Program Executive Office for Command, Control and Communications - Tactical (PEO C3T) 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.

FY18 funding initiates System Design and Prototyping of the MTV M1087 Mission Command Platform (MCP), Joint Light Tactical Vehicle (JLTV) Command Post Support Vehicle (CPSV), and Light Medium Tactical Vehicle (LMTV) M1079 CPSV. FY18 funding supports the development of the developmental test plan.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Product Development ***FY 2018 Base 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.	-	-	16.885	-	16.885
Title: Program Office Management ***FY 2018 Base Plans:*** Program Office Management and Support	-	-	2.000	-	2.000
Title: Systems Test and Evaluation ***FY 2018 Base Plans:*** Supports development of the Developmental Test plan	-	-	1.115	-	1.115
Accomplishments/Planned Programs Subtotals	-	-	20.000	-	20.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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)

N/A

Remarks

D. Acquisition Strategy

Command Post Integrated Infrastructure (CPI2) is predominantly a systems integration effort and leverages improvements in technology to reduce the current CP footprint and improve its agility. It consists of the integration of approved and fielded mission command information systems (INFOSYS), Government-Off-The-Shelf (GOTS) and Commercial Off-The-Shelf (COTS) technology. The centerpiece of CPI2 is the Mission Command Platform (MCP) and the Command Post Support Vehicle (CPSV).

FY18-FY22 Directed Requirement for CPI2 will leverage existing contracts managed by Project Manager (PM) Joint Light Tactical Vehicle (JLTV), Project Manager (PM) Stryker Brigade Combat Team (SBCT), and Project Manager (PM) Armored Multi-Purpose Vehicle (AMPV) for integration efforts associated with JLTV, Stryker, and AMPV. CPI2 will use a Functional Support Agreement for the prototype development of the M1079 CPSV and M1087 MCP variants. A Request For Proposal (RFP) will be released for a production contract for the M1079 CPSV and M0187 MCP in 1QFY20 with a projected award in 4QFY20 to produce four brigade sets.

The CPI2 Capability Development Document (CDD) is projected for Army Requirements Oversight Council (AROC) approval in 4QFY17 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 3-year Firm Fixed Priced/Cost Plus Fixed Fee (FFP/CPFF) contract for the design, engineering, prototyping, Developmental Test (DT), new equipment training, and Limited User Test (LUT) for the M1079 CPSV, M1087 MCP, and ISC Container MCP. A second anticipated contract is projected to be awarded in 4QFY23 following Milestone C in 4QFY22. This will be a competitive award for follow-on Low Rate Initial Production (LRIP), Initial Operational Test and Evaluation (IOT&E) support with Option Years for production. CPI2 will leverage existing contracts managed by PM JLTV, PM SBCT, and PM AMPV for integration efforts associated with JLTV, Stryker, and AMPV.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army			Date: May 2017
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*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Porgram Office Management	C/TBD	Various : Various	0.000	-		-		2.000		-		2.000	Continuing	Continuing	Continuing
		Subtotal	0.000	-		-		2.000		-		2.000	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/TBD	TBD : TBD	0.000	-		-		16.885		-		16.885	Continuing	Continuing	Continuing
		Subtotal	0.000	-		-		16.885		-		16.885	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Test and Evaluation	C/TBD	TBD : TBD	0.000	-		-		1.115		-		1.115	Continuing	Continuing	Continuing
		Subtotal	0.000	-		-		1.115		-		1.115	-	-	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		0.000		20.000		-		20.000	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
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*

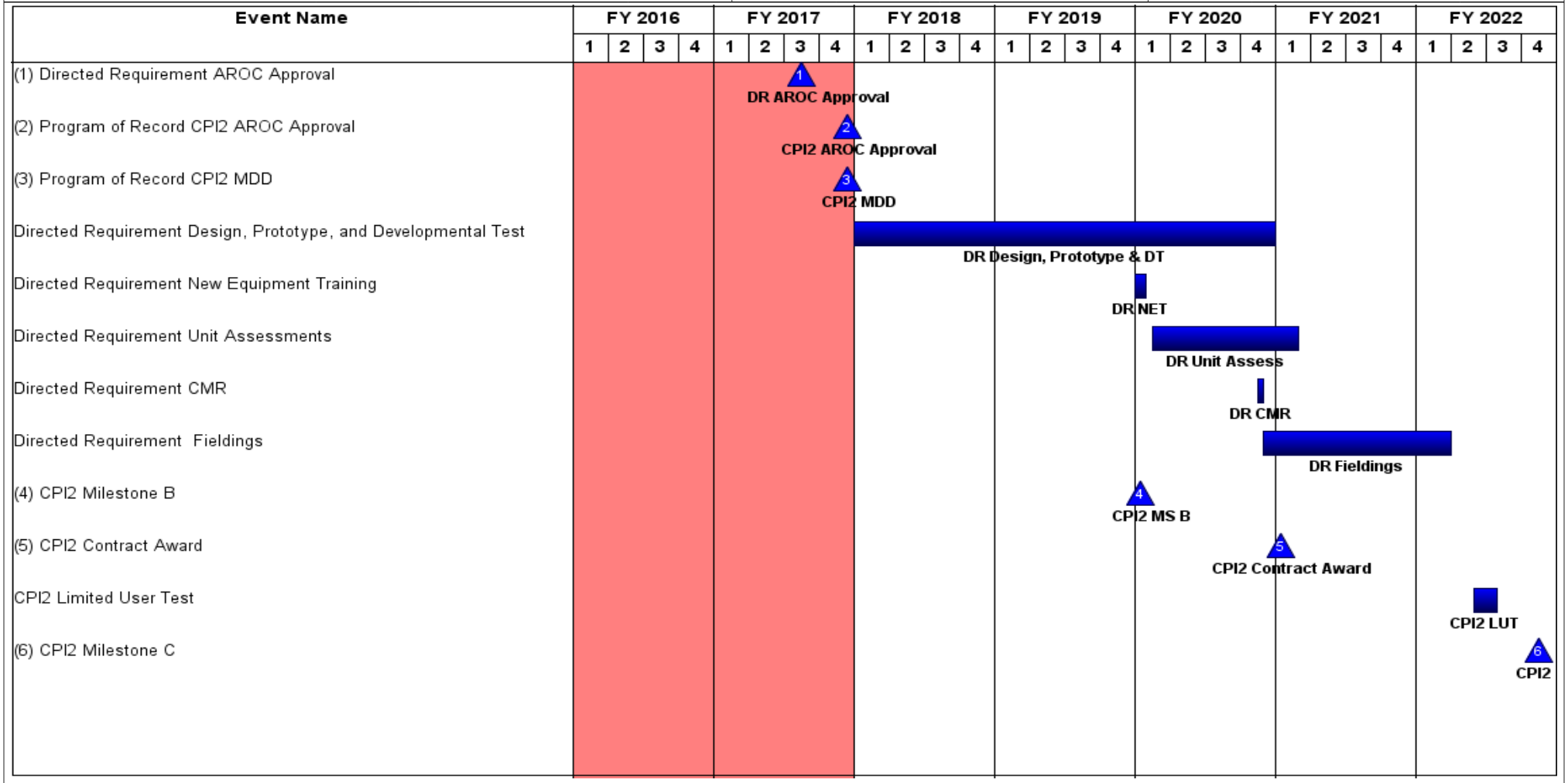

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** ER9 / *Command Post Integrated Infrastructure*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Directed Requirement AROC Approval	3	2017	3	2017
Program of Record CPI2 AROC Approval	4	2017	4	2017
Program of Record CPI2 MDD	4	2017	4	2017
Directed Requirement Design, Prototype, and Developmental Test	1	2018	4	2020
Directed Requirement New Equipment Training	1	2020	1	2020
Directed Requirement Unit Assessments	1	2020	1	2021
Directed Requirement CMR	4	2020	4	2020
Directed Requirement Fieldings	4	2020	1	2022
CPI2 Milestone B	1	2020	1	2020
CPI2 Contract Award	1	2021	1	2021
CPI2 Limited User Test	2	2022	3	2022
CPI2 Milestone C	4	2022	4	2022

Note

Directed Requirement FY18-FY22. RDTE activities FY18-FY20/Procurement activities FY20-FY22
Program of Record to begin FY20. RDTE activities FY20-FY24/Procurement activities to begin in FY23

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army			Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
EW3: *Unit Task Reorganization (UTR) Development*	-	0.000	24.498	25.969	-	25.969	24.431	27.658	27.003	25.635	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Unit Task Reorganization (UTR) effort leverages and integrates existing PEO C3T capabilities to create a drag and drop capability 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 program will address the intent of FES 3.0 – MC adaptability and utility through a simplified and more secure network – and reduce individual program LCM costs by reducing the need for FSEs and Help Desk support by standardizing and automating processes. The program sub-divides UTR into Network Sustainment, Network Planning, and Network Establishment, and further divides them into 35 distinct System of Systems capabilities.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: UTR Common Data Model ***Description:*** Design and develop a UTR Common Data Model (CDM) capable of representing tactical C4ISR systems and their runtime and planned initialization data. The UTR CDM shall provide a common, structured, machine-readable, and self-describing format. It shall be an extensible and object-oriented data model facilitating data sharing among existing and future tactical C4ISR systems and UTR tools. ***FY 2017 Plans:*** Design and develop a UTR Common Data Model (CDM) capable of representing tactical C4ISR systems and their runtime and planned initialization data. The UTR CDM shall provide a common, structured, machine-readable, and self-describing format. It shall be an extensible and object-oriented data model facilitating data sharing among existing and future tactical C4ISR systems and UTR tools.	-	11.731	-	-	-
Title: UTR Data Repositories ***Description:*** UTR Data Repository is that of a distributed, authoritative database architecture capable of storing, synchronizing, and presenting existing, planned, and archived initialization data. The repositories shall be distributed and connected across each echelon of the tactical network. ***FY 2017 Plans:***	-	6.285	-	-	-

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
UTR Data Repository is that of a distributed, authoritative database architecture capable of storing, synchronizing, and presenting existing, planned, and archived initialization data. The repositories shall be distributed and connected across each echelon of the tactical network.					
Title: UTR Data Dissemination Service ***Description:*** Design and develop a UTR Data Dissemination Service (UTR DDS). It is a data distribution methodology for disseminating existing and planned initialization data through the tactical network (both within and between tactical echelons), as required. ***FY 2017 Plans:*** Design and develop a UTR Data Dissemination Service (UTR DDS). It is a data distribution methodology for disseminating existing and planned initialization data through the tactical network (both within and between tactical echelons), as required.	-	3.897	-	-	-
Title: UTR Automated Initialization Service ***Description:*** Design and develop the UTR Automated Initialization Service (AIS). It is envisioned as a mechanism that automates the manual workflows for initializing tactical C4ISR systems. In addition, it aims to decouple the planning and initialization functions, so that each function can be performed at the appropriate tactical echelon. ***FY 2017 Plans:*** Design and develop the UTR Automated Initialization Service (AIS). It is envisioned as a mechanism that automates the manual workflows for initializing tactical C4ISR systems. In addition, it aims to decouple the planning and initialization functions, so that each function can be performed at the appropriate tactical echelon.	-	1.115	-	-	-
Title: PMO ***Description:*** The PMO cost is oversight and management of the design and development efforts. These people will lead, manage, and provide direction to the development teams. ***FY 2017 Plans:*** The PMO cost is oversight and management of the design and development efforts. These people will lead, manage, and provide direction to the development teams.	-	1.470	-	-	-
Title: IP Address Management	-	-	0.675	-	0.675

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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 Base Plans:*** 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.					
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 Base 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.)	-	-	3.544	-	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 Base Plans:*** SoS capability to create a COMSEC plan that meets the mission requirements using the COMSEC assets assigned	-	-	1.802	-	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. ***FY 2018 Base Plans:***	-	-	0.621	-	0.621

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
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.					
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 Base 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.	-	-	0.808	-	0.808
Title: Cryptographic Planning ***FY 2018 Base 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.	-	-	5.488	-	5.488
Title: Load and Activate Network ***Description:*** 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 2018 Base 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.	-	-	6.669	-	6.669
Title: Common Data Exchange Framework	-	-	1.191	-	1.191

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Description: Development of visualization services, data dissemination and synchronization services, repository services, initialization services, and data standards ***FY 2018 Base Plans:*** Development of visualization services, data dissemination and synchronization services, repository services, initialization services, and data standards					
Title: System of Systems Engineering ***Description:*** Architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering ***FY 2018 Base Plans:*** Architecture, Systems Engineering Plan, Risk Management Plan, Rapid Prototyping, IPT Management, Requirements Engineering	-	-	3.078	-	3.078
Title: System of Systems Program Management ***Description:*** Work Breakdown Structures, Schedules, Project Plans, Project Budgets, Quality Management Plans ***FY 2018 Base Plans:*** Work Breakdown Structures, Schedules, Project Plans, Project Budgets, Quality Management Plans	-	-	1.107	-	1.107
Title: System of Systems Test and Evaluation ***Description:*** Lab based risk reduction. ***FY 2018 Base Plans:*** Lab based risk reduction.	-	-	0.675	-	0.675
Title: System of Systems Training ***Description:*** Development of Systems of Systems training plans. ***FY 2018 Base Plans:*** Development of Systems of Systems training plans.	-	-	0.311	-	0.311
Accomplishments/Planned Programs Subtotals	-	24.498	25.969	-	25.969

Exhibit R-2A, RDT&E Project Justification: FY 2018 Army		Date: May 2017
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*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

As the Army's tactical network continues to evolve from a loose federation of stove-piped systems, to a single, integrated, service-oriented, and standards-based environment, UTR capabilities must also evolve in the same manner. Today, UTR is a complex, manually intensive, and time-consuming process. This is due in part, to the large increase in network-enabled nodes within the tactical network. In addition, tools employed by the G/S-6 staff to conduct UTR are designed, developed, and fielded by various program and product managers each with discrete requirements, development schedules, and funding lines. This impedes the G/S-6 staffs' ability to conduct UTR in an integrated manner. To enhance UTR, we will address five fundamental challenges to improve UTR. Efficient data sharing is a fundamental characteristic of modern-day integrated systems. The ability to read, modify, and exchange data in a uniform and efficient manner is essential to achieving an integrated UTR solution.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army			Date: May 2017
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 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UTR Common Data Model	TBD	TBD : TBD	0.000	-		11.731		-		-		-	0.000	11.731	0.000
UTR Data Repositories	TBD	TBD : TBD	0.000	-		6.285		-		-		-	0.000	6.285	0.000
UTR Data Dissemination Service	TBD	TBD : TBD	0.000	-		3.897		-		-		-	0.000	3.897	0.000
UTR Automated Initialization Service	TBD	TBD : TBD	0.000	-		1.115		-		-		-	0.000	1.115	0.000
System of Systems Engineering	TBD	TBD : APG	0.000	-		-		3.078		-		3.078	Continuing	Continuing	Continuing
System of Systems Program Management	TBD	TBD : APG	0.000	-		-		1.107		-		1.107	Continuing	Continuing	Continuing
System of Systems Training	TBD	TBD : APG	0.000	-		-		0.311		-		0.311	Continuing	Continuing	Continuing
IP address Management	TBD	TBD : APG	0.000	-		-		0.675		-		0.675	Continuing	Continuing	Continuing
Tactical Radio Management	TBD	TBD : APG	0.000	-		-		3.544		-		3.544	Continuing	Continuing	Continuing
Cryptographic Management	TBD	TBD : APG	0.000	-		-		1.802		-		1.802	Continuing	Continuing	Continuing
Network Configuration Management	TBD	TBD : APG	0.000	-		-		0.621		-		0.621	Continuing	Continuing	Continuing
Signal Running Estimate	TBD	TBD : APG	0.000	-		-		0.808		-		0.808	Continuing	Continuing	Continuing
Cryptographic Planning	TBD	TBD : APG	0.000	-		-		5.488		-		5.488	Continuing	Continuing	Continuing
Load and Activate Network	TBD	TBD : APG	0.000	-		-		6.669		-		6.669	Continuing	Continuing	Continuing
Common Data Exchange Framework	TBD	APG : APG	0.000	-		-		1.191		-		1.191	Continuing	Continuing	Continuing
		Subtotal	0.000	-		23.028		25.294		-		25.294	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PMO	TBD	TBD : TBD	0.000	-		1.470	Sep 2022	-		-		-	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Army			Date: May 2017
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*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.000	-		1.470		-		-		-	-	-	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems of Systems Test and Evaluation	TBD	TBD : APG	0.000	-		-		0.675		-		0.675	Continuing	Continuing	Continuing
		Subtotal	0.000	-		-		0.675		-		0.675	-	-	-

	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	-		24.498		25.969		-		25.969	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
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*

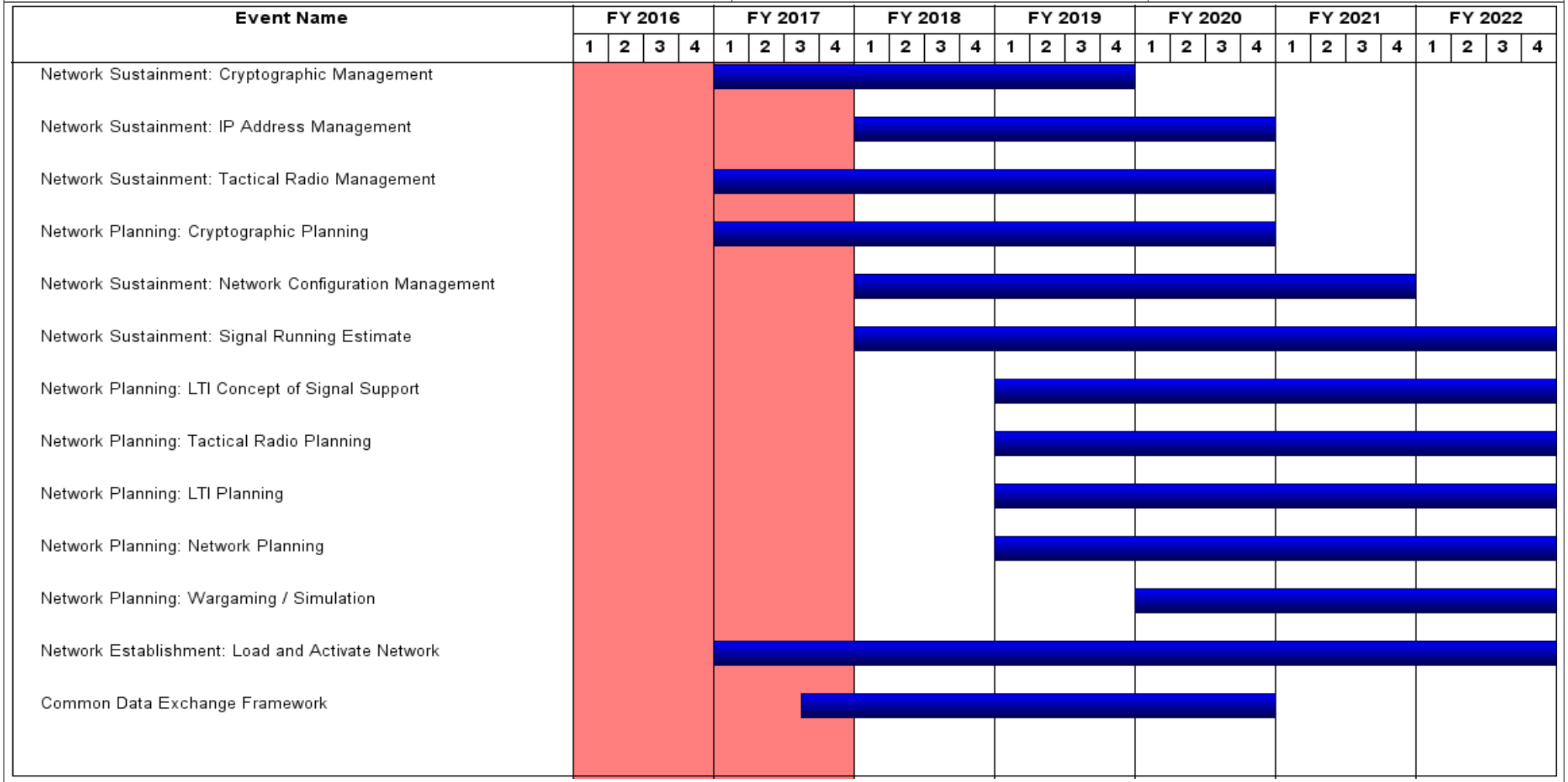

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

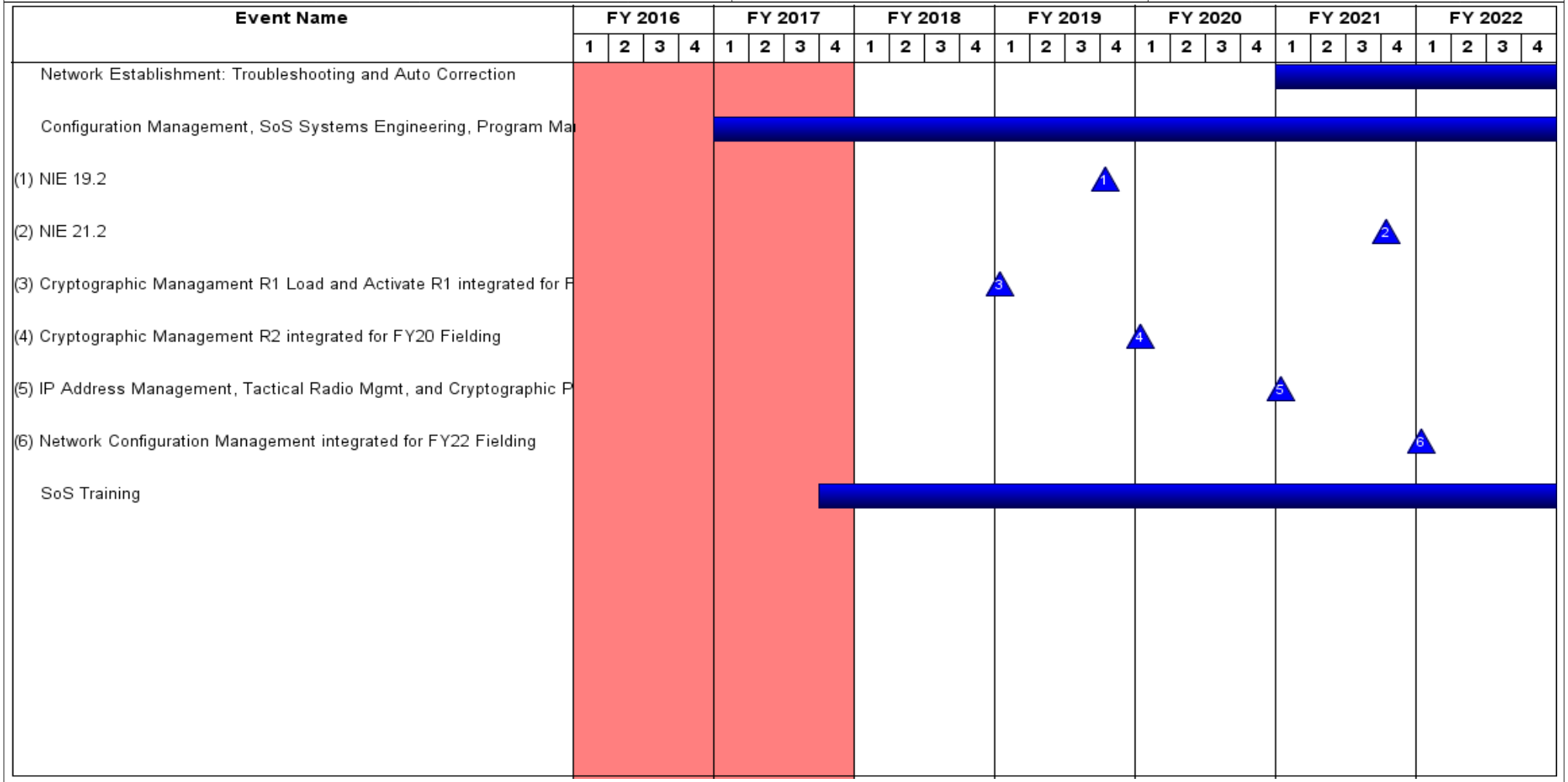

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Army		Date: May 2017
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0604818A / *Army Tactical Command & Control Hardware & Software*	**Project (Number/Name)** EW3 / *Unit Task Reorganization (UTR) Development*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Network Sustainment: Cryptographic Management	1	2017	4	2019
Network Sustainment: IP Address Management	1	2018	4	2020
Network Sustainment: Tactical Radio Management	1	2017	4	2020
Network Planning: Cryptographic Planning	1	2017	4	2020
Network Sustainment: Network Configuration Management	1	2018	4	2021
Network Sustainment: Signal Running Estimate	1	2018	4	2022
Network Planning: LTI Concept of Signal Support	1	2019	4	2022
Network Planning: Tactical Radio Planning	1	2019	4	2022
Network Planning: LTI Planning	1	2019	4	2023
Network Planning: Network Planning	1	2019	4	2023
Network Planning: Wargaming / Simulation	1	2020	4	2023
Network Establishment: Load and Activate Network	1	2017	4	2023
Common Data Exchange Framework	3	2017	4	2020
Network Establishment: Troubleshooting and Auto Correction	1	2021	4	2023
Configuration Management, SoS Systems Engineering, Program Management	1	2017	4	2022
NIE 19.2	4	2019	4	2019
NIE 21.2	4	2021	4	2021
Cryptographic Managament R1 Load and Activate R1 integrated for FY19 Fielding	1	2019	1	2019
Cryptographic Management R2 integrated for FY20 Fielding	1	2020	1	2020
IP Address Management, Tactical Radio Mgmt, and Cryptographic Planning FY19	1	2021	1	2021
Network Configuration Management integrated for FY22 Fielding	1	2022	1	2022
SoS Training	4	2017	4	2023