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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2020 Army	<b>Date:</b> March 2019
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<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 7: Operational Systems Development</i>					<b>R-1 Program Element (Number/Name)</b> PE 0203740A / <i>Maneuver Control System</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	-	6.443	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.443
484: <i>Maneuver Control System</i>	-	6.443	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.443

**A. Mission Description and Budget Item Justification**

Tactical Mission Command (TMC) is a suite of products and services that provide commanders and their staff executive decision making capability in a collaborative environment. The suite of products currently in development consist of Command Web (CW), Tactical Services Infrastructure (TSI), and an Army Voice Communication System (WAVE). TMC satisfies requirements and capabilities identified in the Maneuver Control System (MCS) 6.4 Capability Production Document. The overarching capability includes a user-defined Common Operating Picture (COP) with integrated Command and Control (C2) and Situational Awareness (SA), map-centric collaboration, Army Mission Command Systems (and others) enabling system interoperability, data management, and enterprise services. TMC contributes to Mission Command (MC) Convergence for commanders and staff to effectively conduct collaborative mission planning and execution across a range of operations and spectrum of conflict. Legacy products supported by this Budget Item include Command Post of the Future (CPOF) and Battle Command Common Services (BCCS).

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	6.639	0.000	0.000	-	0.000
Current President's Budget	6.443	0.000	0.000	-	0.000
Total Adjustments	-0.196	0.000	0.000	-	0.000
• Congressional General Reductions	-0.004	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.192	-			

**Change Summary Explanation**

TMC (MCS) will be transitioning into sustainment in FY 2019.

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040 / 7					R-1 Program Element (Number/Name) PE 0203740A / Maneuver Control System				Project (Number/Name) 484 / Maneuver Control System			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
484: Maneuver Control System	-	6.443	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6.443
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

## A. Mission Description and Budget Item Justification

Tactical Mission Command (TMC) is a portfolio of products and services that enable commanders and their staff with collaborative environment, planning tools, and Common Operation Picture (COP) management and other maneuver functional tools. The overarching capability includes above platform level user-defined COP with integrated Command and Control (C2) and Situational Awareness (SA), map-centric collaboration, Army Mission Command System and other enabling system interoperability, data management and enterprise services. Products include:

Command Web is a set of modular software widgets served up over the web providing engineering functionality, improved supportability and ease-of-use in robust network environments.

Tactical Server Infrastructure (TSI) provides the network available services critical to ensuring system and software can transmit the network effectively. Additionally, TSI serves as the hosting platform for many other enabling software systems, as well as multiple Warfighter Functional Area Applications (WFAs) such as Intel, Air Missile Defense Workstations and Fires gateway, providing efficiencies in the Command Post via decreased size, weight and power.

WAVE is the voice of the internet protocol common voice solution for the CPOF portfolio of programs. It provides real-time voice interoperability between radios, intercom and other previously fielded technologies in support of the Commander's update briefing and other Mission Command tasks.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<b>Title:</b> Program Management Office	0.639	-	-
<b>Description:</b> Codification of program operational requirements into discrete technical packages for development, testing, deployment, and support over the systems lifecycle.			
<b>Title:</b> Test and Evaluation	0.512	-	-
<b>Description:</b> Encompasses formal test (operational assessment/test, joint certification, interoperability, and information assurance) and informal testing such as acceptance testing and risk reduction testing.			
<b>Title:</b> WAVE MIP / Development / Intergration	5.292	-	-
<b>Description:</b> Developing and integrating voice over IP solutions into the CPOF portfolio of programs. It provides real-time voice interoperability between radios,			
<b>Accomplishments/Planned Programs Subtotals</b>	6.443	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Army										<b>Date:</b> March 2019	
<b>Appropriation/Budget Activity</b> 2040 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0203740A / <i>Maneuver Control System</i>				<b>Project (Number/Name)</b> 484 / <i>Maneuver Control System</i>			
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
			<b>FY 2020</b>	<b>FY 2020</b>	<b>FY 2020</b>					<b>Cost To</b>	
<b>Line Item</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>Base</b>	<b>OCO</b>	<b>Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Complete</b>	<b>Total Cost</b>
• BA9320: <i>Maneuver Control System (MCS)</i>	72.672	29.144	0.260	-	0.260	-	-	-	-	0.000	102.076
• BS9710: <i>MCS SPARES</i>	2.869	-	0.000	-	0.000	-	-	-	-	0.000	2.869
<b>Remarks</b>											
<b>D. Acquisition Strategy</b>											
<p>In accordance with the Training and Doctrine Command (TRADOC) requirements document approved in 2008, Maneuver Control System Capabilities Production Document, software capability will be developed in 3-year increments in support of Common Operating Environment (COE) Guidance designed to deploy specified Mission Command Essential Capabilities to operating force commanders and their integrated battle staffs. This strategy accounts for subsequent Army directives and continued migration to the Army COE; designed to optimize opportunities for improved interoperability. The products developed under this funding line are an integral part of the Army Mission Command System of Systems.</p> <p>TMC (MCS) will be transitioning into sustainment in FY 2019.</p>											
<b>E. Performance Metrics</b>											
N/A											

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2020 Army</b>												<b>Date: March 2019</b>			
<b>Appropriation/Budget Activity</b> 2040 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0203740A / Maneuver Control System						<b>Project (Number/Name)</b> 484 / Maneuver Control System			
<b>Management Services (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Office Mgmt	Various	PM Mission Command : Aberdeen Proving Grounds, MD	20.310	0.639		-		-		-		-	0.000	20.949	-
<b>Subtotal</b>			20.310	0.639		-		-		-		-	0.000	20.949	N/A
<b>Product Development (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Tactical Applications (TacApps)/ CPOF Maintenance	IA	Software Development: WSEC : Picatinny Arsenal, NJ	19.107	0.736		-		-		-		-	0.000	19.843	-
Command Web Development	Various	CECOM SEC : APG, MD	1.999	-		-		-		-		-	0.000	1.999	-
Log Widget Development	TBD	Development: Government Agency : TBD	3.665	-		-		-		-		-	0.000	3.665	-
Misc Contracts	Various	Various : Various	24.931	-		-		-		-		-	0.000	24.931	-
ABCS SoS Contract (Joint Convergence Development)	Various	Lockheed Martin : Tinton Falls, NJ	6.404	-		-		-		-		-	0.000	6.404	-
Technical Support	Various	PM Mission Command/SEC : Various	27.251	-		-		-		-		-	0.000	27.251	-
CPOF Development	Various	General Dynamics : Scottsdale, AZ	137.255	-		-		-		-		-	0.000	137.255	-
ABCS SoS Contract (Joint Convergence Development) Follow-on	Various	General Dynamics : Scottsdale, AZ	1.025	-		-		-		-		-	0.000	1.025	-
Mission Command Convergence Development & Integration	Various	Various : Various	42.698	-		-		-		-		-	0.000	42.698	-

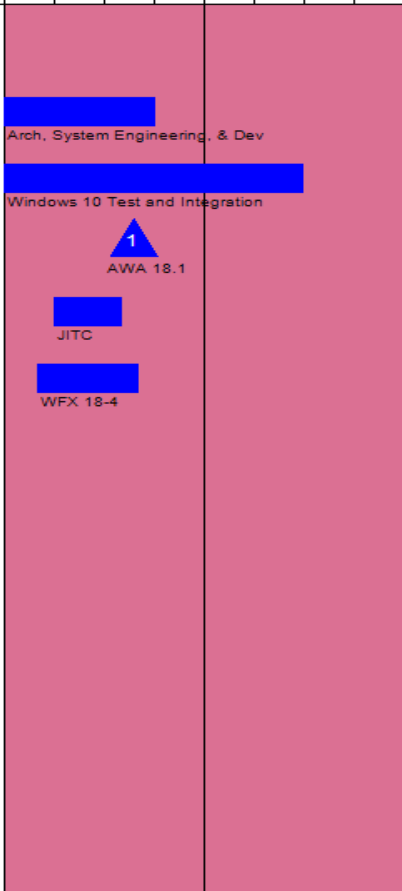
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Army												Date: March 2019			
Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0203740A / Maneuver Control System				Project (Number/Name) 484 / Maneuver Control System					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Mission Command Convergence - CP CE Software Development & Integration (Common Software)	Various	software development Future Skies : APG, MD	11.055	-		-		-		-		-	0.000	11.055	-
Mission Command Convergence Development & Integration (TAIS)	Various	software development SED : Redstone Arsenal, AL	2.103	-		-		-		-		-	0.000	2.103	-
Software Development & Technical Support for BCCS	Various	CECOM Software Engineering Center : APG, MD	71.362	2.126		-		-		-		-	0.000	73.488	-
PAL Integration	IA	SRI : AZ	11.000	-		-		-		-		-	0.000	11.000	-
WAVE / MIP Development &Integration	Various	TBD : APG	0.600	2.430		-		-		-		-	0.000	3.030	-
Subtotal			360.455	5.292		-		-		-		-	0.000	365.747	N/A
Support (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Misc Engineering Support	Various	PM Mission Command/SEC : Aberdeen Proving Ground, MD	10.340	-		-		-		-		-	0.000	10.340	-
Misc Contracts	Various	PM Mission Command : Aberdeen Proving Ground	5.743	-		-		-		-		-	0.000	5.743	-
Subtotal			16.083	-		-		-		-		-	0.000	16.083	N/A

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Appropriation/Budget Activity 2040 / 7						R-1 Program Element (Number/Name) PE 0203740A / Maneuver Control System				Project (Number/Name) 484 / Maneuver Control System					
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental tests / CTSF integration testing	Various	Various : APG, MD	9.645	-		-		-		-		-	0.000	9.645	-
AIC/NIE/JITC Testing	TBD	VARIOUS : APG, MD	10.060	0.512		-		-		-		-	0.000	10.572	-
Operational Assessment/ testing	Various	Various : APG, MD	36.804	-		-		-		-		-	0.000	36.804	-
Subtotal			56.509	0.512		-		-		-		-	0.000	57.021	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			453.357	6.443		0.000		-		-		-	0.000	459.800	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Army																Date: March 2019												
Appropriation/Budget Activity 2040 / 7								R-1 Program Element (Number/Name) PE 0203740A / Maneuver Control System								Project (Number/Name) 484 / Maneuver Control System												
Event Name	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Systems Integration Effort																												
Arch, System Engineering, & Dev																												
Windows 10 Test and Integration																												
AWA 18.1																												
Joint Interoperability Testing																												
WFX 18-4																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Army			<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 2040 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0203740A / <i>Maneuver Control System</i>	<b>Project (Number/Name)</b> 484 / <i>Maneuver Control System</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
COE V2	2	2012	2	2017
COE v2 Arch, System Engineering, & Dev	2	2012	2	2016
COE V2 Development & Test	1	2015	2	2017
Systems Integration Effort	4	2014	2	2019
Arch, System Engineering, & Dev	4	2014	3	2018
Windows 10 Test and Integration	2	2017	2	2019
AWA 18.1	3	2018	3	2018
Joint Interoperability Testing	1	2018	3	2018
WFX 18-4	1	2018	3	2018