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Department of Defense Fiscal Year (FY) 2020 Budget Estimates

March 2019



The Joint Staff

Defense-Wide Justification Book Volume 5 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Department of Defense
FY 2020 President's Budget
Exhibit R-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Feb 2019

Appropriation	FY 2018 (Base + OCO)	FY 2019 Base Enacted	FY 2019 OCO Enacted	FY 2019 Total Enacted
Research, Development, Test & Eval, DW	123,975	138,000		138,000
Total Research, Development, Test & Evaluation	123,975	138,000		138,000

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Department of Defense
FY 2020 President's Budget
Exhibit R-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

25 Feb 2019

Appropriation

Research, Development, Test & Eval, DW

	FY 2020 Base	FY 2020 OCO for Requirements	FY 2020 Direct War and Enduring Costs	FY 2020 Total OCO	FY 2020 Total (Base + OCO)
Research, Development, Test & Eval, DW	157,479				157,479
Total Research, Development, Test & Evaluation		157,479			157,479

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Department of Defense
 FY 2020 President's Budget
 Exhibit R-1 FY 2020 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

25 Feb 2019

	FY 2018 (Base + OCO)	FY 2019 Base Enacted	FY 2019 OCO Enacted	FY 2019 Total Enacted
Summary Recap of Budget Activities				
Advanced Component Development And Prototypes	23,638	22,435	-	22,435
Management Support	97,300	112,528	-	112,528
Operational System Development	3,037	3,037	-	3,037
Total Research, Development, Test & Evaluation	123,975	138,000	-	138,000
Summary Recap of FYDP Programs				
General Purpose Forces	25,749	19,695	-	19,695
Intelligence and Communications	673	652	-	652
Research and Development	60,219	75,000	-	75,000
Training Medical and Other	37,334	42,653	-	42,653
Total Research, Development, Test & Evaluation	123,975	138,000	-	138,000

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Summary Recap of Budget Activities

Advanced Component Development And Prototypes

	FY 2020 Base	FY 2020 OCO for Requirements	Direct War and Enduring Costs	FY 2020 Total OCO	FY 2020 Total (Base + OCO)
--	-----------------	------------------------------------	-------------------------------------	-------------------------	----------------------------------

20,062 20,062

Management Support

132,880 132,880

Operational System Development

4,537 4,537

Total Research, Development, Test & Evaluation

157,479 157,479

Summary Recap of FYDP Programs

General Purpose Forces

13,753 13,753

Intelligence and Communications

553 553

Research and Development

103,100 103,100

Training Medical and Other

40,073 40,073

Total Research, Development, Test & Evaluation

157,479 157,479

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Summary Recap of Budget Activities

	FY 2018 (Base + OCO)	FY 2019 Base Enacted	FY 2019 OCO Enacted	FY 2019 Total Enacted
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Management Support	97,300	112,528		112,528
Operational System Development	3,037	3,037		3,037
Total Research, Development, Test & Evaluation	123,975	138,000		138,000

Summary Recap of FYDP Programs

General Purpose Forces	25,749	19,695	19,695
Intelligence and Communications	673	652	652
Research and Development	60,219	75,000	75,000
Training Medical and Other	37,334	42,653	42,653
Total Research, Development, Test & Evaluation	123,975	138,000	138,000

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(Dollars in Thousands)

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Summary Recap of Budget Activities

	FY 2020 Base	FY 2020 OCO for Requirements	FY 2020 OCO for Base and Enduring Costs	FY 2020 Total OCO	FY 2020 Total (Base + OCO)
Advanced Component Development And Prototypes	20,062				20,062
Management Support	132,880				132,880
Operational System Development	4,537				4,537
Total Research, Development, Test & Evaluation	157,479				157,479

Summary Recap of FYDP Programs

General Purpose Forces	13,753	13,753
Intelligence and Communications	553	553
Research and Development	103,100	103,100
Training Medical and Other	40,073	40,073
Total Research, Development, Test & Evaluation	157,479	157,479

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FY 2020 President's Budget
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	FY 2018 (Base + OCO)	FY 2019 Base Enacted	FY 2019 OCO Enacted	FY 2019 Total Enacted
The Joint Staff	123,975	138,000		138,000
Total Research, Development, Test & Evaluation	123,975	138,000		138,000

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Appropriation

The Joint Staff

Total Research, Development, Test & Evaluation

	FY 2020 Base	FY 2020 OCO for Requirements	FY 2020 Direct War and Enduring Costs	FY 2020 Total OCO	FY 2020 Total (Base + OCO)
The Joint Staff	157,479				157,479
Total Research, Development, Test & Evaluation		157,479			157,479

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FY 2020 President's Budget
Exhibit R-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

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Appropriation: 0400D Research, Development, Test & Eval, DW

Program Line Element No	Item	Act	FY 2018	FY 2019	FY 2019	FY 2019	S
			(Base + OCO)	Base Enacted	OCO Enacted	Total Enacted	e c
107 0604826J	Joint C5 Capability Development, Integration and interoperability Assessments	04	23,638	22,435		22,435	U
	Advanced Component Development And Prototypes		23,638	22,435		22,435	
142 0603829J	Joint Capability Experimentation	06					U
150 0605126J	Joint Integrated Air and Missile Defense Organization (JIAMDO)	06	36,581	52,565		52,565	U
180 0204571J	Joint Staff Analytical Support	06	22,712	16,658		16,658	U
183 0303166J	Support to Information Operations (IO) Capabilities	06	673	652		652	U
190 0804767J	COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	06	37,334				U
191 0804768J	COCOM Exercise Engagement and Training Transformation (CE2T2) - non-MHA	06		42,653		42,653	U
	Management Support		97,300	112,528		112,528	
203 0208043J	Planning and Decision Aid System (PDAS)	07	3,037	3,037		3,037	U
	Operational System Development		3,037	3,037		3,037	
Total Research, Development, Test & Eval, DW			123,975	138,000		138,000	

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(Dollars in Thousands)

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Appropriation: 0400D Research, Development, Test & Eval, DW

Program Line Element No	Item	Act	FY 2020	FY 2020	FY 2020	FY 2020	FY 2020	S
			Base	OCO for Requirements	Direct War and Enduring Costs	Total OCO	Total (Base + OCO)	e
107 0604826J	Joint C5 Capability Development, Integration and interoperability Assessments	04	20,062				20,062	U
	Advanced Component Development And Prototypes		20,062				20,062	
142 0603829J	Joint Capability Experimentation	06	13,000				13,000	U
150 0605126J	Joint Integrated Air and Missile Defense Organization (JIAMDO)	06	70,038				70,038	U
180 0204571J	Joint Staff Analytical Support	06	9,216				9,216	U
183 0303166J	Support to Information Operations (IO) Capabilities	06	553				553	U
190 0804767J	COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	06						U
191 0804768J	COCOM Exercise Engagement and Training Transformation (CE2T2) - non-MHA	06	40,073				40,073	U
	Management Support		132,880				132,880	
203 0208043J	Planning and Decision Aid System (PDAS)	07	4,537				4,537	U
	Operational System Development		4,537				4,537	
Total Research, Development, Test & Eval, DW			157,479				157,479	

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 (Dollars in Thousands)

25 Feb 2019

Appropriation: 0400D Research, Development, Test & Eval, DW

Program Line Element No	Item	FY 2018 Act	FY 2018 (Base + OCO)	FY 2019 Base Enacted	FY 2019 OCO Enacted	FY 2019 Total Enacted	S e c
107 0604826J	Joint C5 Capability Development, Integration and interoperability Assessments	04	23,638	22,435		22,435	U
	Advanced Component Development And Prototypes		-----	-----	-----	22,435	
142 0603829J	Joint Capability Experimentation	06					U
150 0605126J	Joint Integrated Air and Missile Defense Organization (JIAMDO)	06	36,581	52,565		52,565	U
180 0204571J	Joint Staff Analytical Support	06	22,712	16,658		16,658	U
183 0303166J	Support to Information Operations (IO) Capabilities	06	673	652		652	U
190 0804767J	COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	06	37,334				U
191 0804768J	COCOM Exercise Engagement and Training Transformation (CE2T2) - non-MHA	06		42,653		42,653	U
	Management Support		97,300	112,528		112,528	
203 0208043J	Planning and Decision Aid System (PDAS)	07	3,037	3,037		3,037	U
	Operational System Development		3,037	3,037		3,037	
	Total The Joint Staff		123,975	138,000		138,000	

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 FY 2020 President's Budget
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Appropriation: 0400D Research, Development, Test & Eval, DW

Program Line Element No	Item	Act	FY 2020	FY 2020	FY 2020	FY 2020	FY 2020	S
			Base	OCO for Requirements	Direct War and Enduring Costs	Total OCO	(Base + OCO)	e
107 0604826J	Joint C5 Capability Development, Integration and interoperability Assessments	04	20,062				20,062	U
	Advanced Component Development And Prototypes		20,062				20,062	
142 0603829J	Joint Capability Experimentation	06	13,000				13,000	U
150 0605126J	Joint Integrated Air and Missile Defense Organization (JIAMDO)	06	70,038				70,038	U
180 0204571J	Joint Staff Analytical Support	06	9,216				9,216	U
183 0303166J	Support to Information Operations (IO) Capabilities	06	553				553	U
190 0804767J	COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	06						U
191 0804768J	COCOM Exercise Engagement and Training Transformation (CE2T2) - non-MHA	06	40,073				40,073	U
	Management Support		132,880				132,880	
203 0208043J	Planning and Decision Aid System (PDAS)	07	4,537				4,537	U
	Operational System Development		4,537				4,537	
	Total The Joint Staff		157,479				157,479	

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107	04	0604826J	Joint C5 Capability Development, Integration, and Interoperability Assessments.....	Volume 5 - 1

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Line #	Budget Activity	Program Element Number	Program Element Title	Page
142	06	0603829J	Joint Capability Experimentation.....	Volume 5 - 25
150	06	0605126J	Joint Integrated Air & Missile Defense Organization (JIAMDO).....	Volume 5 - 29
180	06	0204571J	Joint Staff Analytical Support.....	Volume 5 - 49
183	06	0303166J	Support to Information Operations (IO) Capabilities.....	Volume 5 - 57
190	06	0804767J	COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA.....	Volume 5 - 61
191	06	0804768J	COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA.....	Volume 5 - 79

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203	07	0208043J	Planning and Decision Aid System (PDAS).....	Volume 5 - 105

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COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	0804767J	190	06.....	Volume 5 - 61
COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA	0804768J	191	06.....	Volume 5 - 79
Joint C5 Capability Development, Integration, and Interoperability Assessments	0604826J	107	04.....	Volume 5 - 1
Joint Capability Experimentation	0603829J	142	06.....	Volume 5 - 25
Joint Integrated Air & Missile Defense Organization (JIAMDO)	0605126J	150	06.....	Volume 5 - 29
Joint Staff Analytical Support	0204571J	180	06.....	Volume 5 - 49
Planning and Decision Aid System (PDAS)	0208043J	203	07.....	Volume 5 - 105
Support to Information Operations (IO) Capabilities	0303166J	183	06.....	Volume 5 - 57

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)									
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments									
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		
Total Program Element	45.330	23.638	22.435	20.062	-	20.062	20.274	20.066	21.316	21.087	Continuing	Continuing		
001: C5 Assessments and Analyses	23.082	12.898	11.648	9.275	-	9.275	9.487	9.279	10.529	10.300	Continuing	Continuing		
002: C5 Capability Development	13.673	6.590	5.787	5.787	-	5.787	5.787	5.787	5.787	5.787	Continuing	Continuing		
003: Joint Fires C2 Interoperability	8.575	4.150	5.000	5.000	-	5.000	5.000	5.000	5.000	5.000	Continuing	Continuing		
A. Mission Description and Budget Item Justification														
Lead command, control, communications, computers, and cyber (C5) assessments, analyses, capability development, and joint fires command and control (C2) interoperability efforts required to achieve an effective, integrated, and interoperable joint force. Efforts include C5 requirements determination, C5 architectures development and integration, C5 data standardization, joint fires C2 interoperability, and C5 integration and interoperability assessments.														
B. Program Change Summary (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total						
Previous President's Budget				23.638	22.435	20.062	-	-						
Current President's Budget				23.638	22.435	20.062	-	-						
Total Adjustments				0.000	0.000	0.000	-	-						
• Congressional General Reductions				0.000	-	-	-	-						
• Congressional Directed Reductions				-	-	-	-	-						
• Congressional Rescissions				-	-	-	-	-						
• Congressional Adds				-	-	-	-	-						
• Congressional Directed Transfers				-	-	-	-	-						
• Reprogrammings				-	-	-	-	-						
• SBIR/STTR Transfer				-	-	-	-	-						
• N/A				-	-	-	0.000	-						
Change Summary Explanation														
The FY 2020 requested amount reflects the mandated 25% Major Headquarters Activities (MHA) reductions prescribed by the 2016 NDAA.														

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments				Project (Number/Name) 001 / C5 Assessments and Analyses				
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	
001: C5 Assessments and Analyses	23.082	12.898	11.648	9.275	-	9.275	9.487	9.279	10.529	10.300	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

Conduct analysis and assessment activities to inform and enhance joint warfighter capabilities in support of national security requirements. Provide timely, facts-based findings and recommendations to DoD decision-making processes that validate operational requirements and apply funding to field effective, interoperable capabilities. Conduct interoperability assessments and analyses that evaluate capability and interoperability of fielded and emerging command, control, communications, computers, and cyber (C5), and systems in response to operational issues and shortfalls. Conduct integration assessment efforts focused on emerging capabilities in wireless devices and security, operational and tactical command and control, networking, satellite communications, advanced secure digital datalinks, and allied/coalition data exchanges.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020
Title: C5 Assessments and Analyses	12.898	11.648	9.275
Description: Support the Chairman's statutory requirement to advise the Secretary of Defense "on development of joint command, control, communications and cyber capability, including integration and interoperability of such capability through requirements, integrated architectures, data standards and assessments." Also supports the Chairman's focus area of improving joint warfighting capability and the SECDEF's line of effort to strengthen alliances and attract new partners. Interoperability is assessed and integrated solutions are developed to improve C5 system performance by providing recommendations based on operational architectures and evolving standards and data products. Combatant Commands, Services, Agencies and Allies/Coalition partners are provided a laboratory, exercise and assessment venue for the warfighter and capability developer to identify and solve interoperability, integration, and cyber issues.			
FY 2019 Plans:			
Conduct analysis, assessment, and integration activities to inform and enhance Joint warfighter capabilities in support of national security requirements. Provide timely, facts-based findings and recommendations for action through formal DoD decision-making processes used to validate operational requirements and apply funding to field integrated, interoperable capabilities. Conduct interoperability assessments, analyses, and integration that evaluate and enhance capability and interoperability of fielded and emerging command, control, communications, computers, and cyber (C5), and systems in response to operational needs and issues. Conduct integration and integration assessment efforts focused on emerging capabilities in wireless devices and security, tactical command and control and networking, satellite communications, advanced secure digital datalinks, and coalition data			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments	Project (Number/Name) 001 / C5 Assessments and Analyses	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018 FY 2019 FY 2020
exchanges. Employ a deployable capability supporting the collection and analysis of decision quality data for command and control operations from the operational to lowest tactical echelons of command. Joint analysis supports capability development, acquisition, and systems employment decisions based on quantifiable performance in both actual and replicated operational environments. Projects include:			
Coalition Interoperability and Assurance Validation (CIAV) – CIAV assessments of US and coalition systems support in-theater operations by ensuring C5 system adequacy before their operational employment in the Afghan and Iraq areas of operations. CIAV is also increasing efforts in the Pacific. CIAV assessments validate complete and timely exchange of critical information and improve interoperability, enabling coalition forces to fight more effectively and efficiently.			
Classified reconfigurable operational wireless network – the integration, employment, and assessment of a single, rapidly deployed and configurable wireless network that carries multiple classifications. Network is suitable for tactical field settings, temporary installations, and fixed headquarters thereby addressing tactical, operational, and strategic requirements. Employs National Security Agency approved communications security and provides secure communications faster with less hardware and overhead.			
Joint fires support joint mission thread interoperability assessment – assess joint and coalition fire support command and control systems digital (machine-to-machine) interoperability and provide findings and observations.			
Advanced tactical cellular (4G/LTE) integration – multiple efforts to increase the availability of 4G/LTE to tactical forces. Addresses communications security, smart-phone battlefield apps, and 4G/LTE survivability in contested and austere environments.			
Bold Quest (BQ) 2019 coalition interoperability demonstrations – support the design, plan, and execution of the BQ events which address close air support, counter UAS, IFF testing, and cyber effects on operations for U.S. forces and coalition partners. Support includes accredited exercise networks, associated C2 systems, and data collection and analysis capabilities.			
Joint expeditionary integration capabilities – integrate, refine, and accelerate the migration of Special Operating Forces (SOF) battle-proven capabilities to general purpose forces in accordance with governing instructions. Rapid migration of SOF “best practices” provides greater capability to general purpose forces and enhances interoperability with SOF and coalition partners. The capabilities include integrated secure radio networks, tactical data links, tactical cellular, enroute satellite communications, enhanced situational awareness, fratricide prevention, and a more efficient kill-chain.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments	Project (Number/Name) 001 / C5 Assessments and Analyses	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018 FY 2019 FY 2020
Battlefield intelligence trusted network environment – the integration and assessment of an enterprise environment featuring a single, aggregated intelligence sharing capability for multiple partner nations that does not compromise respective national networks or domains.			
Joint Planning Services (JPS) – operational assessment of the JPS pilot will determine if the combatant commanders and Service operational planning requirements would be met by JPS. JPS is intended to enable planners to develop and maintain complex strategic/contingency plans in a dispersed, collaborative, cross-functional joint, interagency, intergovernmental, multinational environment. JPS should also provide rapid access to authoritative, geospatially-enabled planning data and tools and efficient and expeditious information dissemination.			
Mode 5 analysis – Plan and execute analysis events at various live venues (such as RED FLAG or BOLD QUEST) in support of certification of Service Mode 5 IFF capabilities.			
USCENTCOM counter-UAS (C-UAS) support – Conduct analysis activities both at CONUS C-UAS events and in active operational theaters to evaluate effectiveness of rapidly fielded C-UAS systems. Results will inform follow-on fielding and rapid procurement decisions.			
FY 2020 Plans: Conduct quantifiable analysis, assessment, and integration activities in both actual and replicated operational environments to inform and enhance C5I Joint warfighter capabilities in support of capability development, acquisition, and systems employment decisions. Conduct interoperability assessments, analyses, and integration through rapidly reconfigurable C5 laboratories replicating joint and coalition system of systems operational environments that can respond to emerging warfighter needs and issues. Employ a deployable assessment capability supporting the collection and analysis of decision quality data for command and control operations from the operational to lowest tactical echelons of command, in field conditions, in real time to provide immediate feedback on the data being collected. Projects include: Cyber Guard (CG)/Cyber Flag (CF) - Provide assessment and technical support to cyber exercises to include C2 information systems, while conducting assessments of cyber effects on systems integrated into the DoD Information Network. Trusted Network Environment - Support cross domain security solution that provides cross domain collaborative services (e-mail with attachments, chat, VoIP, and file share) between US SIPRNET, coalition bi-lateral and multilateral networks that does not compromise respective national networks or domains.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018 FY 2019 FY 2020
<p>Counter-UAS (CUAS) – Data collection and analysis during RTD&E test events as well as in support of urgent operational needs in active operational theaters. Analysis covers all aspects of CUAS defense, including lethal engagements.</p> <p>Small Unit Situational Awareness – Support DARPA Squad-X and related efforts to enhance Joint/Coalition small unit situational awareness and lethality with quantitative/qualitative field assessments. Efforts include assessments of GPS-denied navigation aids, unmanned systems performance, command of kinetic/non-kinetic engagements, and employment of expert systems/artificial intelligence systems at small unit level.</p> <p>Bold Quest (BQ) 2020 Coalition Interoperability Demonstrations – Support the design, plan, and execution of the BQ events which address close air support, Mission Partner Environment (MPE) / Federated Mission Networking (FMN) development/assessments, counter UAS, IFF testing, and cyber effects on operations for U.S. forces and coalition partners. Support includes accredited exercise networks, associated C2 systems, and data collection and analysis capabilities.</p> <p>Joint Tactical Integration - Integrate, refine, and accelerate the migration of Special Operating Forces (SOF) battle-proven capabilities to rapidly improve the Joint warfighting capabilities and lethality of general purpose forces in accordance with governing instructions. Capabilities include integrated secure radio networks, tactical data links, tactical cellular, enroute satellite communications, enhanced situational awareness, fratricide prevention, and a more efficient kill-chain.</p> <p>Coalition Interoperability and Assurance Validation (CIAV) - Assess US and coalition systems support in-theater operations by ensuring C5 capabilities adequacy before current operational employment in the Afghan and Iraq areas of operations. Conduct CIAV projects in the INDOPACOM AOR. CIAV assessments improve interoperability and joint warfighting capabilities.</p>			
<p>FY 2019 to FY 2020 Increase/Decrease Statement: \$276K in FY 2019 resources were transferred to support the Small Business Innovation Research program. The FY 2020 requested amount reflects the mandated 25% Major Headquarters Activities (MHA) reductions prescribed by the 2016 NDAA.</p>			
Accomplishments/Planned Programs Subtotals			12.898 11.648 9.275
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
Biannual review of C4/Cyber resources includes an examination of the current and future Budget/Spend Plan, Lines of Effort, Acquisition Strategy and current Execution.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 001 / <i>C5 Assessments and Analyses</i>
<p>The award of a Multi Award Contract (MAC) seeks efficiencies in the performance of requirements for C4/Cyber and Information services, and promotes contractor teaming to provide critical technical and management support. The MAC approach also seeks to reduce the costs of current contract support through the elimination of multiple fees for service contracts, and through the competitive award of contract services.</p>		
<p>E. Performance Metrics</p> <ol style="list-style-type: none">1. Conduct a minimum of 15 interoperability assessments designed to identify joint and coalition interoperability issues and recommend solutions to program managers, Combatant Commands, Services, and agencies.2. Conduct a minimum of one broad-spectrum Counter-UAS (C-UAS) analysis event; providing data collection, analysis, and recommendations that directly address identified C-UAS capability gaps and interoperability shortfalls for partners including: Joint, Services, intergovernmental, and coalition stakeholders.3. Provide C2 systems and persistent command, control, communications, and computers (C4) environment supporting at least two Combatant Command exercises to satisfy Combatant Command training objectives, including the cyber threat to mission systems.4. Support up to four Squad-X experiment events, providing objective analysis on performance and interoperability that directly informs the acquisition of improved C2 capabilities for U.S. small units.5. Support a minimum of 30 coalition interoperability assurance and validation events and provide a minimum of 100 observations/findings to resolve end-to-end mission based interoperability issues, validate tactics, techniques, and procedures, and support NATO future mission networking (FMN) and U.S. mission partner environment (MPE) plans.6. Provide analyses for at least six field assessments/demonstrations in the areas of joint fires, C2, coalition intelligence, surveillance, and reconnaissance (CISR), digitally aided close air support (DACS), FMN and MPE. Analyses results will inform continued development of evaluated capabilities, including acquisition/fielding decisions and tactics, techniques and procedures.7. Provide C2 Systems and persistent C4 environment supporting at least four individual or team training events per year to meet cyber training and certification objectives.8. Provide C2 Systems and Persistent C4 Environment to support at least four cyber assessments promoting cyber capability development.9. Integrate at least two new capabilities per year supporting Combatant Command, Service, agency, and commercial solutions for classified and mobile computing program requirements.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 The Joint Staff												Date: March 2019			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments				Project (Number/Name) 001 / C5 Assessments and Analyses						
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
Contract Management and Engineering Technical Services	C/CPFF	Various : Norfolk, Suffolk, Eglin	23.082	12.898	Oct 2017	11.648	Oct 2018	9.275	Oct 2019	-		9.275	Continuing	Continuing	-
Subtotal			23.082	12.898		11.648		9.275		-		9.275	Continuing	Continuing	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			23.082	12.898		11.648		9.275		-		9.275	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 The Joint Staff																Date: March 2019							
Appropriation/Budget Activity								R-1 Program Element (Number/Name)				Project (Number/Name)											
0400 / 4								PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>				001 / <i>C5 Assessments and Analyses</i>											
FY 2018				FY 2019				FY 2020				FY 2021				FY 2022							
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<i>Joint C5I</i>																							
C5 Assessments and Analyses																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 The Joint Staff				Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 001 / <i>C5 Assessments and Analyses</i>		
Schedule Details				
Events by Sub Project		Start	End	
<i>Joint C5I</i>		Quarter	Year	Quarter
C5 Assessments and Analyses		1	2020	4
				2020

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A. Mission Description and Budget Item Justification

C5 capability development functions as the DoD requirements lead for the joint command and control family of programs, Joint cyber, and requirements lead for mission partner environment (MPE). The program also develops joint C4 architectures, joint common systems functions, joint mission threads, leads analysis and reviews architectures and standards in joint capability development systems. C5 development enables warfighter access to authoritative data sources and improves data interoperability by establishing common C2 data and service standards.

B. Accomplishments/Planned Programs (\$ in Millions)

<p>Title: C5 Capability Development</p> <p>Description: Lead C2 capability development and integration in order to achieve an interdependent joint force. Supports Chairman's focus to improve joint warfighter capability and enhance global integration. This will be accomplished through four focus areas: capability development, C4 architectures, data and services, and interoperability and integration.</p> <p>FY 2019 Plans:</p> <p>Capability Development – analyze and coordinate the Department's FY 2021-2025 C2 integrated priority lists and capability gap assessment for JROC approval. Develop and coordinate annual Joint C2 FY 2020 and FY 2021 operational priorities for JROC approval. Facilitate Nuclear C3 requirements through the JROC process for C4/Cyber-aligned capabilities. Enhance C2 requirements creation, validation, and management through the Net-enabled Requirements Identification Database (NRID) and Decision Support Tool (DST) suite, and development and management of aligned JCIDS capability development documents. Provide requirements management and operational focus to test and field the Global Command and Control System-Joint (GCCS-J) version 6.0 and begin development of its follow-on GCCS-J Enterprise (GCCS-JE) cloud-accessible solution utilizing Agile/DevOps acquisition methodologies. Ensure warfighter demands for a functional denied-disconnected, intermittent, low-bandwidth capability at the Combined/Joint Task Force-level are adequately understood and addressed by the capability developer. Ensure capability needs are addressed for 1) Command and Control of the Information Environment (C2IE) transition and enhancement, 2) Joint Force Capability Catalog/Global Laydown Server (JFCC/GLS)/ORION development and sustainment, and 3) Joint Planning Services (JPS) materiel development and transition.</p> <p>C4 Architectures - provide architecture and joint mission thread development and analysis efforts as required to support the Chairman's directed focus areas and Chief Information Officer (CIO) lines of operations. Provide architectures and analytical</p>	6.590	5.787	5.787
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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019		
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)			
0400 / 4	PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments	002 / C5 Capability Development			
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018	FY 2019	FY 2020
	<p>support as required to the Chairman's Joint Military Net Assessment. Conduct analysis and validate architectures and engineering designs for continued implementation of the Joint Information Environment (JIE). Update the warfighter mission area (WMA) architecture development standards to improve WMA architecture portal usability. Continue to improve the quality of and expand the amount of the C4/Cyber portfolio architecture information available on the WMA architecture portal. Conduct analyses and develop architectures and metrics for JCIDS capability requirement documents.</p> <p>Data and Services – develop, promote, and integrate warfighter data and services requirements, standards, technical specifications, and policy to improve warfighter interoperability and information sharing with joint, mission partners, and other U.S. government departments and agencies. Perform and lead proof of concept activities of the North Atlantic Treaty Organization (NATO) core data framework and the National Information Exchange Model (NIEM) with selected communities of interest, such as robotics and autonomous systems, to achieve coalition interoperability and demonstrate operational effectiveness for the Mission Partner Environment and for the Federated Mission Networking domain. Continue to align and standardize emerging tactical data link, symbology (including cyber symbology) and messaging standards with enterprise information sharing. Support and guide the maturation of and implementation of NIEM in the interagency, joint and coalition domains as the common enterprise level interoperability information exchange standard for new and updated IT services.</p> <p>Integration and interoperability – lead mission partner environment (MPE) implementation and support cyber priorities across DoD by performing analysis, conducting assessments and supporting materiel developers. Review and monitor the continued development of the MPE information system to ensure it meets the operational requirements of the Combatant Commands and Services and complements the greater MPE initiative. Continue to shape NATO future mission networking implementation to ensure it remains aligned with MPE, including related capability development. Support development and maturation of DOD enterprise cyber-range environment command and control information system to support US and coalition cyber force readiness, cyber defense of coalition networks, integration, interoperability, and defensibility of mission partner environment federated networks. Coordinate and lead non-overseas contingency operations-funded coalition interoperability events across the geographic Combatant Commands.</p>				
FY 2020 Plans:	Capability Development – Analyze and coordinate the Department's FY 2022-2026 C2 integrated priority lists and capability gap assessment for JROC approval. Develop and coordinate annual Joint C2 FY 2021 and FY 2022 operational priorities for JROC approval. Enhance C2 requirements validation and management through the Net-enabled Requirements Identification Database (NRID) and Decision Support Tool (DST) suite, and development and management of aligned JCIDS capability development documents. Provide requirements management and operational focus to develop and field the Global Command and Control System-Joint Enterprise (GCCS-JE) cloud-accessible solution utilizing Agile/DevOps acquisition methodologies. Additionally,				

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments	Project (Number/Name) 002 / C5 Capability Development	
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
<p>participate in quarterly Program Increment planning session for Agile/DevOps development of GCCS-JE. Ensure warfighter demands for a functional denied-disconnected, intermittent, low-bandwidth capability at the Combined/Joint Task Force-level are adequately understood and addressed by the capability developer. Ensure joint capability needs are addressed for:</p> <p>(1) Nuclear C3 requirements for C4/Cyber-aligned capabilities</p> <p>(2)Command and Control of the Information Environment(C2IE)</p> <p>(3)Joint Force Capability Catalog/Global Laydown Server (JFCC/GLS)/ORION</p> <p>(4)Joint Planning Services (JPS) modernization and sustainment</p> <p>(5) Multi-domain Battle C2 initial prototype capability development. Integrate missile warning enhancements identified in VCJCS Competitive Area Study into GCCS-J. Collaborate with J2 and OSD(I) to identify/prioritize Intelligence Support to C2 requirements for materiel solution development.</p> <p>C4 Architectures - Provide architecture and joint mission thread development and analysis products as required to support the Chairman's directed focus areas and Chief Information Officer (CIO) lines of operations (e.g. operational context for Artificial Intelligence). Provide architecture and analysis as required in support of Chairman's Priorities (e.g. Joint Military Net Assessment, Coalition Interoperability). Conduct analysis and validate architectures and engineering designs for continued implementation of the Joint Information Environment (JIE). Update the Joint Common Service/System Function List and Warfighter Mission Area (WMA) architecture development standards to improve WMA architecture integration and interoperability. Continue to improve the quality of and expand the amount of the FCB portfolio architectures available on the WMA architecture portal. Conduct analyses and develop architectures and metrics for JCIDS capability requirement documents.</p> <p>Data and Services – Develop, promote, and integrate warfighter data and services requirements, standards, technical specifications, and policy to improve warfighter interoperability and information sharing with joint, mission partners, and other U.S. government departments and agencies. Perform and lead proof of concept activities of the North Atlantic Treaty Organization (NATO) core data framework and the National Information Exchange Model (NIEM) with selected communities of interest, such as robotics and autonomous systems, to achieve coalition interoperability and demonstrate operational effectiveness for the Mission Partner Environment and for the Federated Mission Networking domain including one complex demonstration with NATO and one Service partners. Continue to lead, align and standardize emerging tactical data link, symbology (including cyber symbology) and messaging standards with enterprise information sharing. Support and guide the maturation of and implementation of NIEM</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 002 / <i>C5 Capability Development</i>		
B. Accomplishments/Planned Programs (\$ in Millions)				
<p>in the interagency, joint and coalition domains as the common enterprise level interoperability information exchange standard for new and updated IT services. Support standardization of common warfighter Identity Access Management, robust cyber security, standardized interfaces and common data tagging to promote warfighter interoperability. Support joint command and control governance and requirements documents development (Information Support Plan (ISP))to ensure data and service equities are properly represented on behalf of the warfighter.</p> <p>Interoperability and Integration - Lead mission partner environment (MPE) implementation and support coalition cyber priorities across DoD by performing analysis, conducting assessments and supporting materiel developers. Review and monitor the continued development of the MPE information system to ensure it meets the operational requirements of the Combatant Commands and Services and complements the greater MPE initiative. Continue to shape North Atlantic Treaty Organization (NATO) federated mission networking (FMN) implementation to ensure it remains aligned with MPE, including related capability development. Participate in the Combined Communications-Electronics Board to ensure interoperability among the Five Eyes nations (Canada, New Zealand, Australia, UK and US). Coordinate and lead Coalition Interoperability Assurance and Validation (CIAV) interoperability mission-based assessments across the geographic Combatant Commands. Lead the NATO-sponsored Coalition Warrior Interoperability Exploration, Experimentation, Examination, Exercise's FMN Focus Area to ensure standardized, effective development of Joining, Membership, and Exit Instructions.</p>	FY 2018	FY 2019	FY 2020	
FY 2019 to FY 2020 Increase/Decrease Statement: \$137K in FY 2019 resources were transferred to support the Small Business Innovation Research program. The FY 2020 requested amount reflects the mandated 25% Major Headquarters Activities (MHA) reductions prescribed by the 2016 NDAA.				
Accomplishments/Planned Programs Subtotals		6.590	5.787	5.787
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
Biannual review of C4/Cyber resources includes an examination of the current and future Budget/Spend Plan, Lines of Effort, and Acquisition Strategy.				
The award of a Multi Award Contract (MAC) seeks efficiencies in the performance of requirements for C4/Cyber and Information services, and promotes contractor teaming to provide critical technical and management support. The MAC approach also seeks to reduce the costs of current contract support through the elimination of multiple fees for service contracts, and through the competitive award of contract services.				

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 002 / <i>C5 Capability Development</i>
E. Performance Metrics		
<ol style="list-style-type: none">1. Secure DoD approval for following JCIDS documents to meet warfighter capability gaps: Information Systems-Initial Capability Document (IS-ICD) for Cyber C2, and Capability Definition Package (CDP)/Capability Package (CP) for Joint Cyber C2 in coordination with USAF and USCYBERCOM; CPs for Intelligence Support to C2/targeting in coordination with J2; IS-ICD for Fires in coordination with U.S. Army; CPs for Global-Theater Security Cooperation Management Information System (G-TSCMIS) in coordination with DSCA; CP for C2IE in coordination with JS J39; CP for Missile Warning in coordination with USSSTRATCOM; and Joint Planning and Execution Services Phase II functional requirements specifications in coordination with J3.2. Secure JROC approval of the FY 2020 and FY 2021 joint C2 operational priorities defining C2 capability needs/gaps providing senior level oversight and direction to joint C2 capability development.3. Ensure Joint C2 requirements development supports the DoD-directed better buying power by continuing the rapid development and fielding of virtualized C2 system capabilities to Combatant Commands and Services. Advocate and participate in quarterly GCCS-JE Program Increment planning sessions to prioritize Agile backlog of capabilities for development IAW warfighter demand signal.4. Revise the warfare mission area architecture development standards, Joint Common Service/System Function List and JMT governance to align with new JCIDS Manual Requirements, new JCAs and changes to cyberspace operations functionality.5. Review, analyze and validate warfighter capability requirements in 35 JCIDS, joint information environment and mission partner environment architectures.6. Conduct three National Information Exchange Model Military Operations Domain Configuration Control Board sessions to improve and increase information sharing via promulgation of one domain content update.7. Include mission partnering concepts in four Combatant Command and Service exercises.8. Establish at least two new or enhanced information/sharing and collaboration areas.9. Establish and refine processes and procedures to ensure FMN implementation is included in two NATO exercises.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 The Joint Staff												Date: March 2019			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments				Project (Number/Name) 002 / C5 Capability Development						
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
Contract Management and Engineering Technical Services	C/CPFF	Various : Norfolk, Suffolk	13.673	6.590	Oct 2017	5.787	Oct 2018	5.787	Oct 2019	-		5.787	Continuing	Continuing	-
Subtotal			13.673	6.590		5.787		5.787		-		5.787	Continuing	Continuing	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			13.673	6.590		5.787		5.787		-		5.787	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 The Joint Staff															Date: March 2019
Appropriation/Budget Activity					R-1 Program Element (Number/Name)					Project (Number/Name)					
0400 / 4					PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>					002 / <i>C5 Capability Development</i>					
				1	2	3	4	1	2	3	4	1	2	3	4
C5 Capability Development															
C5 Capability Development								[REDACTED]							

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 The Joint Staff				Date: March 2019	
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 002 / <i>C5 Capability Development</i>			
Schedule Details					
Events by Sub Project		Start		End	
C5 Capability Development		Quarter	Year	Quarter	Year
C5 Capability Development		1	2020	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 4					PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments				003 / Joint Fires C2 Interoperability				
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	
003: Joint Fires C2 Interoperability	8.575	4.150	5.000	5.000	-	5.000	5.000	5.000	5.000	5.000	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
Lead interoperability efforts across DoD and partner nations at the operational and tactical level for mission partner operations, fire support, combat identification (CID), and friendly force tracking (FFT) capabilities. Conduct joint fire support, joint close air support and CID-FFT action plans to fulfill CJCS-directed, General Officer/Flag Officer (GOFO) level responsibilities. Conduct Joint Fire Support Executive Steering Committee (JFS ESC) standardization team accreditation visits to U.S. and partner nation schoolhouses to ensure memorandum of agreement signatories are accomplishing schoolhouse training in compliance with the memoranda.													
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020
Title: Joint Fires C2 Interoperability Description: These efforts directly support Chairman, Joint Chiefs of Staff (CJCS) guidance to increase interoperability with allies and partners, to more effectively counter trans-regional threats. Supports Chairman's focus area of improving joint warfighting capability and the SECDEF's line of effort to strengthen alliances and attract new partners. Execute Joint Staff-sponsored Bold Quest systems-of-systems interoperability assessment, including integration of cyber capabilities with command and control of conventional and Special Operations Force missions from a multinational perspective at the tactical level. Lead the Joint Fire Support Executive Steering Committee (JFS ESC), composed of Flag/General Officer representatives and supporting staffs from the U.S. Services, Special Operations Command and 21 partner nations. Those nations include NATO nations, Australia, Republic of Korea and key Gulf State allies. Also lead the Combat Identification – Friendly Force Tracking Executive Steering Committee (CID-FFT ESC), focused on more effective and efficient combat operations and reduced potential for friendly fire incidents. FY 2019 Plans: Plan and execute Joint Staff-sponsored Bold Quest 2019 capability demonstration and assessment, focused on interoperability for joint and coalition fires. Bold Quest data and assessments inform US and Partner Nation investment in multiple capability areas: combat identification, friendly force tracking, digitally aided close air support and fires, integrated air and missile defense, coalition intelligence surveillance and reconnaissance, and cyber. These efforts directly support the National Military Strategy, the CJCS' global integration objectives and the Combatant Commanders conventional and SOF international engagement programs. Continue leading accreditation visits of current JFS ESC member programs and provided staff assistance for development of close air support-related training and certification programs. FY 2020 Plans:											4.150	5.000	5.000

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments	Project (Number/Name) 003 / Joint Fires C2 Interoperability	
B. Accomplishments/Planned Programs (\$ in Millions) Plan and execute Joint Staff-sponsored Bold Quest 2020 capability demonstration and assessment, focused on interoperability for joint and coalition fires. Bold Quest data and assessments inform US and Partner Nation investment in multiple capability areas: combat identification, friendly force tracking, digitally aided close air support and fires, integrated air and missile defense (Mode 5 Identify Friend or Foe), coalition intelligence surveillance and reconnaissance, integrated interoperable simulations, and cyber. These efforts directly support the National Military Strategy, the CJCS' global integration objectives and the Combatant Commanders conventional and SOF international engagement programs. Continue leading accreditation visits of current JFS ESC member programs and provide staff assistance visits for development of close air support-related training and certification programs.			FY 2018
			FY 2019
			FY 2020
FY 2019 to FY 2020 Increase/Decrease Statement: \$119K in FY 2019 resources were transferred to support the Small Business Innovation Research program. The FY 2020 requested amount reflects the mandated 25% Major Headquarters Activities (MHA) reductions prescribed by the 2016 NDAA.			
			Accomplishments/Planned Programs Subtotals
			4.150
			5.000
			5.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy Biannual review of C4/Cyber resources includes an examination of the current and future Budget/Spend Plan, Lines of Effort and Acquisition Strategy.			
The award of a Multi Award Contract (MAC) seeks efficiencies in the performance of requirements for C4/Cyber and Information services, and promotes contractor teaming to provide critical technical and management support. The MAC approach also seeks to reduce the costs of current contract support through the elimination of multiple fees for service contracts, and through the competitive award of contract services.			
E. Performance Metrics			
1. Lead development, demonstration and assessment of situational awareness and cooperative/non-cooperative identification capabilities that enable U.S. and NATO/Coalition warfighters to identify friendly, enemy, and neutral forces for "shoot/don't shoot" decisions.			
2. Synchronize Service testing, acquisition and fielding of Mode 5 IFF capability, with focus on Full Operational Capability (FOC) in 2020. Monitor Service fielding progress of 169 platform types.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 003 / <i>Joint Fires C2 Interoperability</i>
3. Due to resource re-phasing, lead the design, planning and execution of two risk reduction sized Bold Quest coalition capability demonstrations and assessments, in order to inform U.S. and partner nation investment in networked capabilities to improve the detection and engagement of targets via surface (ground and maritime) and air delivered fires and other non-kinetic means.		
4. Lead the digitally aided close air support (DACS) coordinated implementation initiative among all US Services, USSOCOM, and 16 partner nations; develop and document engineering change proposals' technical solutions to operational interoperability issues in the CAS mission area; maintain the associated equipment and currency of assessment tools software and licensing agreements.		
5. Lead US and partner nations with international fire support interoperability capability development initiatives, to ensure on-going efforts optimize: unity-of-effort; resource/cost benefit; and enhanced fire support integration.		
6. Expand digital call-for-fire solution development to include enhanced multi-national interoperability with 11 partner nations.		
7. Lead, coordinate, organize, and execute an annual Joint Fire Support Symposium to exchange information, identify issues, examine capability shortfalls, assess emerging technologies, and recommend areas for DoD action/resolution.		
8. Conduct accreditation assessments for 18 of 33 current signatory programs (11 Joint Terminal Attack Controller, 2 Forward Air Controller (Airborne), and 5 Joint Fires Observer).		
9. Lead development and refinement of four U.S. and NATO joint fires-related doctrine and tactics, techniques, and procedures publications.		
10. Plan and conduct quarterly Joint Fire Support and Combat ID-Friendly Force Tracking Executive Steering Committees and working group meetings to address identified shortfalls in those mission areas.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 The Joint Staff												Date: March 2019			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604826J / Joint C5 Capability Development, Integration, and Interoperability Assessments				Project (Number/Name) 003 / Joint Fires C2 Interoperability						
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
Contract Management and Engineering Technical Services	C/CPFF	Various : Norfolk	8.575	4.150	Oct 2017	5.000	Oct 2018	5.000	Oct 2019	-		5.000	Continuing	Continuing	-
Subtotal			8.575	4.150		5.000		5.000		-		5.000	Continuing	Continuing	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			8.575	4.150		5.000		5.000		-		5.000	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 The Joint Staff																Date: March 2019							
Appropriation/Budget Activity					R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 4					PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>								003 / <i>Joint Fires C2 Interoperability</i>										
					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				
Joint Fires C2 Interoperability																							
Joint Fires C2 Interoperability																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604826J / <i>Joint C5 Capability Development, Integration, and Interoperability Assessments</i>	Project (Number/Name) 003 / <i>Joint Fires C2 Interoperability</i>	
Schedule Details			
Events by Sub Project		Start	End
<i>Joint Fires C2 Interoperability</i>		Quarter	Year
Joint Fires C2 Interoperability		1	2020
		4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019	
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: <i>RDT&E Management Support</i>					PE 0603829J / <i>Joint Capability Experimentation</i>							
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
Total Program Element	0.000	0.000	0.000	13.000	-	13.000	0.000	0.000	0.000	0.000	Continuing	Continuing
001: <i>Joint Capability Experimentation</i>	-	0.000	0.000	13.000	-	13.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

NDAA 19 amends the Chairman's responsibilities to address experimentation on future concepts and the 2018 National Defense Strategy Implementation Guidance directs that rigorous experimentation take place on concepts to ensure Department investments adequately address future requirements as well as those of today. As such, the Joint Staff will establish an experimentation capability to analyze and validate priority joint concept required capabilities.

Concept analysis and validation will have a multi-faceted nature to meet the Chairmen's Title 10 responsibility of, "identifying new joint military capabilities based on advances in technology and concepts of operation, and recommending investments and experiments in such capabilities." Wargames will assess baseline mission and campaign level outcomes of the concepts as well as identify a tradespace of potential new capabilities. This tradespace of capabilities is further explored with quantitative models and software that identify the most efficient cost and capability tradeoffs to help meet the Title 10 responsibility of "advising the Secretary on new and alternative joint military capabilities, and alternative program recommendations and budget proposals, within projected resource levels."

The National Defense Strategy directs "early design tradeoffs in the requirements process to increase the speed of delivery." The Joint Staff approach to tradespace exploration follows that guidance by providing a cost conscious and operationally relevant prioritization tradeoff technique early in the portfolio design process. Using this rigorous prioritization approach, the capability development cycle can efficiently focus resources on more detailed experimentation of specific capabilities to inform the requirements process. The analysis from the experimentation program will be used to provide foundational evidence to directly inform the Joint Military Net Assessment (JMNA), the Chairman's Program Recommendation (CPR), and ultimately the Defense Planning Guidance for Joint Force development and design.

B. Program Change Summary (\$ in Millions)

	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	13.000	-	13.000
Total Adjustments	0.000	0.000	13.000	-	13.000
• Congressional General Reductions	-	0.000			
• Congressional Directed Reductions	-	0.000			
• Congressional Rescissions	-	0.000			
• Congressional Adds	-	0.000			
• Congressional Directed Transfers	-	0.000			
• Reprogrammings	-	0.000			
• SBIR/STTR Transfer	-	0.000			
• New program start	-	-	13.000	-	13.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff	Date: March 2019
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0603829J / <i>Joint Capability Experimentation</i>
Change Summary Explanation FY 2020 increase is due to a new program element start in FY 2020 to expand joint experimentation activities.	

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0603829J / Joint Capability Experimentation				Project (Number/Name) 001 / Joint Capability Experimentation				
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	
001: Joint Capability Experimentation	-	0.000	0.000	13.000	-	13.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

The FY19 NDAA amends the Chairman's responsibilities to address experimentation on future concepts and the 2018 National Defense Strategy Implementation Guidance directs vigorous experimentation take place on concepts to ensure department investments are adequately addressing future requirements as well as those today. As such, the Joint Staff will establish an experimentation capability to analyze and prioritize joint concept required capabilities. The specific and rigorous analysis from the this experimentation program will be used to provide foundational evidence to directly inform portion of the Joint Military Net Assessment (JMNA), the Chairman's Program Recommendation (CPR), and ultimately the Defense Planning Guidance. The project will deliver analytically rigorous, resource conscious and operationally validated portfolio investment strategies for the CJCS to ensure an enduring competitive advantage.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020
Title: Joint Capability Experimentation	0.000	0.000	13.000
Description: The FY19 NDAA amends the Chairman's responsibilities to address experimentation on future concepts and the 2018 National Defense Strategy Implementation Guidance directs vigorous experimentation take place on concepts to ensure department investments are adequately addressing future requirements as well as those today. The project will deliver analytically rigorous, resource conscious and operationally validated portfolio investment strategies for the CJCS to ensure an enduring competitive advantage.			
FY 2019 Plans: Not applicable. This is a new program element starting in FY 2020.			
FY 2020 Plans: Integrate, synthesize, and prioritize concept required capabilities for Joint Force development and design efforts out to 2030 that are aligned with the Capstone Concept for Joint Operations: Joint Force 2030 and based on Joint Operating Concepts for Russia and North Korea.			
Identify priority concept required capabilities using a set criteria of criticality, strategic guidance, and Combatant Command and Service priorities.			
Evaluate and validate priority concept required capabilities through an integrated and federated experimentation, exercises, wargames, and studies approach.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0603829J / Joint Capability Experimentation	Project (Number/Name) 001 / Joint Capability Experimentation		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
Conduct tradespace exploration studies to help prioritize the most efficient options based on cost and capability tradeoffs.				
In FY 2020, the top 5 to 10 priority CRC's will be evaluated and validated in two joint and/or service exercises; at least one technology demonstration; at least one Globally Integrated Operations (GIO) wargame; leveraging already planned Service and Combatant Command events with extensive use of modeling and simulation. Experimentation via research and development, science and technology, and Defense Advanced Research Projects Agency (DARPA) will be leveraged.				
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 increase is due to a new program element start to expand joint experimentation activities.				
				Accomplishments/Planned Programs Subtotals
				0.000 0.000 13.000
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
Performance metrics are measured through internal management controls and external assessments. Performance metrics include, but are not limited to time, money, realism, and fidelity defined as follows:				
Time – Will the effort enable the warfighter faster access to future capabilities at the speed of relevance than current capabilities/processes allow?				
Money – Will the effort enable the DOD to reduce duplication of effort and to prepare and execute events at a more effective and efficient cost than current capabilities allow?				
Realism – Will the effort enable the warfighter to create an environment that is closer to what he/she will operate in during real world operations than current capabilities allow?				
Fidelity – Will the effort ensure unity of effort throughout the Force Development and Design Community?				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019					
Appropriation/Budget Activity					R-1 Program Element (Number/Name)											
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: <i>RDT&E Management Support</i>					PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)											
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				
Total Program Element	342.874	36.581	52.565	70.038	-	70.038	65.946	69.770	75.036	73.721	Continuing	Continuing				
P001: Core	143.254	9.343	9.967	11.657	-	11.657	11.601	10.860	10.860	10.860	Continuing	Continuing				
P003: Black Dart	28.483	3.000	3.000	5.500	-	5.500	5.634	5.370	6.424	6.231	Continuing	Continuing				
P004: Joint Distributed Engineering Plant	19.748	2.738	1.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.486				
P005: Nimble Fire	81.769	16.000	14.000	28.226	-	28.226	21.036	21.065	20.277	19.155	Continuing	Continuing				
P006: Cruise Missile Combat Identification (CID)	69.620	5.500	4.998	4.655	-	4.655	4.675	4.475	4.475	4.475	Continuing	Continuing				
P007: Homeland Defense Capability	0.000	0.000	15.000	20.000	-	20.000	23.000	28.000	33.000	33.000	Continuing	Continuing				
P008: Joint Regional Integrated Air and Missile Defense Capability	0.000	0.000	4.600	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing				

A. Mission Description and Budget Item Justification

The Joint Integrated Air and Missile Defense Organization (JIAMDO) is the organization within the Department of Defense chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, joint operational concepts, and operational architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the operational community's proponent for requirements and capabilities in IAMD, and is the joint IAMD proponent within the DoD's resource allocation structures. JIAMDO also leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, conducts evaluations, demonstrations of joint IAMD architectures, and provides advocacy for innovative, technically mature, and affordable solutions.

JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to facilitate coordination of integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs, and assesses the validity of those criteria in relation to national and military requirements. At the request of USSTRATCOM and direction of the CJCS, JIAMDO supports USSTRATCOM in the development of the IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and technical oversight of homeland capability solutions.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff					Date: March 2019
Appropriation/Budget Activity	R-1 Program Element (Number/Name) PE 0605126J / <i>Joint Integrated Air & Missile Defense Organization (JIAMDO)</i>				
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	36.581	52.565	56.162	-	56.162
Current President's Budget	36.581	52.565	70.038	-	70.038
Total Adjustments	0.000	0.000	13.876	-	13.876
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program adjustments	-	-	13.876	-	13.876
Change Summary Explanation					
JIAMDO program changes from FY 2019 to FY 2020 is a combination of: \$15,000K added to Project NIMBLE FIRE for modeling and simulation capability enhancements to improve fidelity of EW and IR capability models. \$1,124K in FY 2020 reductions to meet MHA goals prescribed by 2016 NDAA.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				Project (Number/Name) P001 / Core				
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	
P001: Core		143.254	9.343	9.967	11.657	-	11.657	11.601	10.860	10.860	10.860	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Integrated Air and Missile Defense Organization (JIAMDO) is chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, concepts, and architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting his Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the IAMD proponent for requirements and capabilities within the DoD's resource allocation system. JIAMDO leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, and conducts evaluations of joint IAMD architectures.

JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to coordinate integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs. At the request of USSTRATCOM and at the direction of the CJCS, JIAMDO supports USSTRATCOM development of IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and homeland defense solutions.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Core	FY 2018	FY 2019	FY 2020
Description: Provides staff support for JIAMDO operations in the area of ballistic missile defense, air and cruise missile defense, homeland defense, requirements management, combat identification, modeling and simulation, analytical functions and products, senior level briefings, and all travel costs for government and contractor support personnel. Routine functions include performing analyses, demonstrations, and programmatic assessments of technology, operations, requirements, and weapons systems. In coordination with Services and CCMDs, JIAMDO Core funds the definition, assessment, development, and approval of Joint IAMD operational concepts, operational architectures, and capability requirements. These assessments guide the Department's joint, interagency, integrated and net-centric IAMD. JIAMDO Core provides funding to:	9.343	9.967	11.657
1. Conduct and integrate joint studies, simulations, war games, force resource allocation, and interoperability initiatives.			
2. Manage relevant Congressional interaction and CCMD interface through a cadre of liaisons collocated with major headquarters.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)	
0400 / 6	PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)	P001 / Core	
B. Accomplishments/Planned Programs (\$ in Millions)			
3. Directly support and sponsor homeland air surveillance-related demonstration and analysis activities.		FY 2018	FY 2019
4. Manage the IAMD Working Group and co-chair the Protection Functional Capabilities Board focusing CCMD, Joint Staff, and Service collaboration efforts to generate joint concepts and develop the IAMD architecture and roadmap.			FY 2020
JIAMDO Core enables strategic planning development, security, travel, and other support activities. Funding pays for: contracted Systems Engineering and Technical Assistance (SETA) support for Air & Cruise Missile Defense (ACMD), Ballistic Missile Defense (BMD), Homeland Air Security (HAS) strategic planning, studies & analysis, combat ID, modeling & simulation. Additionally, the JIAMDO Core budget funds daily on-site security management personnel to meet DoD, National Industrial Security Program Operating Manual (NISPOM), and other security regulations, for all administrative and support functions related to higher security classifications, as well as basic office supplies and furniture, and classified/unclassified data connections.			
FY 2019 Plans: Perform Ballistic Missile Defense studies as directed by higher authority and provide contracted expertise in support of all JIAMDO analytical and requirements management activities. Execute DepSecDef directed tasking for non-kinetic and kinetic layered defense modeling. Continue support to Chairman's Net Assessment, Joint Military Net Assessment and OSD Policy using analysis and study findings.			
FY 2020 Plans: Perform Ballistic Missile Defense studies as directed by higher authority and provide contracted expertise in support of all JIAMDO analytical and requirements management activities. Continue DepSecDef directed tasking for non-kinetic and kinetic layered defense modeling. Continue support to Chairman's Net Assessment, Joint Military Net Assessment and OSD Policy using analysis and study findings.			
FY 2019 to FY 2020 Increase/Decrease Statement: The FY 2020 requested amount, as well as the future years request, reflects un-executed resources from prior year and an associated re-phasing of resources into FY 2021 and FY 2022.			
Accomplishments/Planned Programs Subtotals			9.343 9.967 11.657
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / <i>Joint Integrated Air & Missile Defense Organization (JIAMDO)</i>	Project (Number/Name) P001 / <i>Core</i>
E. Performance Metrics		
(1) Support two major Nimble Fire exercises during FY 2020.		
(2) Conduct two IAMD Working Groups and at least one Functional Capabilities Board per month.		
(3) Conduct the annual Black Dart Counter-Unmanned Aerial System technology demonstration.		
(4) Support U.S. Representative to NATO Air Defense Council and Missile Defense Committee including two overseas meetings per year and numerous lower-level supporting functions.		
(5) Develop and maintain operational architecture compliance with DoD Architectural Framework (DODAF) standards.		
(6) Ensure 100% of all government employee travel is in accordance with the Joint Federal Travel Regulation/Joint Travel Regulation and all contractor travel is in accordance with applicable regulations.		
(7) Maintain all unclassified/classified LANs on a daily basis in accordance with the Joint Staff's Office of the Chief Information Officer guidance/policy.		
(8) Ensure all computers, NIPRNET/SIPRNET, are refreshed according to applicable policy/guidance.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				Project (Number/Name) P003 / Black Dart				
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	
P003: Black Dart	28.483	3.000	3.000	5.500	-	5.500	5.634	5.370	6.424	6.231	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

The Joint Integrated Air and Missile Defense Organization (JIAMDO) is chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, concepts, and architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting his Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the IAMD proponent for requirements and capabilities within the DoD's resource allocation system. JIAMDO leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, and conducts evaluations of joint IAMD architectures.

JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to coordinate integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs. At the request of USSTRATCOM and at the direction of the CJCS, JIAMDO supports USSTRATCOM development of IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and homeland defense solutions.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Black Dart Counter Unmanned Aircraft Systems Technology Demonstration	FY 2018	FY 2019	FY 2020
<p>Description: Provides funding to support administration and execution of Black Dart demonstrations. Black Dart is a unique joint, interagency demonstration focusing on rapid development and implementation of Counter - Unmanned Aircraft Systems (C-UAS) technology from readily-available commercial and governmental products. Objectives include:</p> <ol style="list-style-type: none"> 1. Execute live-fly, live-fire C-UAS technology demonstration to assess and validate existing and emerging Integrated Air and Missile Defense (IAMD) capabilities. 2. Present emerging solutions to inform requirements decision-making. 3. Identify and develop IAMD operational concepts, system interoperability, and operational architectures for the C-UAS mission set. 	3.000	3.000	5.500

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / <i>Joint Integrated Air & Missile Defense Organization (JIAMDO)</i>	Project (Number/Name) P003 / <i>Black Dart</i>	
B. Accomplishments/Planned Programs (\$ in Millions) 4. Advocate for C-UAS capabilities and affordable, integrated solutions.			FY 2018
FY 2019 Plans: Perform Ballistic Missile Defense studies as directed by higher authority and provide contracted expertise in support of all JIAMDO analytical and requirements management activities. Execute DepSecDef directed tasking for non-kinetic and kinetic layered defense modeling. Continue support to Chairman's Net Assessment, Joint Military Net Assessment and OSD Policy using analysis and study findings.			FY 2019
FY 2020 Plans: Performing Ballistic Missile Defense studies as directed by higher authority and provide contracted expertise in support of all JIAMDO analytical and requirements management activities. Execute DepSecDef and JROC directed tasking for non-kinetic and kinetic layered defense modeling. Continue support to Chairman's Net Assessment, Joint Military Net Assessment, Comparative Area Study and OSD Policy using analysis and study findings.			FY 2020
FY 2019 to FY 2020 Increase/Decrease Statement: Net increase of \$2.3M from FY 2019 to FY 2020 is due to realignment of remaining JDEP resources into Black Dart. Additional funds are needed since Black Dart operations are being moved to the Eglin range, which is more expensive to utilize. Although the Eglin range costs more, it can incorporate maritime C-UAS systems along with land based systems for multi-domain testing.			
Accomplishments/Planned Programs Subtotals			3.000 3.000 5.500
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics 1. Document gaps, develop and substantiate hardware, software, and employment concepts. 2. Field C-UAS capability.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				P004 / Joint Distributed Engineering Plant				
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	
P004: Joint Distributed Engineering Plant	19.748	2.738	1.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.486	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Integrated Air and Missile Defense Organization (JIAMDO) is chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, concepts, and architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting his Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the IAMD proponent for requirements and capabilities within the DoD's resource allocation system. JIAMDO leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, and conducts evaluations of joint IAMD architectures.

JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to coordinate integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs. At the request of USSTRATCOM and at the direction of the CJCS, JIAMDO supports USSTRATCOM development of IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and homeland defense solutions.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
Title: Joint Distributed Engineering Plant (JDEP)	2.738	1.000	0.000
Description: The JDEP is a tool for evaluating interoperability of emerging or newly fielded systems; identifying interoperability deficiencies in existing systems; and verifying corrective actions in a controlled, repeatable environment through the use of hardware in the loop.			
FY 2019 Plans: Fund multiple, distributed test events to assess the interoperability of joint IAMD weapons systems with a focus on C-UAS capabilities to counter the emerging threat of Group 1 and 2 UAS. Continue to leverage live-fly data of the Black Dart technology demonstrations to develop scenarios that replicate the future operational environments.			
FY 2020 Plans: In FY20, JDEP will be absorbed under the Black Dart program and will no longer execute as a stand-alone program.			
FY 2019 to FY 2020 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / <i>Joint Integrated Air & Missile Defense Organization (JIAMDO)</i>	Project (Number/Name) P004 / <i>Joint Distributed Engineering Plant</i>	
B. Accomplishments/Planned Programs (\$ in Millions) JDEP functions will be absorbed under the Black Dart program in FY 2020.		FY 2018	FY 2019
		Accomplishments/Planned Programs Subtotals	2.738
			1.000
			0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
1. Each JDEP event develops measures of effectiveness (MOE) & measures of performance (MOP) based on an eighteen month test planning and event process.			
2. Complete events within schedule and budget.			
3. Events provide useful data to improve air missile defense interoperability, with implemented and recommended corrective changes.			
4. Events must be linked to the current approved IAMD architecture, provide joint benefit, contribute to joint interoperability, and address IAMD capability gaps.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				Project (Number/Name) P005 / Nimble Fire				
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	
P005: Nimble Fire	81.769	16.000	14.000	28.226	-	28.226	21.036	21.065	20.277	19.155	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

The Joint Integrated Air and Missile Defense Organization (JIAMDO) is chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, concepts, and architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting his Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the IAMD proponent for requirements and capabilities within the DoD's resource allocation system. JIAMDO leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, and conducts evaluations of joint IAMD architectures.

JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to coordinate integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs. At the request of USSTRATCOM and at the direction of the CJCS, JIAMDO supports USSTRATCOM development of IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and homeland defense solutions.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: JIAMDO Nimble Fire	FY 2018	FY 2019	FY 2020
Description: Nimble Fire is the Department's only IAMD operator-in-the-loop modeling and simulation capability supporting the Chairman's top five critical joint IAMD capabilities: wide-area surveillance and engagement quality tracking, pre-launch interdiction, non-kinetic post-launch capabilities, ballistic missile discrimination, and increased weapons ranges and lethality. Nimble Fire events generally explore joint IAMD capabilities and concepts in the FYDP plus two timeframe. The events combine experienced operators from the tactical communities, virtual simulations accredited by the program offices, current and future advanced capabilities, an integrated air, ballistic and cruise missile threat, and informed scenarios based on the Department's analytical agenda and CCMD operational plans. JIAMDO brings together stakeholders across the engineering, analytical, and tactical communities to assess Joint interoperability of Service and MDA programs of record, explore concepts of employment, inform tactics, techniques and procedures and concepts of operation, provide insights that help shape CCMD integrated priorities and future operational plans, and inform senior leader acquisition and requirements decisions.	16.000	14.000	28.226
FY 2019 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)	Project (Number/Name) P005 / Nimble Fire	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018 FY 2019 FY 2020
Execute two Nimble Fire events in support of PACOM, USFK, STRATCOM, and MDA. Nimble Fire 19A will introduce limited offensive capabilities, defense of hypersonic missile threats, offensive & defensive long-range fires, and continue Patriot & THAAD integration in support of USFK JEONS. Nimble Fire 19B will provide direct support to USAF Air Combat Command (ACC) exploring several potential tactical command & control alternatives within the USAF's 2030 air superiority concepts.			
Modeling and simulation upgrades: 1. Include weather effects (e.g., rain and clouds) on Infrared (IR) based kill chains 2. Higher-fidelity IR signatures 3. Surface Electronic Warfare Improvement Program (SEWIP) Block 3 capability within the Aegis simulation 4. SPY-6 radar model integration into Aegis 5. Increase numbers of F-35 simulations (8 to 12+) 6. F-16 simulation with APG-83 advanced electronically scanned array (AESA) radar 7. USA and USMC long-range precision fires and kill chains 8. AARGM-ER and other long-range weapons for fighters 9. Unmanned aerial systems and unmanned surface systems teaming concepts, kill chains, and capabilities 10. Additional classified capabilities			
FY 2020 Plans: Execute two Nimble Fire events in support of the Combatant Commands, the Services, and MDA. Implement upgrades at the Virtual Warfare Center to enable robust integration of EW, space and cyber capabilities and effects. Modeling and simulation upgrades:			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)	Project (Number/Name) P005 / Nimble Fire			
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018	FY 2019	FY 2020
1. Develop infrastructure to support modeling of EW techniques to allow Virtual Warfare Center to quickly adapt to a large spectrum of threat capabilities – to include receiver sensitivities, more accurate antenna patterns, power-based radar models, and additional jamming techniques.					
2. Build from FY19 upgrades adding fidelity to Infrared Search and Track (IRST) kill chains; include electro-optical (EO) sensors; and directed energy weapons.					
3. Develop real-time visualization of clouds and rain within fighter out-the-window displays					
4. Integrate a Multi-platform IR sensor					
5. Secure necessary facility space, hardware, and software to capture additional data, achieve simulation capability enhancements to better visualize impacts of EW or IR capabilities					
6. Integrate higher-fidelity space representations and feasibility of using multi-level security toolsets to integrate into the facility					
7. Introduce limited cyber effects to explore integration of non-kinetic and kinetic fires					
8. Update Link-16 network modeling					
9. Dedicated Unmanned Aerial Systems (UAS) cell					
10. Additional classified capabilities					
FY 2019 to FY 2020 Increase/Decrease Statement: Additional FY 2020 funds were added to NIMBLE FIRE to enhance modeling and simulation capability of EW and IR capability models.			Accomplishments/Planned Programs Subtotals	16.000	14.000
					28.226
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / <i>Joint Integrated Air & Missile Defense Organization (JIAMDO)</i>	Project (Number/Name) P005 / <i>Nimble Fire</i>
D. Acquisition Strategy		
N/A		
E. Performance Metrics		
<ol style="list-style-type: none">1. Perform at least two Nimble Fire events per year.2. Document capability gaps and shortfalls.3. Report Nimble Fire results and findings to the Joint Capabilities Board (JCB) to refine investment strategy.4. Other metrics are classified.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				P006 / Cruise Missile Combat Identification (CID)				
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	
P006: Cruise Missile Combat Identification (CID)	69.620	5.500	4.998	4.655	-	4.655	4.675	4.475	4.475	4.475	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

The Joint Integrated Air and Missile Defense Organization (JIAMDO) is chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, concepts, and architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting his Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the IAMD proponent for requirements and capabilities within the DoD's resource allocation system. JIAMDO leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, and conducts evaluations of joint IAMD architectures.

JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to coordinate integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs. At the request of USSTRATCOM and at the direction of the CJCS, JIAMDO supports USSTRATCOM development of IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and homeland defense solutions.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020
Title: Cruise Missile Combat Identification (CID)	5.500	4.998	4.655
Description: Establishes joint requirements for emerging national and tactical combat identification technology and advocates for fielding CID technology to frontline weapon systems. Monitors, assesses, and enhances current joint air and cruise missile defense combat ID programs.			
FY 2019 Plans: Details of this program are classified and will be provided under a separate cover.			
FY 2020 Plans: Details of this program are classified and will be provided under a separate cover.			
FY 2019 to FY 2020 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)	Project (Number/Name) P006 / Cruise Missile Combat Identification (CID)	
B. Accomplishments/Planned Programs (\$ in Millions) The FY 2020 requested amount, as well as the future years request, reflects un-expended resources from prior year and an associated re-phasing of resources into FY 2021 - FY 2022.		FY 2018	FY 2019
		Accomplishments/Planned Programs Subtotals	5.500
			4.998
			4.655
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Details of this program are classified.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				P007 / Homeland Defense Capability				
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	
P007: Homeland Defense Capability	0.000	0.000	15.000	20.000	-	20.000	23.000	28.000	33.000	33.000	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
Note													
This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.													
A. Mission Description and Budget Item Justification													
This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.													
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020
Title: Homeland Defense Capability											-	15.000	20.000
Description: Develop Homeland Defense Capability													
FY 2019 Plans: Perform technology development efforts. Further details are reported in accordance with with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.													
FY 2020 Plans: Perform technology development efforts. Further details are reported in accordance with with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.													
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase from FY 2019 to FY 2020 reflects planned ramp-up of effort in this project. No additional funds have been added. Further details are reported in accordance with with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.													
Accomplishments/Planned Programs Subtotals											-	15.000	20.000
C. Other Program Funding Summary (\$ in Millions)													
N/A													
Remarks													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / <i>Joint Integrated Air & Missile Defense Organization (JIAMDO)</i>	Project (Number/Name) P007 / <i>Homeland Defense Capability</i>
D. Acquisition Strategy N/A		
E. Performance Metrics This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)				P008 / Joint Regional Integrated Air and Missile Defense Capability				
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	
P008: Joint Regional Integrated Air and Missile Defense Capability	0.000	0.000	4.600	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification												
The Joint Integrated Air and Missile Defense Organization (JIAMDO) is chartered to plan, coordinate, and oversee Integrated Air and Missile Defense (IAMD) requirements, concepts, and architectures. As part of the Joint Staff, JIAMDO supports the Chairman in meeting his Title 10 responsibilities as they relate to IAMD issues. JIAMDO is the IAMD proponent for requirements and capabilities within the DoD's resource allocation system. JIAMDO leads IAMD mission and utility analysis, integrates IAMD within the force protection joint capability area, and conducts evaluations of joint IAMD architectures.												
JIAMDO has established a close partnership with Combatant Commands (CCMDs) and maintains liaison offices at major CCMD locations to coordinate integration issues and requirements. In particular, JIAMDO maintains close coordination with U.S. Strategic Command (USSTRATCOM) and U.S. Northern Command (USNORTHCOM) in support of ballistic missile defense of the United States. JIAMDO provides the CJCS and the Joint Requirements Oversight Council the ability to meet statutory responsibilities to review cost, schedule, and performance criteria of Missile Defense Agency missile defense programs. At the request of USSTRATCOM and at the direction of the CJCS, JIAMDO supports USSTRATCOM development of IAMD prioritized capabilities list and the global integrated IAMD assessment and analysis of the Ballistic Missile Defense System. JIAMDO supports the USSTRATCOM ballistic missile early warning mission by ensuring operational and technical requirements are integrated into the theater missile warning architecture. JIAMDO also provides direct support to North American Aerospace Defense Command and USNORTHCOM for homeland air and cruise missile surveillance issues and homeland defense solutions.												

B. Accomplishments/Planned Programs (\$ in Millions)												FY 2018	FY 2019	FY 2020
Title: Joint Regional Integrated Air and Defense Capability Mix (JRICM)												-	4.600	0.000
Description: Joint Regional Integrated Air and Defense Capability Mix (JRICM) will use analysis of adversary ballistic and cruise missile capabilities to determine if a layered missile defense can successfully degrade or defeat adversary missile attacks to extend base defense duration and maintain aircraft sortie generation rates. Funding will enable the study to proceed with support from the various government organizations and FFRDCs. Organizations will be funded to develop detailed analysis using modeling and simulation to study and evaluate attack operations, as well as defense capabilities in the 2023 timeframe.														
FY 2019 Plans:														

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605126J / Joint Integrated Air & Missile Defense Organization (JIAMDO)	Project (Number/Name) P008 / Joint Regional Integrated Air and Missile Defense Capability			
B. Accomplishments/Planned Programs (\$ in Millions) Conduct studies and analysis on air and missile defense capability mix. Deliveries will include briefings summarizing the impact that layered defense capabilities have on extending defense durations and aircraft sortie generation rate. Specific details are classified and can be provided upon request. FY 2020 Plans: Study ends in FY 2019. FY 2019 to FY 2020 Increase/Decrease Statement: Study ends in FY 2019.			FY 2018	FY 2019	FY 2020
		Accomplishments/Planned Programs Subtotals	-	4.600	0.000
C. Other Program Funding Summary (\$ in Millions) N/A					
Remarks					
D. Acquisition Strategy N/A					
E. Performance Metrics Specific details are classified and can be provided upon request.					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)								
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: <i>RDT&E Management Support</i>					PE 0204571J / Joint Staff Analytical Support								
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	
Total Program Element	15.855	22.712	16.658	9.216	-	9.216	4.216	4.216	4.214	4.214	Continuing	Continuing	
P001: Future Joint Force Development	13.955	5.712	5.301	4.216	-	4.216	4.216	4.216	4.214	4.214	Continuing	Continuing	
P003: GFM DI Enterprise Force Structure (EFS) Integration	1.900	17.000	11.357	5.000	-	5.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
A. Mission Description and Budget Item Justification													
The Joint Staff Analytical Support (JSAS) family of programs provide defense analytical support capabilities for the Joint Staff and Combatant Commands (CCMDs). JSAS encompasses the developmental tools and infrastructure required to conduct analyses and formulate results to assist the Chairman in fulfilling his statutory responsibilities. Key deliverables provided by JSAS include development and implementation of Joint Concepts, wide-ranging force structure assessments, course of action development for the joint force environment, analyses and studies to aid in decision-making, and other analysis efforts to implement timely, low-cost joint force development initiatives.													
B. Program Change Summary (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total					
Previous President's Budget				22.712	6.658	4.959	-	4.959					
Current President's Budget				22.712	16.658	9.216	-	9.216					
Total Adjustments				0.000	10.000	4.257	-	4.257					
<ul style="list-style-type: none"> • Congressional General Reductions • Congressional Directed Reductions • Congressional Rescissions • Congressional Adds • Congressional Directed Transfers • Reprogrammings • SBIR/STTR Transfer • Program adjustment 				-	-	-	-	-					
				-	10.000	-	-	-					
				-	-	-	-	-					
				-	-	-	4.257	-					
Change Summary Explanation													
FY 2019 Congressional add of \$10,000K to Global Force Management (GFM) for advanced wargaming.													
FY 2020 is a combination of an increase of \$5,000K to GFM DI to reflect CJCS requirement to execute global force management, and a decrease of \$743K from Joint Force Development to maintain balance at the program level.													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0204571J / Joint Staff Analytical Support				Project (Number/Name) P001 / Future Joint Force Development				
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	
P001: Future Joint Force Development	13.955	5.712	5.301	4.216	-	4.216	4.216	4.216	4.214	4.214	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

The Joint Staff Analytical Support (JSAS) program supports the Chairman of the Joint Chiefs of Staff Title 10, Section 153 statutory responsibilities for the analytical support, management, development, evaluation, and implementation of joint concepts in order to advance the operational effectiveness of the future Joint Force and enable the introduction of new capabilities. The Joint Concepts program supports the Chairman's statutory responsibility to provide "best military advice" to the SECDEF and POTUS by expressing his vision for the future joint force; addressing operational problems on a 20 year horizon; identifying joint force development implications; and identifying capabilities required to mitigate and solve future joint warfighting gaps. The overarching goal is to enable investment decisions between near and far term. Concepts drive horizontal integration for force development across the Services, Combatant Commands, Defense agencies, OSD and Joint Staff. An intent of the Joint Concepts program is to support senior leader decisions in balancing today's requirements and future force requirements. Key deliverables include:

Capstone Concept for Joint Operations (CCJO) that provides the Chairman's vision for the future joint operations and establishes aim points for the development of the future Joint Force. The key theme is globally integrated operations.

Family of Joint Concepts, based on National Military Strategy (NMS), provides operational approaches to future challenges or opportunities with respect to Russia, China, Iran, North Korea, and Countering Violent Extremist Organizations in order to guide current and future Joint Force development.

Joint Concept Transition Plans, developed for each joint concept, document approaches for Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) changes in the future Joint Force and identifies conceptual ideas that may require further exploration.

Joint Operating Environment (JOE) describes the future security environment and projects the implications of change for the Joint Force so it can anticipate and prepare for potential conflicts. The JOE articulates the circumstances that are likely to alter the security environment and explores how the intersection and interaction of these changes might impact the character of war in the future. Finally, the JOE provides a framework to think about the full range of Joint Force missions and how they may evolve over time.

The International Force Development Division's (IFDD) mission is to ensure collaboration and integration throughout the spectrum of joint force development. This ensures both the Joint Staff, its allies, and partners can invest in initiatives and conduct interoperable and seamless operations to meet the objectives in the NMS. The Multinational Capability Development Campaign (MCDC) is an initiative led by the United States Joint Staff, J-7, and partners with 22 countries and international organizations. It is designed to develop and assess non-materiel force development solutions and close capability gaps within multi-national operations.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Future Joint Force Development

FY 2018	FY 2019	FY 2020
5.712	5.301	4.216

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0204571J / Joint Staff Analytical Support	Project (Number/Name) P001 / Future Joint Force Development	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018 FY 2019 FY 2020
<p>Description: Current efforts focus is on updating the Capstone Concept for Joint Operations (CCJO) so it extends the strategic approach developed in the 2016 NMS out to 2035. The CCJO revision will provide a common view of the future operating environment and a vision for how the future joint force will conduct globally integrated operations. Also, the revised CCJO will identify force development implications and required capabilities to maintain U.S. competitive advantage against emerging threats out to 2035. In partnership with selected Combatant Commands and the Services, development of the Joint Operating Concepts to address strategic challenges has begun. Prospectuses were developed to initiate Supporting Joint Concepts in the areas of space, intelligence, deterrence, and operating in a CBRN environment. Study of the 2035 operating environment continues and informs understanding of military challenges associated with the common view of the future operating environment. Work with Five Eyes (FVEY) countries is focused on developing a FVEY common view of the future operating environment culminating in a report due by the end of 2018. Joint Concept for Integrated Campaigning and the Joint Concept for Operating in the Information Environment completed development and were approved by the VCJCS. Concept implementation is underway for both concepts as well as the Joint Concepts for Rapid Aggregation, Robotic and Autonomous Systems, Human Aspects of Military Operations, Access and Maneuver in the Global Commons, Preventing the Transfer and Use of Weapons of Mass Destruction, and Operational Contract Support.</p> <p>FY 2019 Plans: Execute the Chairman's Joint Concept program. Complete the Capstone Concept for Joint Operations: Joint Force 2030 approved by the CJCS. Support development of the Joint Military Net Assessment in terms of how the joint force is achieving Joint Force 2030 as input to the Chairman's Program Recommendation to the Secretary of Defense. In partnership with CCMDs, the Services and other Joint Staff directorates, complete development and obtain Vice CJCS approval of the Joint Operating Concepts for China and Iran. Provide support to U.S. Special Operations Command to develop JOC – Counter Violent Extremist Organizations and the associated transition plan. Provide support for concept sponsors developing Supporting Joint Concepts in the areas of space, intelligence, deterrence, and operating in a CBRN environment. Continue futures study to inform our understanding of the challenges of the future operating environment. Continue implementing approved Joint Concepts as described in CJCS Instruction 3010. Maintain and enhance multinational partnerships in concept development. Integrate Joint Concepts across the Joint Staff to inform DOTMLPF capability development decisions and explore new joint force adaptations and innovations posited by Joint Concepts in exercises, wargames, and experimentation.</p> <p>Major events and projects in 2019 will include the International Concept Development and Experimentation Conference, a U.S. / NATO co-led event that is the annual forum of Supreme Allied Command Transformation and Joint Staff to provide a unique opportunity for the international concept development and experimentation community and stakeholders to discuss the most current issues of concept development and experimentation in the capability development process. Additional projects and events include travel to the MCDC Executive Steering Group (ESG) and National Directors' meetings to provide governance for the</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0204571J / Joint Staff Analytical Support	Project (Number/Name) P001 / Future Joint Force Development	
B. Accomplishments/Planned Programs (\$ in Millions)			
MCDC program as well as travel in support of U.S. led projects in the areas of logistics, personnel recovery, cyber, command and control and information sharing.	FY 2018	FY 2019	FY 2020
<p>FY 2020 Plans:</p> <p>Execute the Chairman's Joint Concept program. Publish an update of the Joint Operating Environment 2035. Support development of the Joint Military Net Assessment in terms of how the joint force is achieving the CJCS's Capstone Concept for Joint Operations. Joint Force 2030 as input to the chairman's program recommendation to the Secretary of Defense. In partnership with the concept sponsors, CCMDs, the services and other Joint Staff directorates, complete development and obtain Vice CJCS approval of supporting Joint Concepts in the areas of space, intelligence, deterrence, and operating in a CBRN environment. Continue futures study to inform our understanding of the challenges of the future operating environment. Continue implementing approved Joint Concepts as described in CJCS Instruction 3010. Maintain and enhance multi-national partnerships in concept development. Integrate Joint Concepts across the Joint Staff to inform DOTMLPF capability development decisions and explore new joint force adaptations and innovations posited by Joint Concepts in exercises, war games, and experimentation.</p> <p>MCDC major events and projects in 2020 will include travel associated with: Identification of multi-national force development capability gaps; developing and evaluating corresponding non-material solutions; managing plans for the transition, implementation and integration of the resulting multi-national and international force development capabilities to meet present and future operational needs of the warfighter; conducting stakeholder analysis and engagements with senior civilian and military officers within the Joint Staff, Combatant Commands, Services, NATO Allied Command Transformation (ACT), other DoD activities, and multi-national partners. Additional travel to the MCDC Executive Steering Group (ESG) and National Directors' meetings is required to provide governance for the MCDC program to include: Cyber/cyber defense, mil/civ info sharing, logistics, joint personnel recovery, combined operational fires, and lethal/non-lethal actions.</p>			
<p>FY 2019 to FY 2020 Increase/Decrease Statement:</p> <p>Decrease in funding for FY 2019 thru FY 2022 is a result of mandated 25% Management Headquarters Activities (MHA) reductions prescribed by the 2016 NDAA.</p>	Accomplishments/Planned Programs Subtotals	5.712	5.301
<p>C. Other Program Funding Summary (\$ in Millions)</p> <p>N/A</p> <p>Remarks</p>			4.216
<p>D. Acquisition Strategy</p> <p>N/A</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0204571J / <i>Joint Staff Analytical Support</i>	Project (Number/Name) P001 / <i>Future Joint Force Development</i>
E. Performance Metrics		
Concept development performance metrics are derived from the Chairman's Title 10 responsibilities and guidance for developing and implementing Joint Concepts. These measures and metrics inform the Department's senior leadership by providing an azimuth for future joint force development.		
Performance measure 1 – Joint Concepts were developed to examine military challenges and propose innovative joint solutions and associated capabilities in support of defense needs and priorities. Metric: Joint Concepts align and inform the National Military Strategy, informed by rigorous futures analysis. The Joint Concepts Program resulted in relevant and timely advocacy among operations, plans, and force development communities.		
Performance measure 2 – Joint Staff provided leadership for the development of Joint Concepts in collaboration with joint and multi-national partners. Metric: Joint Concepts governance system supports joint force development recommendations to the CJCS to support his provision of "best military advice" to the President and other national leaders. Ideas and solutions are rigorously and objectively evaluated within a joint and multinational context. Joint Concepts are continually monitored to ensure consistency, relevancy, and utility throughout their life cycle.		
Performance measure 3 – Implement Joint Concepts. Metric: Transition plans promote informed decisions for joint force development that leverage, integrate or inform related net assessments, DOTMPLF capability development programs, and innovative ideas for exploration for maximum efficiency and effectiveness.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0204571J / Joint Staff Analytical Support					Project (Number/Name) P003 / GFM DI Enterprise Force Structure (EFS) Integration			
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	
P003: GFM DI Enterprise Force Structure (EFS) Integration	1.900	17.000	11.357	5.000	-	5.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			

A. Mission Description and Budget Item Justification

Global Force Management (GFM) data initiative Enterprise Force Structure (EFS) effort provides the next steps for GFM mission application enhancements required to balance global force demand against available military force. This complex task requires technologies that provide integrated information obtained by linking force structure quantitative data (derived from the GFM organizational servers) to qualitative data of Capability, Readiness, Availability and Employment/Location data (C.R.A.E.) resident in GFM mission applications and associated data bases. The Joint Staff is responsible for GFM allocation and will employ a strategy for efficiently providing Enterprise Force Structure (EFS) data utility.

DoD must meet national military objectives that range from large force scenarios to small-scale activities. Our adversaries demonstrate the ability to readily transition from non-kinetic to kinetic effects. Consequently, Information Technology (IT) superiority, capabilities, and recognition of associated vulnerabilities are an operational imperative. Yet, warfighters, strategic planners and GFM decision makers are unable to exchange information in a manner that rapidly and accurately enables force sourcing activities to support SecDef decisions. The Joint Staff is mandated to utilize the Service's organizational server EFS data to enhance managing, assessing, and displaying the health and worldwide disposition of U.S. Forces. Key deliverables include incrementally developed, operationally realistic capability enhancements focused on resource-informed planning and GFM sourcing functionality required by numerous Joint Staff requirements documents.

The Joint Staff Analytical Support (JSAS) enterprise force structure data integration efforts enables Project ORION: a Global Laydown Server and a Joint Force Capabilities Catalog along with functional applications that support a global visibility capability. This capability enhances resource-informed planning, global force management and joint deployment. Global visibility capability also supports future force integration and concept implementation needed to support timely and dynamic response to Combatant Commanders' contingency requirements. Project ORION creates a technical environment that enables rapid integration of the JOPES replacement with remaining GFM data that supports planning and execution of U.S. Military Operations. Project Orion provides operational force structure and the means to allocate and attach units. This capability is the cornerstone for fulfilling the CJCS-directed requirement to integrate force planning, support planning, and deployment planning and execution of military operations. The ORION environment supports all variants of planning and execution processes by providing portal access to authoritative data aggregated in the Global Laydown Servers and associated display of force capabilities, readiness, employment, and availability of the force. This is a cost-effective yet full spectrum approach to support and assist the Chairman in fulfilling his statutory responsibilities while improving current and future joint force management.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: GFM Data Initiative (GFM DI) Enterprise Force Structure Integration (EFS)

FY 2018	FY 2019	FY 2020
17.000	11.357	5.000

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019				
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0204571J / Joint Staff Analytical Support	Project (Number/Name) P003 / GFM DI Enterprise Force Structure (EFS) Integration					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018	FY 2019	FY 2020		
<p>Description: The GFM DI EFS integration effort requires RDT&E funds to operationalize force structure data from the service's Organizational Servers to actual forces for employment within the purview of allocation and Joint command and control. This GFM DI effort within the Joint Staff Analytical Support (JSAS) family of programs will immediately streamline the SECDEFs "Forces for Unified Commands" memorandum Assignment Tables. RDT&E efforts for assignment and apportionment functions ended in FY 2015 with the declaration of Full Operation Capability (FOC) for the Automated Global Force Management Tool. GFM DI planned milestones must be met to enable a global visibility capability. GFM applications managed by the Joint Staff are used by the JSAS family of programs.</p> <p>FY 2019 Plans: Specific RDT&E work will focus on efforts to implement timely, low-cost initiatives and Global Force Management (GFM) focused tools delivering a global visibility of the disposition of DoD forces on an operational enterprise. This supports the preferred munitions and engineering and cross-servicing arrangements.</p> <p>FY 2020 Plans: Specific RDT&E work will focus on the development and fielding of specific functional capability applications resident in the ORION environment, and riding on the Global Laydown Server, to meet the CJCS decision support requirements for full operating capability. These include: Force Element Inventory – Predictive Analysis Tool, Preferred Munitions Synchronization Tool, Readiness Synchronization Tool, Constellation Tool, and the TPFDD Visualization Tool.</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: Net funding decrease from FY19 to FY20 reflects project nearing full operational capability.</p>							
	Accomplishments/Planned Programs Subtotals		17.000	11.357	5.000		
C. Other Program Funding Summary (\$ in Millions)							
N/A							
Remarks							
D. Acquisition Strategy							
N/A							
E. Performance Metrics							
Success of the JSAS enterprise force integration and ultimate global visibility capability provided by Project ORION and are measured by the following:							
(1) Meet initial operational capability providing decision-making information for policy-makers and Combatant Commanders.							

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0204571J / <i>Joint Staff Analytical Support</i>	Project (Number/Name) P003 / <i>GFM DI Enterprise Force Structure (EFS) Integration</i>
(2) Reduce the manual process of assembling Capability, Readiness, Availability, Employment (CRAE) data.		
(3) Services, CCMDs, Joint Staff and OSD are be able to efficiently manage (collect and analyze) force generation data supporting joint planning and GFM in far less time than the current process, and with an authoritative common view of the sourcing-to-employment tracking of forces.		
(4) Enables rapid information generation when making time-sensitive decisions and allows Joint Planners to inculcate force structure data into the GFM sourcing solution generation and deployment planning, execution, and distribution processes.		
(5) Meet full operating capability by the end of FY 2020 for GFM Allocation and senior-level decision support functionality.		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)								
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: <i>RDT&E Management Support</i>					PE 0303166J / Support to Information Operations (IO) Capabilities								
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	
Total Program Element	35.136	0.673	0.652	0.553	-	0.553	0.641	0.641	0.641	0.641	Continuing	Continuing	
001: Joint Information Operations Range	35.136	0.673	0.652	0.553	-	0.553	0.641	0.641	0.641	0.641	Continuing	Continuing	
A. Mission Description and Budget Item Justification													
The Joint Information Operations Range (JIOR) provides DoD with a closed-loop network that forms a global live-fire information operations range complex. JIOR uses encrypted tunneling over existing transport networks to conduct mission rehearsal, training, testing, concept development and experimentation in support of Information Operations (IO), Electronic Warfare (EW), Offensive Cyber Operations (OCO), Defensive Cyber Operations (DCO), Spectrum Warfare, Space Operations, and Special Operations Forces mission areas in a realistic threat representative environment. JIOR provides the capability to train and certify Cyber Mission Forces on the full spectrum of cyber weapons/capabilities without risk of observation or fratricide. JIOR is unique within the Department of Defense and is accredited by DIA for operations at Unclassified through Top Secret-Special Compartment Information (TS-SCI) in a Multiple Independent Levels of Security (MILS) environment. JIOR is approved for use by Special Access Programs (SAP), Special Access Required Programs (SAR), and for Special Technical Operations (STO). JIOR provides Combatant Commands, Services and Agencies (C/S/A's) and key allied partners the ability to test deployment and collaboratively gain insights into advanced cyberspace and Electronic Warfare (EW) capabilities under current and future operational environments. JIOR integrates available cyberspace ranges with the training/test audience providing access to low density/high demand test and training resources including critical infrastructure, cyber targets, internet traffic, and opposing forces. JIOR supports Presidential policy and CJCS mandates for training, certification, and recertification of 6000+ cyber mission forces and DoD/Interagency cyber vulnerability assessments. C/S/A's conduct hundreds of mission rehearsal, training, testing, and experimentation events on the JIOR annually.													
B. Program Change Summary (\$ in Millions)				FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total					
Previous President's Budget				0.673	0.652	0.650	-	0.650					
Current President's Budget				0.673	0.652	0.553	-	0.553					
Total Adjustments				0.000	0.000	-0.097	-	-0.097					
• Congressional General Reductions				0.000	0.000								
• Congressional Directed Reductions				0.000	0.000								
• Congressional Rescissions				0.000	0.000								
• Congressional Adds				0.000	0.000								
• Congressional Directed Transfers				0.000	0.000								
• Reprogrammings				0.000	0.000								
• SBIR/STTR Transfer				0.000	0.000								
• Program adjustment				-	-	-0.097	-	-0.097					
Change Summary Explanation													
Project level funding reflects minor program adjustment to maintain balance at the program level.													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0303166J / Support to Information Operations (IO) Capabilities				Project (Number/Name) 001 / Joint Information Operations Range				
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	
001: Joint Information Operations Range	35.136	0.673	0.652	0.553	-	0.553	0.641	0.641	0.641	0.641	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
The Joint Information Operations Range (JIOR) provides DoD with a closed-loop network that forms a global live-fire information operations range complex. JIOR uses encrypted tunneling over existing transport networks to conduct mission rehearsal, training, testing, concept development and experimentation in support of Information Operations (IO), Electronic Warfare (EW), Offensive Cyber Operations (OCO), Defensive Cyber Operations (DCO), Spectrum Warfare, Space Operations, and Special Operations Forces mission areas in a realistic threat representative environment. JIOR provides the capability to train and certify Cyber Mission Forces on the full spectrum of cyber weapons/capabilities without risk of observation or fratricide. JIOR is unique within the Department of Defense and is accredited by DIA for operations at Unclassified through Top Secret-Special Compartment Information (TS-SCI) in a Multiple Independent Levels of Security (MILS) environment. JIOR is approved for use by Special Access Programs (SAP), Special Access Required Programs (SAR), and for Special Technical Operations (STO).JIOR provides C/S/A's and key allied partners the ability to test deployment and collaboratively gain insights into advanced cyberspace and Electronic Warfare (EW) capabilities under current and future operational environments. JIOR integrates available cyberspace ranges with the training/test audience providing access to low density/high demand test and training resources including critical infrastructure, cyber targets, internet traffic, and opposing forces. JIOR supports Presidential policy and CJCS mandates for training, certification, and recertification of 6000+ cyber mission forces and DoD/Interagency cyber vulnerability assessments. C/S/A's conduct hundreds of mission rehearsal, training, testing, and experimentation events on the JIOR annually.													
B. Accomplishments/Planned Programs (\$ in Millions)													
Title: Joint Information Operations Range										FY 2018	FY 2019	FY 2020	
Description: The Joint Information Operations Range (JIOR) is a closed-loop network that forms a live-fire, distributed range utilizing encrypted tunneling to conduct training, testing, and experimentation in a threat representative environment to support Cyberspace and Electronic Warfare mission areas. This project is 100 percent cyber.										0.673	0.652	0.553	
FY 2019 Plans: Operate and sustain JIOR developmental baseline network (the TICnet) and Joint Test & Integration Lab (JTIL). These assets are used to test & integrate new networking technologies/hardware/software that will be used on the JIOR. The assets are also used for off-net troubleshooting and test of new JIOR network configurations in support of configuration control and cybersecurity prior to being deployed on the operational JIOR.													
FY 2020 Plans:													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0303166J / Support to Information Operations (IO) Capabilities	Project (Number/Name) 001 / Joint Information Operations Range	
B. Accomplishments/Planned Programs (\$ in Millions) Continue testing and evaluating new, cutting edge technologies and refining networking configurations for optimization of the JIOR. Refine network automation strategy.		FY 2018	FY 2019
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 project level funding decrease reflects minor program adjustment to maintain balance at the program level.			
Accomplishments/Planned Programs Subtotals		0.673	0.652
0.553			
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics The metrics below reflect JIOR research and development goals to test newly available hardware and software (including automation software) that supports selection of a modernized network architecture for the future JIOR. 1. Reduction in network configuration/reconfiguration time for use/reuse of DoD designated cyber ranges and available capability providers due to JIOR modernization and technology insertion. 2. Estimated man-hours saved due to transforming manual integration of ranges, capability providers and users to automated integration. 3. Sufficient capacity & agility to support Cyber Mission Forces force development and systems cybersecurity assessments & testing (outcomes). 4. Improved rapid response for short-notice mission rehearsal requirements from days to on-demand (outcomes).			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)								
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support					PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA								
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	
Total Program Element	0.000	44.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
758: Joint National Training Capability (JNTC)	0.000	32.550	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
761: Joint Simulations Systems (JSS)	0.000	1.103	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
769: Joint Knowledge Development & Distribution Capability (JKDDC)	0.000	4.168	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
701: Air Force Joint National Training Capability (JNTC)	0.000	2.964	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	
772: Navy Joint National Training Capability (JNTC)	0.000	3.715	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing	

Note

For FY 2019 and beyond data, please see PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.

A. Mission Description and Budget Item Justification

These programs support readiness of the joint force by creating a joint training environment to replicate the complex and changing operational environment. These investments directly support defense strategic guidance and enhance joint warfighting readiness by building training capabilities that support the operational readiness of the force. The elements associated with this coordinated effort consist of:

- Joint National Training Capability (JNTC)
- Joint Simulation System (JSS)
- Joint Knowledge Development & Distribution Capability (JKDDC)
- Air Force JNTC
- Navy JNTC

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	
0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	
<p>JNTC: The mission of the Joint National Training Capability program is to advance joint capabilities and interoperability by concentrating on emerging joint training requirements through training experiences using a managed set of globally distributed capabilities and activities. The program resources Service and Special Operations Forces joint training that improves interoperability and realism of tactical and operational joint training between the Services and USSOCOM. JNTC enables joint training for Combatant Commands and Services by developing relevant joint training content and ensuring global distributed access. JNTC enabling capabilities support the Services and USSOCOM in their requirement to provide trained and ready forces in support of Combatant Command operational requirements. This program focuses efforts on improving, rather than consuming readiness and creating a ready surge force consistent with Chairman's guidance.</p> <p>JSS: The Joint Simulation System, consisting of the Joint Theater Level Simulation and the Joint Conflict and Tactical Simulation, provides a low cost, distributed or deployable, web-based joint training capability with a small technical and operator footprint. JSS funding provides warfighters with joint simulations and tools that enhance and enable joint training across Services, Combatant Commands, Combat Support Agencies, NATO, and multinational partners. The joint simulations and tools provided by JSS funding are critical enablers that support the delivery of trained, capable, and interoperable joint forces. JSS intent is to maintain a capability to share simulation environments with coalition partners by continuing limited investments ensuring Joint Theater Level Simulation and Joint Conflict and Tactical Simulation remain relevant providing reliable, low-cost, small footprint, distributed, and deployable joint training solutions.</p> <p>JKDDC: Joint Knowledge Development & Distribution Capability (JKDDC) Joint Knowledge Online (JKO) is the program of record for online joint training that implements and operationalizes the OSD training transformation JKDDC. JKO directly supports the CE2T2 program by developing, delivering, tracking, reporting, and supporting online training for Combatant Command exercises; Combatant Command required training; doctrinally based joint operations core curriculum; multinational, coalition, interagency training; OSD required training (externally funded); and administration of the Senior Enlisted Joint Professional Military Education program. JKO expends RDT&E funding for leading edge technology review, market research, and integration to directly enhance various aspects of the training capability required to support Combatant Commanders, CE2T2 program goals and objectives, and the Chairman's training guidance. JKO satisfies all requirements necessary to provide CE2T2 stakeholders with a distributed learning capability and access to web-based training content, learning resources, and distributed online training tools.</p> <p>Air Force JNTC: Air Force JNTC funding provides a focused upgrade to develop models for space-based and cyber capabilities for integration into the Joint Live, Virtual, and Constructive (JLVC) environment. Air Force supports development of cross-domain solutions that enable the integration of systems with disparate security requirements which significantly increases the training audience to additional joint and coalition participants. Additionally, the Air Force supports the integration of tactical models into the virtual environment.</p> <p>Navy JNTC: These funds enable Navy to develop unique maritime capabilities that integrate JLVC elements into a seamless joint training environment. Navy program activities include conducting research, development, test and evaluation, and cross-service architecture certification on joint-capable systems. Additionally, the program develops cross-domain architectures for U.S. and coalition forces and ensures sister service modeling/simulation and instrumentation efforts follow a unified standard.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff					Date: March 2019
Appropriation/Budget Activity	R-1 Program Element (Number/Name)				
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: <i>RDT&E Management Support</i>	PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA				
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	44.500	0.000	0.000	-	0.000
Current President's Budget	44.500	0.000	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
Change Summary Explanation					
COCOM Exercise Engagement and Training Transformation (CE2T2) transferred to The Joint Staff in FY 2018 in PE 0804767J from 0804767D8Z. Prior year FY 2017 data will be reported by OSD P&R.					
Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and out to properly align CE2T2 RDT&E funding to a Non-MHA PE similar to the O&M appropriation. For FY 2019 and beyond data, please see R-2 for PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 6					PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA				758 / Joint National Training Capability (JNTC)					
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		
758: Joint National Training Capability (JNTC)	0.000	32.550	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing		
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-				

Note

COCOM Exercise Engagement and Training Transformation (CE2T2) transferred to the Joint Staff in FY 2018 in PE 0804767J from 0804767D8Z.

For FY 2019 and beyond data, please see PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.

A. Mission Description and Budget Item Justification

Investment in the Joint National Training Capability (JNTC) program enables Service and Combatant Commands to train as they operate. The funding requested continues to modernize joint training capabilities into a single integrating architecture aligned to DoD Chief Information Officer IT mandates. Funding supports the development of cloud-enabled modular training application services. Program intent is to reduce dependence on touch labor, and mitigate the impact of reductions in operation and sustainment funding. Momentum must be maintained to deliver operationally relevant training environments and respond to changes in global security landscape and the warfighters' operational environment. JNTC enables the Department of Defense to be responsive to the warfighters' changing operational concepts, threat environments, and best practices. In FY 2018, this investment continues expanding capabilities and access for Service and Combatant Command trainers to plan and execute joint training. Funds support improved relevance and realism of training by providing capabilities that replicate the contemporary and future operating environment.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
<p>Title: Joint National Training Capability (JNTC)</p> <p>Description: JNTC provides the technical standards, architecture (blueprint), and development processes required to integrate joint training programs. The Joint Training Environment (JTE) is envisioned as an integrated network of training sites and nodes with accessible joint training and force development services. By leveraging existing training programs and initiating programmatic actions, JNTC develops credible opposing force capabilities and expanded access to assets typically unavailable to the training audience. These capabilities enhance the integration of joint training objectives into Service training events. RDT&E funding supports the technical integration of Joint and Service modeling and simulation training capabilities. The resulting capabilities enable selective aggregation of training audiences at the Combatant Command, Joint Task Force, and Component Command headquarter levels. The funding increases warfighter access to semi-automated training enablers within the Joint Training Synthetic Environment through web-based, modular cloud capabilities.</p>	32.550	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019					
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	Project (Number/Name) 758 / Joint National Training Capability (JNTC)						
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020				
<p>The Adaptive Training Capability Program (ATCP) is a subordinate component of JNTC that enables the joint force to be responsive to the warfighters' changing operational concepts, threat environments, and best practices. ATCP funding advances joint capabilities and interoperability by addressing emerging joint training requirements through a managed set of globally distributed joint live, virtual, and constructive enablers. ATCP funding promotes joint context to Service training programs and joint enablers supporting Combatant Command training requirements and high interest training issues identified in the Chairman's annual training guidance.</p> <p>FY 2019 Plans: Transition to PE 0804768J</p> <p>FY 2020 Plans: Transition to PE 0804768J</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and out to properly align CE2T2 RDT&E funding to a Non-MHA PE similar to the O&M appropriation. For FY 2019 and beyond data, please see R-2 for PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.</p>								
Accomplishments/Planned Programs Subtotals				32.550 0.000 0.000				
C. Other Program Funding Summary (\$ in Millions)								
N/A								
Remarks								
D. Acquisition Strategy								
N/A								
E. Performance Metrics								
RDT&E development efforts are evaluated based on the performance metrics. This ensures the joint force trainer capability development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to: access, cost, realism, relevance, and technology and are defined below.								
Access – Develop design standards that enable participation across DoD and, as applicable, with coalition partners. Make the environment available to meet user demands.								

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - MHA	Project (Number/Name) 758 / <i>Joint National Training Capability</i> (JNTC)
Cost – Enable the Joint Force Trainer to prepare and execute training more efficiently than current capabilities allow.		
Realism – Enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow.		
Relevance – Maintain operational relevance through adaptation to the changing operational environment.		
Technology – Sustain the training environment network through developments for distributed home station training that include modular cloud-enabled training services.		
Measures:		
Cost - Vendors provide ordered hours and projected costs remain within 10 percent of government estimates.		
Schedule - Task completions (software enhancements, bug fixes, and cyber security requirements) delivered within six months of government estimate.		
Performance - Product results, outcomes or milestones meet specified requirements and successfully pass more than 80 percent of operational assessment test cases.		
DoD Demand - Number of Commands, Services, and Agencies using Joint Staff developed training products.		
Partner Nation Demand - Number of partner nations using Joint Staff developed training products.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 6					PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA				761 / Joint Simulations Systems (JSS)					
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		
761: Joint Simulations Systems (JSS)	0.000	1.103	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing		
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-				

Note
COCOM Exercise Engagement and Training Transformation (CE2T2) transferred to the Joint Staff in FY2018 in PE 0804767J from 0804767D8Z.
In FY 2019, this project is merged with 758: Joint National Training Capability (JNTC)
For FY 2019 and beyond data, please see PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.

A. Mission Description and Budget Item Justification
The Joint Simulation System (JSS) will decompose, harvest, and reuse DoD investment in joint simulations to develop cloud-enabled modular services (CEMS), reaching Initial Operating Capability in FY 2016. JSS will further develop the existing Joint Conflict and Tactical Simulation (JCATS) and Joint Theater Level Simulation (JTLS) to remain relevant and responsive to Combatant Command training requirements as the Joint Training Environment is implemented. JSS will provide design and development of web-based applications used as services in the cloud-enabled modular environment.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
Title: Joint Simulation System (JSS) Description: This effort provides warfighters with joint simulations and tools that enhance and enable joint training across Services, Combatant Commands, agencies and coalition partners. These joint simulations and tools are part of an overall joint live, virtual, and constructive baseline of training capabilities. They represent a set of training enablers, and “certified systems” that are interoperable and acceptable for use within the joint training environment. The joint simulations and tools provided by JSS are critical enablers that support the delivery of trained, capable, and interoperable Joint Forces. FY 2019 Plans: Transition to PE 0804768J FY 2020 Plans: Transition to PE 0804768J FY 2019 to FY 2020 Increase/Decrease Statement:	1.103	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	Project (Number/Name) 761 / Joint Simulations Systems (JSS)	
B. Accomplishments/Planned Programs (\$ in Millions) Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and out to properly align CE2T2 RDT&E funding to a Non-MHA PE similar to the O&M appropriation. For FY 2019 and beyond data, please see R-2 for PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.			FY 2018
			FY 2019
			FY 2020
			Accomplishments/Planned Programs Subtotals
			1.103
			0.000
			0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
RDT&E development efforts are evaluated based on performance metrics. This ensures the development of joint force trainer capabilities synchronize with warfighter requirements. Performance metrics include, but are not limited to: time, cost, realism, and fidelity and are defined below.			
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow?			
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more efficiently than current capabilities allow?			
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow?			
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow?			
Measures:			
Cost - Vendors provide ordered hours and projected costs remain within ten percent of government estimates.			
Schedule - Task completions (software enhancements, bug fixes, and cyber security requirements) delivered within six months of government estimate.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise <i>Engagement and Training Transformation</i> <i>(CE2T2) - MHA</i>	Project (Number/Name) 761 / Joint Simulations Systems (JSS)
Performance - Product results, outcomes or milestones meet specified requirements and successfully pass more than 80 percent of operational assessment test cases. Joint Theater Level Simulation (JTLS) and Joint Conflict and Tactical Simulation (JCATS) availability of use in support of all training activities remains above 95 percent.		
DoD Demand - Number of exercises/events supported by JTLS and JCATS.		
Partner Nation Demand - Number of partner nations using Joint Staff developed training products (active foreign military sales cases).		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019	
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)			
0400 / 6					PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA				769 / Joint Knowledge Development & Distribution Capability (JKDDC)			
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
769: Joint Knowledge Development & Distribution Capability (JKDDC)	0.000	4.168	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

COCOM Exercise Engagement and Training Transformation (CE2T2) transferred to the Joint Staff in FY2018 in PE 0804767J from 0804767D8Z.

For FY 2019 and beyond data, please see PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.

A. Mission Description and Budget Item Justification

Joint Knowledge Online (JKO) is DoD's authoritative source for online joint training. JKO is a DoD enterprise-wide, Joint individual training toolkit of web-enabled individual and small group training products, services, and enabling training technology. Products and services are developed in response to OSD program goals, CJCS high interest training issues, Joint Staff training priorities, and JKO stakeholders (Combatant Commands, Services, and Combat Support Agencies, interagency, and multinational) prioritized training requirements. JKO supports a career-long joint learning continuum, joint professional military education, and tailored common training standards to Service members for tasks that are jointly executed, resulting in trained, capable, and interoperable joint forces. JKO research and development will improve all components of the joint content management architecture including:

1. JKO Learning Content Management System (LCMS): Development and enhancement is required to integrate advanced individual and staff training technologies and methodologies with larger scale, collective training exercises, and modernize military training capability with a DoD enterprise-wide online training toolkit. JKO LCMS is necessary to develop, host and deliver JKO courses, track and report students' progress, completions and survey results more effectively and efficiently. JKO LCMS extends web-based, distributed access to mission-critical joint training requirements. There are currently over 2.7 million registered users of the JKO LCMS.
2. Small Group Scenario Trainer (SGST) desktop modeling and simulation based training: This JKO capability trains and prepares thousands of military and civilian personnel deploying to Combatant Command theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. Specifically, C/JTF "battle staffs" will be adequately trained, as individuals and as collective staffs, based on SGST development and implementation throughout the joint training enterprise. JKO integration of SGST simulation exercise scenarios and prerequisite JKO courses enable blended learning training support to large-scale, collective training exercises that augment the joint event learning cycle and support meeting Combatant Commander exercise objectives.
3. JKO mobile application training device development: Development and enhancements facilitate the global distribution of web-based joint training content on portable, hand-held platforms (cell phones and tablets). JKO mobile application extends access to training courses and learning resources to personal use of mobile phones and tablets.

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	Project (Number/Name) 769 / Joint Knowledge Development & Distribution Capability (JKDDC)	
B. Accomplishments/Planned Programs (\$ in Millions)			
Title: Joint Knowledge Development & Distribution Capability (JKDDC)		FY 2018	FY 2019
Description: Joint Knowledge Online (JKO) advance technology initiatives primarily include the JKO Learning Content Management System (LCMS) application, Small Group Scenario Trainer (SGST) desktop modeling, simulation-based training capability, and mobile courseware training applications. These capabilities increase access to, and facilitate the training and preparation of, hundreds of thousands of military and civilian personnel deploying to Combatant Command (CCMD) theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. JKO LCMS development and enhancements are required to develop, host, deliver, track, report and support students' completions, progress and survey results more effectively and efficiently. C/JTF "battle staffs" will be better trained, as individuals and as staffs, based on SGST development and implementation throughout the joint training enterprise. JKO mobile courseware training device development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for DoD personnel.		4.168	0.000
FY 2019 Plans: Transition to PE 0804768J			FY 2020
FY 2020 Plans: Transition to PE 0804768J			
FY 2019 to FY 2020 Increase/Decrease Statement: Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and out to properly align CE2T2 RDT&E funding to a Non-MHA PE similar to the O&M appropriation. For FY 2019 and beyond data, please see R-2 for PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.			
Accomplishments/Planned Programs Subtotals			4.168
C. Other Program Funding Summary (\$ in Millions)			0.000
N/A			0.000
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Joint Staff prescribed performance metrics include, but are not limited to: time, cost, realism, and fidelity and are defined below:			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - MHA	Project (Number/Name) 769 / Joint Knowledge Development & Distribution Capability (JKDDC)
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow?		
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more efficiently than current capabilities allow?		
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow?		
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow?		
Measures:		
Identify, develop, test and implement 15 or more cyber-security, operational, and functional JKO LCMS requirements.		
Identify, develop, test and implement 12 or more cyber-security, operational, and functional JKO SGST requirements.		
Identify, develop, test and implement six or more cyber-security, operational, and functional JKO mobile App requirements.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019	
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)			
0400 / 6					PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA				701 / Air Force Joint National Training Capability (JNTC)			
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
701: Air Force Joint National Training Capability (JNTC)	0.000	2.964	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

COCOM Exercise Engagement and Training Transformation (CE2T2) transferred to the Joint Staff in FY2018 in PE 0804767J from 0804767D8Z.

For FY 2019 and beyond data, please see PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.

A. Mission Description and Budget Item Justification

The Air Force JNTC funding provides a focused upgrade to develop models of space-based capabilities for integration into the joint live, virtual, and constructive environment. The Air Force supports development of cross-domain solutions that enable the integration of systems with disparate security requirements which significantly increases the training audience to joint and coalition participants.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Air Force Joint National Training Capability (JNTC)	FY 2018	FY 2019	FY 2020
Description: Air Force continues to develop joint enablers that drive realistic/effective training by producing a deployable Electronic Warfare training capability for Europe which replicates highly advanced surface-to-air missiles and advanced anti-aircraft artillery threats for U.S. and coalition forces. Additionally, Air Force assists in the engineering, development, and deployment of joint cross-domain information sharing enterprise network architecture which enables joint and coalition participants to train while protecting classified information. Furthermore, the Air Force is creating cyber-contested environments in the distributed mission operations setting to challenge the joint exercise/training audience. Finally, comprehensive space effects are being integrated into the JLVC federation of models.	2.964	0.000	0.000

FY 2019 Plans:

Transition to PE 0804768J

FY 2020 Plans:

Transition to PE 0804768J

FY 2019 to FY 2020 Increase/Decrease Statement:

Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and out to

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	Project (Number/Name) 701 / Air Force Joint National Training Capability (JNTC)	
B. Accomplishments/Planned Programs (\$ in Millions) properly align CE2T2 RDT&E funding to a Non-MHA PE similar to the O&M appropriation. For FY 2019 and beyond data, please see R-2 for PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.		FY 2018	FY 2019
			FY 2020
			Accomplishments/Planned Programs Subtotals
			2.964 0.000 0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
RDT&E development efforts are evaluated based on performance metrics. This ensures the development of Joint Force Trainer (subject matter expert) capabilities synchronized with warfighter requirements. Performance metrics include, but are not limited to: time, cost, realism, and fidelity and are defined below.			
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow?			
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more efficiently than current capabilities allow?			
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow?			
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow?			
Measures :			
Cyber: Establish a persistent simulation environment that can be configured rapidly and accurately to reflect the desired operating environment of the training audience. Also, create an ability to reflect cyber activities against a live integrated air defense system.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - MHA	Project (Number/Name) 701 / Air Force Joint National Training Capability (JNTC)
Space: A fully operational GPS environment which allows space operators to actively participate in distributed mission operations-Space, live, virtual and constructive missile warning, GPS disruption and infrared special events. Also develop models that model Space as a contested environment to accurately portray impacts of adversary actions in the Space domain.		
OPFOR: A prototype for a next generation tactical surface to air threat simulator emulating modern threats fielded with potential adversary maneuver elements. A plan for integrating Army ground instrumentation within the Air Force run Polygon Range complex.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 6					PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA				772 / Navy Joint National Training Capability (JNTC)					
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		
772: Navy Joint National Training Capability (JNTC)	0.000	3.715	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing		
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-				

Note

COCOM Exercise Engagement and Training Transformation (CE2T2) transferred to the Joint Staff in FY2018 in PE 0804767J from 0804767D8Z.

For FY 2019 and beyond data, please see PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.

A. Mission Description and Budget Item Justification

These funds enable the Navy to develop unique maritime capabilities that integrate joint live, virtual and constructive elements into a seamless joint training environment. The Navy program activities include conducting research, development, test and evaluation, and cross-service architecture certification on joint-capable systems. Additionally, the program develops cross-domain architectures for U.S. and coalition forces and ensures sister service modeling/simulation and instrumentation efforts follow a unified standard.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
Title: Navy Joint National Training Capability (JNTC)	3.715	0.000	0.000
Description: Develops unique maritime capabilities that integrate joint live, virtual, and constructive (JLVC) elements into a seamless joint training environment. Using a scientific and phased approach that focuses on modeling ground, air, space, and maritime capabilities, this program researches new technologies and methods that provide a crucial technology-based foundation to all JNTC Training Transformation (T2), JLVC Federation, and Combatant Commanders exercise and engagement operations.			
FY 2019 Plans: Transition to PE 0804768J			
FY 2020 Plans: Transition to PE 0804768J			
FY 2019 to FY 2020 Increase/Decrease Statement: Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and out to			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA	Project (Number/Name) 772 / Navy Joint National Training Capability (JNTC)	
B. Accomplishments/Planned Programs (\$ in Millions) properly align CE2T2 RDT&E funding to a Non-MHA PE similar to the O&M appropriation. For FY 2019 and beyond data, please see R-2 for PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) – Non MHA.		FY 2018	FY 2019
			FY 2020
Accomplishments/Planned Programs Subtotals			3.715 0.000 0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			N/A
E. Performance Metrics			
RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer (subject matter expert) capabilities developed synchronizes with warfighter requirements. Performance metrics include, but are not limited to: time, money, realism, and fidelity and are defined below.			
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow?			
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training at a more effective and efficient cost than current capabilities allow?			
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow?			
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow?			
Measures:			
Produce one Navy Training Baseline (NTB) software release to include documentation.			
Design and implement upgrades to Joint Semi-Automated Forces (JSAF) consistent with approved requirements and contractual requirements.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804767J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - MHA	Project (Number/Name) 772 / Navy Joint National Training Capability (JNTC)
Document the effects of JSAF capabilities (robustness) and stability.		
Design, implement, test, and integrate NTB enhancements in accordance with requirements.		
Continuously update the common operational picture during large scale JLVC exercises.		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)								
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA								
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	
Total Program Element	0.000	0.000	42.653	40.073	-	40.073	39.209	41.042	41.044	41.041	Continuing	Continuing	
758: Joint National Training Capability (JNTC)	0.000	0.000	29.584	27.201	0.000	27.201	27.775	30.703	30.705	30.702	Continuing	Continuing	
769: Joint Knowledge Development & Distribution Capability (JKDDC)	0.000	0.000	1.126	1.608	0.000	1.608	1.108	1.108	1.108	1.108	Continuing	Continuing	
701: Air Force Joint National Training Capability (JNTC)	0.000	0.000	2.917	2.869	0.000	2.869	2.869	2.869	2.869	2.869	Continuing	Continuing	
772: Navy Joint National Training Capability (JNTC)	0.000	0.000	3.260	3.041	0.000	3.041	3.042	3.042	3.042	3.042	Continuing	Continuing	
773: Joint Interoperability Division (JID)	0.000	0.000	1.845	1.419	0.000	1.419	1.095	0.000	0.000	0.000	Continuing	Continuing	
774: USMC Joint National Training Capability (JNTC)	0.000	0.000	0.921	0.935	0.000	0.935	0.320	0.320	0.320	0.320	Continuing	Continuing	
775: Advanced Distributed Learning (ADL)	0.000	0.000	3.000	3.000	0.000	3.000	3.000	3.000	3.000	3.000	Continuing	Continuing	

Note

For FY 2018 and prior year data, please see PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA.

A. Mission Description and Budget Item Justification

These programs support readiness of the joint force by creating a joint training environment to replicate the complex and changing operational environment. These investments directly support defense strategic guidance and enhance joint warfighting readiness by building training capabilities that support the operational readiness of the force. The elements associated with this coordinated effort consist of:

- Joint National Training Capability (JNTC)
- Joint Knowledge Development & Distribution Capability (JKDDC)
- Air Force Joint National Training Capability (JNTC)

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff	Date: March 2019
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA
- Navy Joint National Training Capability (JNTC)	
- Joint Interoperability Division (JID)	
- Marine Corps Joint National Training Capability (JNTC)	
- Advanced Distributed Learning (ADL)	
JNTC: The mission of the Joint National Training Capability (JNTC) program is to advance joint capabilities and interoperability by concentrating on emerging joint training requirements through collective training using a managed set of globally distributed capabilities and activities. The program resources Service and Special Operations Forces joint training to improve interoperability and create realistic tactical and operational joint training. JNTC enables joint training for Combatant Commands and Services by developing joint training content and ensuring global distributed access. JNTC enabling capabilities support Services and USSOCOM requirements to provide trained and ready forces in support of Combatant Command operational requirements. This program focuses efforts on improving readiness and create a ready surge force consistent with Chairman's guidance.	
JKDDC: Joint Knowledge Development & Distribution Capability (JKDDC) Joint Knowledge Online (JKO) is the program of record for online joint training that implements and operationalizes the OSD training transformation JKDDC. JKO directly supports the CE2T2 program by developing, delivering, tracking, reporting, and supporting online training for Combatant Command exercises; Combatant Command required training; doctrinally based Joint Operations Core Curriculum; multinational, coalition, interagency training; OSD required training; and administration of the Senior Enlisted Joint Professional Military Education program. JKO expends RDT&E funding for leading edge technology review, market research, and integration to directly enhance various aspects of the training capability required to support Combatant Commanders, CE2T2 Program Goals and Objectives, and the Chairman's training guidance. JKO satisfies all requirements necessary to provide CE2T2 stakeholders with a distributed learning capability and access to web-based training content, learning resources, and distributed online training tools.	
Air Force JNTC: The Air Force JNTC funding provides a focused upgrade to develop models for space-based and cyber capabilities for integration into the Joint Live, Virtual, and Constructive (JLVC) environment. Air Force supports development of cross-domain solutions that enable the integration of systems with disparate security requirements which significantly increases the training audience to additional joint and coalition participants. Additionally, the Air Force supports the integration of tactical models into the virtual environment.	
Navy JNTC: These funds enable Navy to develop unique maritime capabilities that integrate JLVC elements into a seamless joint training environment. The Navy program activities include conducting research, development, test and evaluation, and cross-service architecture certification on joint-capable systems. Additionally, the program develops cross-domain architectures for U.S. and coalition forces and ensures sister service modeling/simulation and instrumentation efforts follow a unified standard.	
JID: Joint Interoperability Division (JID) supports 35 annual schoolhouse interoperability courses and up to six CAPSTONE Joint Interface Control Officer (JICO) courses tied to various Combatant Command (CCMD) joint exercises. JID trains CCMD, Services and partner nations' operations center personnel on interoperability planning	

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff	Date: March 2019																																																																		
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA																																																																		
tasks required during contingencies and exercises in emerging mission areas such as joint fires, net enabled weapons, remotely piloted aircraft, integrated air and missile defense, and contested operations including secure internet with Link-16/TDL equipped major weapon systems and smart bombs.																																																																			
<p>Marine Corps JNTC: These funds provide USMC stability and risk reduction to a variety of ongoing joint efforts focused on improving the fidelity and realism of training simulation systems that prepare Marine Air Ground Task Force (MAGTF) units for deployment in support of CCMD operations. In support of the Commandant's planning guidance, the Marine Corps will continue to improve performance and support of the MAGTF Tactical Warfare Simulation in the areas of the JLVC-Multi-Resolution Federation (MRF) Bridge, common database terrain data ingestion, and JLVC interoperability. It also provides a single source training environment capability enabling users to select single or multiple play boxes (terrain data sets) for training simulation systems. In addition to developing an exercise planning, design, implementation, execution, and control tool, it also enhances pattern of life and indigenous population modular service enabling exercise designers' ability to rapidly build new scenarios and incorporate human geography elements into training scenarios.</p> <p>ADL: The Advanced Distributed Learning (ADL) initiative supports innovation and provides policy oversight to help the Services, Joint Staff, and partner agencies deliver training and education more efficiently and cost effectively. ADL provides policy oversight and coordination across DoD, coalition partners, and other Federal agencies for distributed learning. This oversight supports interagency interoperability and promotes personnel readiness, ensuring the right people receive the right training at the right time.</p>																																																																			
<table> <thead> <tr> <th>B. Program Change Summary (\$ in Millions)</th><th>FY 2018</th><th>FY 2019</th><th>FY 2020 Base</th><th>FY 2020 OCO</th><th>FY 2020 Total</th></tr> </thead> <tbody> <tr> <td>Previous President's Budget</td><td>0.000</td><td>42.940</td><td>40.073</td><td>-</td><td>40.073</td></tr> <tr> <td>Current President's Budget</td><td>0.000</td><td>42.653</td><td>40.073</td><td>-</td><td>40.073</td></tr> <tr> <td>Total Adjustments</td><td>0.000</td><td>-0.287</td><td>0.000</td><td>-</td><td>0.000</td></tr> <tr> <td> • Congressional General Reductions</td><td>-</td><td>-0.287</td><td></td><td></td><td></td></tr> <tr> <td> • Congressional Directed Reductions</td><td>-</td><td>-</td><td></td><td></td><td></td></tr> <tr> <td> • Congressional Rescissions</td><td>-</td><td>-</td><td></td><td></td><td></td></tr> <tr> <td> • Congressional Adds</td><td>-</td><td>-</td><td></td><td></td><td></td></tr> <tr> <td> • Congressional Directed Transfers</td><td>-</td><td>-</td><td></td><td></td><td></td></tr> <tr> <td> • Reprogrammings</td><td>-</td><td>-</td><td></td><td></td><td></td></tr> <tr> <td> • SBIR/STTR Transfer</td><td>-</td><td>-</td><td></td><td></td><td></td></tr> </tbody> </table>		B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Previous President's Budget	0.000	42.940	40.073	-	40.073	Current President's Budget	0.000	42.653	40.073	-	40.073	Total Adjustments	0.000	-0.287	0.000	-	0.000	• Congressional General Reductions	-	-0.287				• Congressional Directed Reductions	-	-				• Congressional Rescissions	-	-				• Congressional Adds	-	-				• Congressional Directed Transfers	-	-				• Reprogrammings	-	-				• SBIR/STTR Transfer	-	-			
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<p>Change Summary Explanation</p> <p>Funding transferred from PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA to PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA beginning FY 2019 and beyond to properly align CE2T2 RDT&E funding to a Non-MHA PE. For FY 2018 and prior year data, please see R-2 for PE 0804767J / COCOM Exercise Engagement and Training Transformation (CE2T2) - MHA.</p> <p>FY 2019 Congressional reduction of \$287K taken for FFRDC reductions (Section 8024).</p>																																																																			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 6					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA				758 / Joint National Training Capability (JNTC)					
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		
758: Joint National Training Capability (JNTC)	0.000	0.000	29.584	27.201	0.000	27.201	27.775	30.703	30.705	30.702	Continuing	Continuing		
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-				
A. Mission Description and Budget Item Justification														
Investment in the Joint National Training Capability (JNTC) program enables Service and Combatant Commands to train as they operate. The requested funding continues to modernize joint training capabilities into a single integrating architecture aligned to DoD Chief Information Officer IT mandates. Funding supports development of cloud-enabled modular training application services within an Open Systems Architecture (OSA). JNTC focuses on delivering operationally relevant training environments and respond to changes in the global security landscape and the warfighter's operational environment. JNTC enables the Department of Defense to be responsive to the warfighters' changing operational concepts, threat environments, and best practices. Funds support improved relevance and realism of training by providing capabilities that replicate the contemporary and future operating environment.														
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020	
Title: Joint National Training Capability (JNTC)											-	29.584	27.201	
Description: JNTC provides the technical standards, architecture, and development processes required to integrate/link joint training programs. Funding supports the technical integration of Joint and Service models and simulations with the Joint, Live, Virtual, Constructive (JLVC) training capabilities. The capabilities enable aggregation of training audiences at the Combatant Command, Joint Task Force, and Component Command headquarter levels. The funding also supports modernization of the Joint Training Environment (JTE) through a Modular Open Systems Architecture (MOSA) approach to include a cloud enabled web accessible Joint Training Tool (JTT) that supports all phases of an exercise (planning, execution, and AAR). JTT will increase warfighter access to semi-automated training enablers within the Joint Training Synthetic Environment (JTSE).														
FY 2019 Plans:														
FY 2019 Plans:														
1. Continue to modernize the information technology architecture supporting the delivery of joint training capabilities and services.														
2. Continue to develop the joint simulation service. Coordinate a "proof of concept" first use of the simulation service, and execute "proof of concept" use of JTT design and planning services supporting an exercise Joint Exercise Life Cycle (JELC). Exercise planning begins in FY2019 and continues through the exercise, which occurs in FY2020.														

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>	Project (Number/Name) 758 / Joint National Training Capability (JNTC)	
B. Accomplishments/Planned Programs (\$ in Millions)			
<p>3. Design, develop, and integrate tailored architectures, adaptive technology, and plans for Joint Staff, Combatant Commander, and Service training events/exercises.</p> <p>4. Add capability to the Joint Training Synthetic Environment (JTSE) aligned to supporting Global Integrated Exercises (GIE) and the ability to validate concepts while exercising operational and global campaign plans.</p> <p>5. Develop functional capabilities aligned with the Joint Training Synthetic Environment (JTSE) modeling and simulation roadmap (2019), available at: https://jsportal.sp.pentagon.mil/sites/J7/JT/EA/MS%20Roadmap/Forms/AllItems.aspx.</p> <p>6. Enhance current joint simulation (within JLVC) to keep pace with operational environment changes.</p> <p>7. Manage the enhancements to Service-owned JLVC federates and technically integrate the broader JLVC federation following these enhancements.</p> <p>8. Oversee implementation of Director of Joint Force Development's Joint Training Technical Interoperability (JTTI) Strategy.</p>	FY 2018	FY 2019	FY 2020
<p>FY 2020 Plans:</p> <p>1. Use JTT design and planning services as the primary tool in support of an exercise JELC.</p> <p>2. Conduct a "proof of concept" use of JTT simulation service. Continue planning transition of the JTT as the primary tool supporting all aspects of exercises.</p> <p>3. Integrate, test, and validate Service and Agency JLVC capabilities.</p> <p>4. Enhance joint simulation (within JLVC) to keep pace with operational environment changes (annual requirement).</p>	-	29.584	27.201
<p>C. Other Program Funding Summary (\$ in Millions)</p> <p>N/A</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>	Project (Number/Name) 758 / Joint National Training Capability (JNTC)
C. Other Program Funding Summary (\$ in Millions)		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics RDT&E development efforts are evaluated based on the performance metrics below. This ensures the JNTC capability development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to: access, cost, realism, relevance, and technology and are defined below. Access – Develop design standards that enable participation across DoD and, as applicable, with Coalition Partners. Make the environment available to meet user demands. Cost – Enable the Joint Force Trainer to prepare and execute training more efficiently than current capabilities allow. Realism – Enable the Joint Force Trainer to create a training environment that is closer to the real world environment than current capabilities allow. Relevance – Maintain operational relevance through adaptation to the changing operational environment. Technology – Sustain the training environment network through developments for distributed home station training that include modular cloud-enabled training services.		
Measures: Cost - Vendors provide ordered hours and projected costs remain within 10 percent of government estimates. Schedule - Task completions (software enhancements, bug fixes, and cyber security requirements) delivered within six months of government estimate. Task Performance - Product results, outcomes or milestones meet specified requirements and successfully pass more than 80 percent of operational assessment test cases.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 6					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA				769 / Joint Knowledge Development & Distribution Capability (JKDDC)					
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		
769: Joint Knowledge Development & Distribution Capability (JKDDC)	0.000	0.000	1.126	1.608	0.000	1.608	1.108	1.108	1.108	1.108	Continuing	Continuing		
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-				

A. Mission Description and Budget Item Justification

Joint Knowledge Online (JKO) is the DoD unique and authoritative source for online joint training. JKO is tasked to develop a DoD enterprise-wide, joint individual training toolkit of web-enabled individual and small group training products, services, and enabling training technology. Products and services are developed in response to OSD program goals, CJCS high interest training issues, Joint Staff training priorities, and JKO stakeholders (Combatant Commands, Services, Combat Support Agencies, Interagency, and multinational partners) prioritized training requirements. JKO supports a career-long joint learning continuum, joint professional military education, and tailored common training standards to Service members on tasks that are jointly executed. JKO research and development will improve all components of the Joint Content Management Architecture (JCMA) including:

1. JKO Learning Content Management System (LCMS): Development and enhancement is required to integrate advanced individual and staff training technologies and methodologies with larger scale, collective training exercises, and modernize military training capability with a DoD enterprise-wide online training toolkit. There are currently over 3.6 million registered users of the JKO LCMS.
2. Small Group Scenario Trainer (SGST) desktop modeling and simulation based training: This JKO capability trains and prepares thousands of military and civilian personnel deploying to Combatant Command theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. JKO integration of SGST simulation exercise scenarios and prerequisite JKO courses significantly enhance blended learning training support to large-scale, collective training exercises.
3. JKO mobile application training development: Development and enhancements will significantly increase availability and access of web-based joint training content on portable, hand-held platforms (e.g. cell phones and tablets).

B. Accomplishments/Planned Programs (\$ in Millions)

Title	FY 2018	FY 2019	FY 2020
Title: Joint Knowledge Development & Distribution Capability (JKDDC)	-	1.126	1.608

Description: Joint Knowledge Online (JKO) advance technology initiatives primarily include the JKO Learning Content Management System (LCMS) application, Small Group Scenario Trainer (SGST) desktop modeling and simulation based training capability, and mobile courseware training applications. These capabilities increase access to, and facilitate the training and preparation of, hundreds of thousands of military and civilian personnel deploying to Combatant Command (CCMD) theaters of operation prior to serving in their assigned Combined/Joint Task Force (C/JTF) billets. JKO LCMS development

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA	Project (Number/Name) 769 / Joint Knowledge Development & Distribution Capability (JKDDC)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018 FY 2019 FY 2020
and enhancements are required to develop, host, deliver, track, report and support students' completions, progress and survey results more effectively and efficiently. C/JTF "battle staffs" will be better trained, as individuals and as staffs, based on SGST development and implementation throughout the joint training enterprise. JKO mobile courseware training development facilitates the global distribution of web-based joint training content on portable, hand-held platforms for DoD personnel.			
FY 2019 Plans: <ol style="list-style-type: none">1. Develop, test, and deliver two JKO Learning Content Management System (LCMS) releases resulting in improved cybersecurity, and a more effective and efficient online training management application that is interoperable with DoD personnel management systems. JKO anticipates these enhancements will improve access and ease of use for the projected ~50,000 daily log-ins and ~560,000 monthly course completions by DoD personnel.2. Develop, test, and deliver four JKO Small Group Scenario Trainer (SGST) desktop modeling and simulation application releases resulting in a more effective and efficient training capability integrated within the JKO LCMS. JKO anticipates these enhancements will improve the quality of the training experience for Combatant Command and Service exercise participants resulting in heightened preparedness for real world operations. Individual training proficiency improvement will be measured and quantified as part of the exercise design.3. JKO will assess, refine, and continue executing a comprehensive plan to enhance the JKO mobile capability and mobile training products via Responsive Design. JKO's planned components include courseware and video conversions to portable hand-held devices while leveraging other DoD agencies, interagency, and multinational training courseware ported to the JKO. JKO anticipates the development and conversion of ~200 training courses, eBooks, Podcasts, job aids, and videos resulting in reduced cost for classroom training and thousands of hours delivered onsite and on demand to DoD personnel mobile platforms worldwide.			
FY 2020 Plans: <ol style="list-style-type: none">1. Continue development of the LCMS, SGST, and JKO mobile initiatives in the FY2019 plans.2. JKO will research, develop, test, and evaluate a virtual classroom (VClass) open source capability (Sakai) to be integrated into the JKO LCMS suite of tools for synchronous (live) and non-synchronous (video-taped) instructor led training as well as a micro learning technology (Pervasive Learning System (PERLS)), in conjunction with ADL, for content development and delivery on both the mobile and LCMS platforms. JKO's new VClass capability will provide required enhanced distributed learning (DL) much like today's universities with an expectation of student-to-instructor collaboration; student-to-student collaboration; written assignment evaluation; live instructor response and teaching; and critical thinking exercises and assignments. PERLS delivers self-regulated micro-learning training that is designed to be engaging, usable and practical, allowing individuals to quickly access			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>	Project (Number/Name) 769 / Joint Knowledge Development & Distribution Capability (JKDDC)	
B. Accomplishments/Planned Programs (\$ in Millions) desired learning content whenever an opportunity arises. As DoD organizations increase training via DL opportunities to mitigate expenses due to decreased funding and personnel, the methodologies of developing and delivering DL must be cutting edge, timely and optimize the learning experience of the joint warfighter. PERLS and micro-learning provide that edge and optimization.			FY 2018
FY 2019 to FY 2020 Increase/Decrease Statement: FY 2020 increase was a CE2T2 programming decision in the FY 2020 POM to fund open source virtual classroom (Sakai) and micro learning technology (PERLS) research, test, development, and evaluation to keep pace with current state-of-the-art on-line collaborative training.			FY 2019
			FY 2020
			Accomplishments/Planned Programs Subtotals
			- 1.126 1.608
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Joint Staff prescribed performance metrics include, but are not limited to: time, cost, realism, and fidelity and are defined below.			
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow?			
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training at a more effective and efficient cost than current capabilities allow?			
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow?			
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow?			
Measures: Identify, develop, test and implement 15 or more cybersecurity, operational, and functional JKO Learning Content Management System (LCMS) requirements.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - Non MHA	Project (Number/Name) 769 / Joint Knowledge Development & Distribution Capability (JKDDC)
Identify, develop, test and implement 12 or more cybersecurity, operational, and functional JKO Small Group Scenario Trainer (SGST) requirements.		
Identify, develop, test and implement 6 or more cybersecurity, operational, and functional JKO mobile application requirements.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA				701 / Air Force Joint National Training Capability (JNTC)				
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	
701: Air Force Joint National Training Capability (JNTC)	0.000	0.000	2.917	2.869	0.000	2.869	2.869	2.869	2.869	2.869	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
The Air Force JNTC funding provides a focused upgrade to develop models for space-based capabilities for integration into the joint live, virtual, and constructive environment. The Air Force supports development of cross-domain solutions that enable the integration of systems with disparate security requirements which significantly increases the training audience to additional joint and coalition participants.													
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020
Title: Air Force Joint National Training Capability (JNTC)											-	2.917	2.869
Description: Air Force continues to develop joint enablers that drive realistic/effective training in contested and degraded environments across the CE2T2 enterprise. It supports development of a capability that replicates highly advanced surface-to-air missile and anti-aircraft artillery threats to U.S. and coalition forces. Additionally, Air Force continues to build upon prior investments in the cyber and space domains by improving fidelity of synthetic environments, ability to portray and control blue, red, and neutral entities and effects, interoperability with other Service, joint, and JLVC federation models and simulations, and support of CE2T2 mission partners.													
FY 2019 Plans:													
1. Replication of advanced adversary surface-to-air missile and anti-aircraft artillery capabilities.													
2. Development of new capabilities for integration of the cyber simulator environment generator and "blue" cyber effects simulation. Continue to add functionality to the ACE-IOS M&S suite. Further development to allow live space aggressor forces to interact with a virtual constructive environment replicating threats to the space environment.													
3. Space simulation improvements to model improved fidelity of space entities and adversary effects, enhance exercise control and OPFOR capabilities, and improve space simulation interoperability with CE2T2 mission partners.													
4. Capability to integrate live systems with constructive inputs and virtual environments.													
FY 2020 Plans:													
1. Replication of advanced adversary surface-to-air missile and anti-aircraft artillery capabilities.													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA	Project (Number/Name) 701 / Air Force Joint National Training Capability (JNTC)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
2. Development of new capabilities for integration of the cyber simulator environment generator and "blue" cyber effects simulation. Continue to add functionality to the ACE-IOS M&S suite. Further development to allow live space aggressor forces to interact with a virtual constructive environment replicating threats to the space environment.				
3. Space simulation improvements to model improved fidelity of space entities and adversary effects, enhance exercise control and OPFOR capabilities, and improve space simulation interoperability with CE2T2 mission partners.				
4. Capability to integrate live systems with constructive inputs and virtual environments.				
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease is based on CE2T2 FY20 POM Panel decision.	Accomplishments/Planned Programs Subtotals	-	2.917	2.869
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy	N/A			
E. Performance Metrics	Time – Will the effort enable the Air Force JNTC to prepare and execute training more timely than current capabilities allow. Cost – Will the effort enable the Air Force JNTC to prepare and execute training at a more effective and efficient cost than current capabilities allow. Realism – Will the effort enable the Air Force JNTC to create a training environment that is closer to the real world environment than current capabilities allow. Fidelity – Will the effort enable the Air Force JNTC to create more detailed capabilities in the training environment than current capabilities allow.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>	Project (Number/Name) 701 / Air Force Joint National Training Capability (JNTC)
Measures:		
Cyber: Establish a persistent simulation environment that can be configured rapidly and accurately to reflect the desired operating environment of the training audience. Also, create an ability to reflect cyber activities against a live Integrated Air Defense system.		
Space: a fully operational GPS environment which allows space operators to actively participate in distributed mission operations space live, virtual, constructive missile warning, GPS disruption and Infrared special events. Also develop space models to model Space as a contested environment to accurately portray impacts of adversary actions in the space domain. Also enhance exercise control and OPFOR capabilities and improve space simulation interoperability with CE2T2 mission partners.		
Operational Forces: a prototype for a next generation tactical surface to air threat simulator emulating modern threats fielded with potential adversary maneuver elements. Also develop a capability to integrate live systems with constructive inputs and virtual environments.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA				772 / Navy Joint National Training Capability (JNTC)				
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	
772: Navy Joint National Training Capability (JNTC)	0.000	0.000	3.260	3.041	0.000	3.041	3.042	3.042	3.042	3.042	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
These funds enable the Navy to develop unique maritime capabilities that integrate joint live, virtual, and constructive elements into a seamless joint training environment. The Navy program activities include conducting research, development, test and evaluation, and cross-service architecture certification on joint-capable systems. Additionally, the program develops cross-domain architectures for U.S. and Coalition Forces and ensures sister service modeling/simulation and instrumentation efforts follow a unified standard.													
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020
Title: Navy Joint National Training Capability (JNTC) Description: Develops unique maritime capabilities that integrate joint live, virtual, and constructive (JLVC) elements into a seamless joint training environment. Using a scientific and phased approach that focuses on modeling ground, air, space, and maritime capabilities, this program researches new technologies and methods that provide a crucial technology-based foundation that supports all JNTC training transformation, JLVC federation, and Combatant Commanders exercise and engagement operations. FY 2019 Plans: 1. Research and development for current and emerging Ballistic Missile Defense (BMD) threat representation. 2. Development of new capabilities for integration with the annual Navy training baseline software release enabling the development of tactics, techniques and procedures for contested battlespace environments and ballistic missile defense. 3. Integration of air and missile defense, electronic warfare, information operations, strike warfare, ballistic missile defense, "blue" force and opposition force capabilities. 4. Deliver Navy Continuous Training Environment (NCTE) simulation for combat system and C4I stimulation training. 5. Update emerging high-end threat capabilities into JSAF.											-	3.260	3.041

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>	Project (Number/Name) 772 / Navy Joint National Training Capability (JNTC)	
B. Accomplishments/Planned Programs (\$ in Millions) 6. Integrate virtual and blended reality into the JLVC environment. FY 2020 Plans: 1. Continue FY2019 efforts. 2. Develop improvements to architecture and representations to support the effects of GPS jamming on sensors and weapons systems in partnership with the USAF Distributed Mission Operations Center – Space (DMOC-S). 3. Develop and engineer web based graphical user interfaces to replace all existing desktop-based applications. Migrate existing desktop environment to virtualized solution. Implement failover and load balancing for simulation FY 2020 Plans: 1. Continue FY2019 efforts. 2. Develop improvements to architecture and representations to support the effects of GPS jamming on sensors and weapons systems in partnership with the USAF Distributed Mission Operations Center – Space (DMOC-S). 3. Develop and engineer web based graphical user interfaces to replace all existing desktop-based applications. Migrate existing desktop environment to virtualized solution. Implement failover and load balancing for simulation components. Implement Software as a Service to align with the future joint training environment architecture.	FY 2018	FY 2019	FY 2020
C. Other Program Funding Summary (\$ in Millions) N/A	Accomplishments/Planned Programs Subtotals	-	3.260 3.041
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics RDT&E development efforts are evaluated based on performance metrics. This ensures the Joint Force Trainer (subject matter expert) capabilities development effort synchronizes with warfighter requirements. Performance metrics include, but are not limited to: time, money, realism, and fidelity and are defined below.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - Non MHA	Project (Number/Name) 772 / Navy Joint National Training Capability (JNTC)
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow?		
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training at a more effective and efficient cost than current capabilities allow?		
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow?		
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow?		
The Navy will produce one Navy training baseline software release to include documentation; will design and implement upgrades to Joint Semi-Automated Forces (JSAT) consistent with approved requirements and contractual requirements and document the effects of JSAT capabilities and stability. Will design, implement, test, and integrate enhancements in accordance with requirements.		
For JSAT, Joint Simulation BUS (JBUS) reliability, scalability, and tactical control, the Navy will continuously update the common operational picture during large scale JLVC exercises.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA				773 / Joint Interoperability Division (JID)				
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	
773: Joint Interoperability Division (JID)	0.000	0.000	1.845	1.419	0.000	1.419	1.095	0.000	0.000	0.000	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
JID is the sole Department of Defense provider of joint interoperability training and Joint Interface Control Officer (JICO) production. JID trains CCMD, Services and partner nations' operations center personnel in mission areas such as joint fires, net enabled weapons, remotely piloted aircraft, integrated air and missile defense, and contested operations including secure internet with Link-16/TDL equipped major weapon systems and smart bombs. FY19 was the first year the JID received RDT&E funding in order to support the development of the JICO Simulator. The JICO Simulator will allow the JID to train students across the Services on the proper planning, management and execution of tactical data links (TDL) to fill the gaps for non-participating weapon systems missing in live exercises.													
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020
Title: Joint Interoperability Division (JID)											-	1.845	1.419
Description: JICO Simulator will allow the JID to train students across the Services on the proper planning, management and execution of tactical data links (TDL). The simulator will allow the JID to build robust practice scenarios that students can execute fixing TDL architecture plans as necessary. This capability will not only create realistic training scenarios with the ability to inject multi-tactical data link network anomalies for training, but can also be used to support Combatant Command (CCMD) operations centers during planned exercises.													
FY 2019 Plans: Build robust practice scenarios for JICO/TDL students. Automate OPTASK LINK planning message construction. Emulate Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS), Satellite Transportable Terminal (STT) radio operations between weapon systems. Produce track files with all fields, words and message sets. Populate TDL tabular displays for all weapon systems.													
FY 2020 Plans:													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - Non MHA	Project (Number/Name) 773 / Joint Interoperability Division (JID)	
B. Accomplishments/Planned Programs (\$ in Millions) Show data link operations effects with degraded satellites and SIPR connectivity. Provide multi-level security to Partner Nations' picture. Inject TDL information (including NATO Link-22) into CCMD, Component and Partner Nation operations centers.			FY 2018 FY 2019 FY 2020
FY 2019 to FY 2020 Increase/Decrease Statement: Minor funding reduction to balance RDT&E program.			
Accomplishments/Planned Programs Subtotals			- 1.845 1.419
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Measures: Cost - Vendor provides software enhancement costs within 10% of government estimate. Schedule - Vendor provides software releases delivered within one month of government estimate. Performance - Vendor provides software that passes 80% of the Operations Assessment Cases. DoD Demand - Number of JICO courses, joint exercises, and JICO support team requests supported by the JICO simulator software. Partner Nation - Number of Five Eyes partner nations using the JICO Simulator software (active foreign military sales cases).			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)				
0400 / 6					PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA				774 / USMC Joint National Training Capability (JNTC)				
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	
774: USMC Joint National Training Capability (JNTC)	0.000	0.000	0.921	0.935	0.000	0.935	0.320	0.320	0.320	0.320	Continuing	Continuing	
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-			
A. Mission Description and Budget Item Justification													
These funds advance USMC training capabilities by providing stability and risk reduction to a variety of efforts focused on improving the fidelity and realism of training simulation systems. These systems are tailored to prepare operational Marine Air Ground Task Force (MAGTF) units for worldwide deployment in support of CCMD operations and engagements and are available to any organization or entity training via the JLVC federation of training tools. Based on the Commandant's planning guidance, the Marine Corps will continue to improve performance of the MAGTF Tactical Warfare Simulation in the areas of the JLVC-multi-resolution federation bridge, common database terrain data ingestion, and JLVC interoperability. The MAGTF Tactical Warfare Simulation also provides a single source training environment capability that enables users to select single or multiple play boxes (terrain data sets) for training simulation systems easing the burden of requesting terrain, 3D models, and other geographic layers into a single source. In addition to developing an exercise planning, design, implementation, execution, and control tool, the MAGTF Tactical Warfare Simulation also enhances pattern of life (PoL) / indigenous population modular service enabling exercise designers the ability to rapidly build new scenarios and incorporate human geography elements into the training scenarios.													
B. Accomplishments/Planned Programs (\$ in Millions)											FY 2018	FY 2019	FY 2020
Title: Marine Corps Joint National Training Capability (JNTC)											-	0.921	0.935
Description: Provides pattern of life (POL) / indigenous population (IP) concept development and integration, supporting both constructive and virtual training simulation systems by injecting "people packs" with realistic attributes and behaviors associated with specified regions. Full integration of terrain generation 3D models and objects into joint federation synthetic training environment eliminates the burden of requesting terrain data by the Services and CCMDs creates a single, shareable, repository across the federation. Addresses crucial integration of MTWS into the Korean side of multi-resolution federation bridge supporting Ulchi Focus Guardian covering training shortfalls in engineering obstacle simulations (minefields, chemical, anti-tank ditches, bridges, etc.). Initiates design and development of a joint exercise design and control tool enhancing connectivity across multiple platforms providing exercise planning, design and control within various joint simulation constructs.													
FY 2019 Plans: Continue development of pattern-of-life (POL) models that can insert synthetic opposing forces and civilian population into scenarios that will autonomously respond with native behaviors of that region providing synthetic adversaries that adapt to various training scenarios in multi-domain joint training.													

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - Non MHA	Project (Number/Name) 774 / USMC Joint National Training Capability (JNTC)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
	<p>Provide a capability for all simulation systems to use the same standardized terrain datasets across training domains. Sustain pre-deployment training for operations while supporting the readiness of deployed forces, particularly those primarily focused on global response force readiness.</p> <p>Address crucial integration of MTWS into Korean side of multi-resolution federation bridge supporting Ulchi Focus Guardian covering shortfalls identified in addressing engineering obstacle simulations (minefields, chemical, anti-tank ditches, bridges, etc.).</p> <p>Continue design and development of a joint exercise design and control tool enhancing interoperability and connectivity across multiple platforms. Deliver sharper training environment definitions, assist with defining friendly, FY 2019 Plans:</p> <p>Continue development of pattern-of-life (POL) models that can insert synthetic opposing forces and civilian population into scenarios that will autonomously respond with native behaviors of that region providing synthetic adversaries that adapt to various training scenarios in multi-domain joint training.</p> <p>Provide a capability for all simulation systems to use the same standardized terrain datasets across training domains. Sustain pre-deployment training for operations while supporting the readiness of deployed forces, particularly those primarily focused on global response force readiness.</p> <p>Address crucial integration of MTWS into Korean side of multi-resolution federation bridge supporting Ulchi Focus Guardian covering shortfalls identified in addressing engineering obstacle simulations (minefields, chemical, anti-tank ditches, bridges, etc.).</p> <p>Continue design and development of a joint exercise design and control tool enhancing interoperability and connectivity across multiple platforms. Deliver sharper training environment definitions, assist with defining friendly, enemy, neutrals (including joint multinational and synthetic forces), and support to concurrent planning tools.</p> <p>Explore innovative ways to train for operations in strategically challenging transregional, multi-domain and multi-functional (TMM) environments. Use web-based cloud technologies to accelerate exercise development and execution.</p> <p>FY 2020 Plans:</p> <p>Continue development of pattern-of-life (POL) models that can insert synthetic opposing forces and civilian population into scenarios that will autonomously respond with native behaviors of that region providing synthetic adversaries that adapt to various training scenarios in multi-domain joint training.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise Engagement and Training Transformation (CE2T2) - Non MHA	Project (Number/Name) 774 / USMC Joint National Training Capability (JNTC)	
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020
Provide a capability for all simulation systems to use the same standardized terrain datasets across training domains. Sustain pre-deployment training for operations while supporting the readiness of deployed forces, particularly those primarily focused on global response force readiness.			
Address crucial integration of MTWS into Korean side of multi-resolution federation bridge supporting Ulchi Focus Guardian covering shortfalls identified in addressing engineering obstacle simulations (minefields, chemical, anti-tank ditches, bridges, etc.).			
Continue design and development of a joint exercise design and control tool enhancing interoperability and connectivity across multiple platforms. Deliver sharper training environment definitions, assist with defining friendly, enemy, neutrals (including joint multinational and synthetic forces), and support to concurrent planning tools.			
Explore innovative ways to train for operations in strategically challenging transregional, multi-domain and multi-functional (TMM) environments. Use web-based cloud technologies to accelerate exercise development and execution.			
FY 2019 to FY 2020 Increase/Decrease Statement: Minor funding increase to balance RDT&E program.			
	Accomplishments/Planned Programs Subtotals	-	0.921 0.935
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
RDT&E development efforts are evaluated based on performance metrics. This ensures Marine Corps planners and the Joint Force Trainer (subject matter expert) capabilities involved in these development effort synchronize outcomes with warfighter requirements. Performance metrics include, but are not limited to: time, money, realism, and fidelity and are defined below.			
Time – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training more timely than current capabilities allow.			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - Non MHA	Project (Number/Name) 774 / USMC Joint National Training Capability (JNTC)
Cost – Will the effort enable the Joint Force Trainer (subject matter expert) to prepare and execute training at a more effective and efficient cost than current capabilities allow.		
Realism – Will the effort enable the Joint Force Trainer (subject matter expert) to create a training environment that is closer to the real world environment than current capabilities allow.		
Fidelity – Will the effort enable the Joint Force Trainer (subject matter expert) to create more detailed capabilities in the training environment than current capabilities allow.		
The Marine Corps will provide key elements of the proposed change that will allow the USMC to structure a variety of LVC enhancements in a more cost-effective manner to support training efforts within the GRF, NATO, CCMDs, SP-MAGTF and other deploying forces. By expanding the capabilities of existing capabilities through partnerships and cost-sharing efforts that focus on emerging theater training requirements, the changes proposed herein leverage cloud and other technologies to provide the training necessary to address several DoD goals and objectives listed in Commandant's planning guidance and Chairman's joint training guidance.		

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff											Date: March 2019			
Appropriation/Budget Activity					R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 6					PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>				775 / Advanced Distributed Learning (ADL)					
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		
775: Advanced Distributed Learning (ADL)	0.000	0.000	3.000	3.000	0.000	3.000	3.000	3.000	3.000	3.000	Continuing	Continuing		
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-				
A. Mission Description and Budget Item Justification														
The ADL Initiative supports innovation and provides policy oversight to help the Services, Joint Staff, and partner agencies deliver their training and education more efficiently and cost effectively—anytime, anywhere. ADL provides policy oversight and coordination across DoD, Coalition partners, and other Federal agencies for distributed learning. This work supports interoperability (i.e., ensuring interagency technical and organizational systems function together). Ultimately, this promotes personnel readiness, ensuring the right people receive the right training and education, at the right time, and at the right cost.														
B. Accomplishments/Planned Programs (\$ in Millions)														
Title: Advanced Distributed Learning (ADL)											FY 2018	FY 2019	FY 2020	
Description: The ADL Initiative supports innovation and provides policy oversight to help the Services, Joint Staff, and partner agencies deliver their training and education more efficiently and cost effectively—anytime, anywhere. ADL provides policy oversight and coordination across DoD, Coalition partners, and other Federal agencies for distributed learning. This work supports interoperability (i.e., ensuring interagency technical and organizational systems function together). Ultimately, this promotes personnel readiness, ensuring the right people receive the right training and education, at the right time, and at the right cost.											-	3.000	3.000	
FY 2019 Plans:														
1. Continue implementation of revised DoDI 1322.26 requirements, while also providing coordination with Joint Services, and guidance on the incorporation of xAPI into distributed learning software systems.														
2. Provide support to joint services on transitioning emerging learning systems to include digital tutors, personal learning assistants, and the like which will further personalize training.														
3. Further develop research to provide learning science, specifications, guidance and best practices, and technology applications to the joint services in order to further enable their capabilities to deliver next generation learning across a distributed operations environment.														

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff			Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation (CE2T2) - Non MHA</i>	Project (Number/Name) 775 / Advanced Distributed Learning (ADL)	
B. Accomplishments/Planned Programs (\$ in Millions)			
4. Support enhancements to multinational training by continuing collaboration with coalition partners and gaining support to integrate e-learning.		FY 2018	FY 2019
FY 2020 Plans: 1. Continue implementation of revised DoDI 1322.26 requirements, while also providing coordination with Joint Services, and guidance on the incorporation of xAPI into distributed learning software systems. Planned pilot test with JKO-based blended learning package (in conjunction with a Combatant Command exercise). 2. Mobile Training Capability Enhancement for “informal micro-learning” via a smartphone system called the “PERvasive Learning System” (PERLS). Capability capitalizes on personnel learning experience outside of formal training/education settings. Support software development integration of PERLS in JKO LCMS and Mobile tools. 3. Learner-Centric, Total Learning Architecture (TLA). Develop next-generation interoperability specifications that will form the backbone for the “learner-centric, next-generation, technology-enabled” future joint learning environment, in direct support of Joint Force Development goals. FY20 TRL = 6 4. Support enhancements to multinational training by continuing collaboration with coalition partners and gaining support to integrate e-learning into multination exercises.			FY 2020
Accomplishments/Planned Programs Subtotals			- 3.000 3.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
RDT&E development efforts are evaluated based on performance metrics. This ensures the development of Joint Force Trainer (subject matter expert) capabilities synchronize with warfighter requirements. Performance metrics include, but are not limited to: time, cost, realism, and fidelity.			
Measures: 1. Number of collaborative advanced technology demonstrations (i.e., projects supporting transition of new technology into joint training).			

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Exhibit R-2A, RDT&E Project Justification: PB 2020 The Joint Staff		Date: March 2019
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0804768J / COCOM Exercise <i>Engagement and Training Transformation</i> (CE2T2) - Non MHA	Project (Number/Name) 775 / Advanced Distributed Learning (ADL)
<p>2. Number of improvement plans defined (i.e., articulation of plans for future enhancements to joint training).</p> <p>3. Influence on key Service and international ADL meetings and conferences that advance the discovery, sharing and delivery of interoperable training content.</p> <p>4. Increase sharing of data among DoD, other federal agencies, and state and local education departments throughout the U.S. by making educational resources discoverable and retrievable.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 The Joint Staff											Date: March 2019						
Appropriation/Budget Activity					R-1 Program Element (Number/Name)												
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 7: <i>Operational Systems Development</i>					PE 0208043J / Planning and Decision Aid System (PDAS)												
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					
Total Program Element	17.797	3.037	3.037	4.537	-	4.537	3.104	3.043	3.434	3.363	Continuing	Continuing					
P001: <i>Planning and Decision Aid System OPS</i>	17.797	3.037	3.037	4.537	-	4.537	3.104	3.043	3.434	3.363	Continuing	Continuing					
A. Mission Description and Budget Item Justification																	
Provides engineering and testing support to the Planning and Decision Aid System, a classified Joint Staff automated information system supporting the Combatant Commanders, Services, and Department of Defense agencies.																	
Classified details provided in a separate CLASSIFIED budget exhibit.																	
B. Program Change Summary (\$ in Millions)					FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total								
Previous President's Budget					3.037	3.037	3.037	-	3.037								
Current President's Budget					3.037	3.037	4.537	-	4.537								
Total Adjustments					0.000	0.000	1.500	-	1.500								
• Congressional General Reductions					-	-											
• Congressional Directed Reductions					-	-											
• Congressional Rescissions					-	-											
• Congressional Adds					-	-											
• Congressional Directed Transfers					-	-											
• Reprogrammings					-	-											
• SBIR/STTR Transfer					-	-											
• Program adjustment					-	-	1.500	-	1.500								
Change Summary Explanation																	
\$1,500K increase in FY 2020 to improve data security. See CLASSIFIED submission for additional details.																	

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