Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Office of the Secretary Of Defense	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604532D8Z / *Joint Artificial Intelligence*

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	70.000	12.968	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
006: *Joint Artificial Intelligence*	70.000	12.968	0.000	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 JAIC was established to preserve and expand our military advantage in support of the Department's 2018 National Defense Strategy. As a primarily executing body it will accelerate the delivery of Artificial Intelligence (AI) enabled capabilities, scale the Department-wide impact of AI, and synchronize DoD AI activities to expand Joint Force advantages. The JAIC mission is to accelerate the delivery of AI to achieve impact scaled across the DoD at relevant speed to transform the DoD and ensure the nation maintains a competitive advantage. JAIC capitalizes on Project Maven's efforts as the pathfinder AI initiative for the DoD to further critical AI architecture and prototyping to rapidly expand AI to other mission areas. As JAIC efforts prove relevant, they will expedite technology transition from the laboratory to operational use, and increase Joint Force capability. Most military data storage, utilization, and analytic tools and systems were designed pre-AI and require specialized integration to enable the insertion of algorithms into their software baseline. The JAIC will adopt or adapt commercial and government developed capabilities to improve warfighting and business processes.

JAIC will execute an initial sequence of AI implementations, called National Mission Initiatives (NMI), to demonstrate value and create momentum. NMIs are high-priority, pressing operational or business reform challenges. Additionally, JAIC will work closely with individual components to help identify, shape, and accelerate component-specific AI deployments, called Component Mission Initiatives (CMI). Both NMI and CMI efforts will include government, commercial, and academic partners to prototype and develop standardized processes with respect to data, testing and evaluation, and cybersecurity. JAIC will use lessons learned from these initial projects to establish new processes and standards that will be repeatable across additional projects and immediately relevant to the Joint Force. This will be done in collaboration with partners across technology companies, consulting firms, academia, government labs, Federally Funded Research and Development Centers (FFRDC), services, and international partners.

JAIC will scale use cases throughout the DoD in a manner that aligns with and leverages DoD enterprise cloud computing. It will establish a common foundation for scaling AI's impact across DoD, including shared data, reusable tools, frameworks and standards, and cloud and edge services. This will drive greater value by enabling consistency of approach, technology, and tools for all delivery-focused AI projects.
JAIC will foster shared lessons, and establish an enterprise approach while catalyzing efforts across DoD to enable more rapid and efficient prototyping and delivery of AI capabilities. JAIC will develop a governance framework and standards for AI development and delivery and collaborate within DoD, across government, and with industry, academia, and U.S. allies to strengthen partnerships, highlight critical needs, solve problems of urgent operational significance, and adapt AI technologies for DoD missions.

JAIC develops, tests, prototypes and demonstrates innovative AI, Machine Learning (ML), data infrastructure, and model/algorithm test and assessment capabilities to integrate AI capabilities across numerous domains and technical areas including maintenance and supply chain, personnel recovery, infrastructure assessment,

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Office of the Secretary Of Defense	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604532D8Z / *Joint Artificial Intelligence*

geospatial monitoring during disaster, and cyber sense making. JAIC develops and evaluates integrated prototype technologies in realistic operating environments with DoD entities to assess the performance or cost reduction potential of applying such advanced technology to scale across multiple services. JAIC does this by aligning rapid prototype projects under NMIs and leverages existing commercial technology for DoD use, built upon a common architecture that enables the DoD to rapidly scale AI capability.

For the Predictive Maintenance NMI, JAIC uses artificial intelligence, deep learning, and predictive analytics to forecast major issues on the H-60 helicopter platform to better enable services to respond to upcoming failure. AI/ML will help identify component failure relationships to principle end items to predict critical failure prior to corrective maintenance and reactive supply chain requisitions. This will increase efficiency, decrease fleet operating and sustainment costs for equipment platforms, and reduce the time and costs associated with repair part requisition, management and transportation. Predictive maintenance will increase fleet operational readiness through reduced deadline or degradation time, particularly by preventing critical failure during missions, thereby providing certainty for availability and tasking to combatant commands and Joint Forces. This NMI will also apply AI and ML to optimize positioning of tools, parts, and personnel to provide the Joint Force with the best location to provide efficient and cost-effective repair and supply depots.

For the Humanitarian Aid and Disaster Relief NMI, JAIC will use computer vision algorithms to detect, classify, and identify distressed or missing personnel, predict forest fire patterns and burn rates, and flooding that impact human life and infrastructure. JAIC does this within FMV images (e.g., person, forest fire lines, flood lines, terrain and infrastructure changes) and other AI algorithms for text based projects to coordinate disaster relief efforts. JAIC algorithms increase the intelligence value of ISR, reduce the human burden of screening so analysts can multi-task increasing productivity, and seeds the generation of insight from multiple intelligence sources. This program is funded under Budget Activity 4, Demonstration and Validation.

B. Program Change Summary ($ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	12.970	0.000	0.000	-	0.000
Current President's Budget	12.968	0.000	0.000	-	0.000
Total Adjustments	-0.002	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Financing Cancelled Account	-0.002	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2019	FY 2020
Project: 006: *Joint Artificial Intelligence*		
Congressional Add: *Joint Artificial Intelligence Center*	12.968	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Office of the Secretary Of Defense	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604532D8Z / *Joint Artificial Intelligence*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2019	FY 2020
Congressional Add Subtotals for Project: 006	12.968	-
Congressional Add Totals for all Projects	12.968	-

Change Summary Explanation

FY19: Reprogramming FY19 Financing Cancelled Account Reduction -0.002 million.
FY2020: Funding moves to DISA.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020
Congressional Add: Joint Artificial Intelligence Center	12.968	-

FY 2019 Accomplishments: JAIC used rapid prototype sprints to field increasing predictive maintenance capability for the H-60 helicopter fleet across the Joint Force. JAIC used data aggregation, artificial intelligence, deep learning, and predictive analytics algorithms to detect, correlate, and predict component failure and optimize supply chain solutions. This initiative brought artificial intelligence, deep learning, and predictive algorithms into the maintenance and supply business processes of H-60 fleet management, utilizing Joint Force readiness and supply data to process at machine speed versus human speed.

JAIC also used rapid prototype sprints to field capability to the Joint Force that enabled better response to natural disasters, particularly those caused by wildfires and flooding, both common worldwide. Computer vision and algorithms not only reduce the human burden and provide efficient and effective exploration of data, but provide insights and capability that humans alone currently do not have the capacity to manage. JAIC developed algorithms focused on ISR and geospatial data to develop baseline GEOINT and infrastructure, then analyzed changes to that baseline to best provide humanitarian aid and disaster relief. This aided in the more efficient, effective, and quick recovery of distressed humans, identified damage to infrastructure, and assisted relief efforts or evacuation and aid response. Overall, this effort reduced risk to human life, critical infrastructure, and improved U.S. response in times of regional or global crises. This effort integrated AI and ML to provide actionable intelligence and enhance military decision-making by providing algorithms for predictive algorithms, computer vision to identify critical information requirements, and user alerts.

The JAIC created a Joint Common Foundation (JCF) platform that was crucial to the development, testing, and fielding of AI capabilities to the Department. This JCF contained shared common components providing NMIs/ CMIs and the Department with the packages, frameworks, software, tools necessary to accelerate the adoption

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Office of the Secretary Of Defense	Date: February 2020
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604532D8Z *I Joint Artificial Intelligence*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020
of AI-enabled capabilities. This included the build out of AI platforms in a secure protected enclave hosted in a multi-cloud/multi-domain environment which provides NMIs/CMIs with compute, storage and security. The JCF platform supported scalable delivery of novel, impactful AI capability across DoD through the use of several key infrastructure elements. This infrastructure/environment supported each stage of the applied AI lifecycle, including: prototyping, integration, scaling, and support. The common foundation includes shared data, reusable tools, frameworks and standards, in addition to cloud and edge services. As the JAIC scaled and the common foundation developed, entities across DOD were be able to both use and contribute to the infrastructure, leveraging the “factory” of artifacts. This was done in collaboration with industry and government partners, including technology companies, consulting firms, academia, government labs, and Federally Funded Research and Development Centers (FFRDC), and across the Department. The JCF platform promoted information sharing and integration with Programs of Record by facilitating rapid deployment of AI capabilities into operational environments, military platforms and IT systems. JAIC established its Tier 2 (Mission/Business Processes) and Tier 3 (IS and PIT Systems) RMF governance structure to comply with DoDI 8510.01, Risk Management Framework (RMF) for DoD Information Technology (IT) and DoDI 8500.01, Cybersecurity.		
Congressional Adds Subtotals	12.968	-

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Office of the Secretary Of Defense			Date: February 2020
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604532D8Z / *Joint Artificial Intelligence*	Project (Number/Name) 006 / *Joint Artificial Intelligence*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2019 Cost	FY 2019 Award Date	FY 2020 Cost	FY 2020 Award Date	FY 2021 Base Cost	FY 2021 Base Award Date	FY 2021 OCO Cost	FY 2021 OCO Award Date	FY 2021 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Technical Engineering Services	C/Various	Various : Various	70.000	12.968	Jul 2019	-		-		-		-	Continuing	Continuing	-
		Subtotal	70.000	12.968		-		-		-		-	Continuing	Continuing	N/A

	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	70.000	12.968		0.000		-		-		-	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Office of the Secretary Of Defense		Date: February 2020
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604532D8Z / *Joint Artificial Intelligence*	**Project (Number/Name)** 006 / *Joint Artificial Intelligence*

	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Joint Artificial Intelligence 006																												
FY19 Project Execution	[redacted]																											

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Office of the Secretary Of Defense		Date: February 2020
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604532D8Z / *Joint Artificial Intelligence*	**Project (Number/Name)** 006 / *Joint Artificial Intelligence*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Joint Artificial Intelligence 006				
FY19 Project Execution	1	2019	2	2020