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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Defense Information Systems Agency **Date:** February 2020

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0604532K / <i>Joint Artificial Intelligence Center (JAIC)</i>
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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	0.000	0.000	183.834	132.058	-	132.058	128.049	136.045	145.045	154.755	Continuing	Continuing
JA1: <i>Joint Artificial Intelligence Center (JAIC)</i>	0.000	0.000	183.834	132.058	-	132.058	128.049	136.045	145.045	154.755	Continuing	Continuing

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 (NDS). 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 Department of Defense (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. JAIC capabilities are commercial technology initiatives that insert commercial AI into existing programs of record.

JAIC will execute an initial sequence of cross-functional use cases to demonstrate value and create momentum, called National Mission Initiatives (NMI). NMIs will rapidly develop and deploy AI across the Joint Force for selected 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 selecting commercial and academic partners for prototypes, 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.

To support NDS, the JAIC will catalyze and develop AI capabilities to enhance readiness and lethality and ensure DoD maintains an advantage over adversaries. JAIC will spearhead this unique opportunity to expand the competitive space across all domains with AI. JAIC efforts will directly contribute to increased military readiness towards a more lethal Joint Force, it will strengthen alliances and attract new partners by focusing on global problems, and it will enable Departmental reform to increase performance and affordability. JAIC will cultivate workforce talent by recruiting, developing, and retaining high-quality personnel to enable the development and delivery of AI. This will bring critical skills into the department by drawing outside expertise, and leveraging small companies, start-ups, and universities. Implementing AI at a speed of relevance hinges on the ability to integrate AI better than our adversaries, and the JAIC will enable the Department to adapt AI into how it fights. JAIC will focus on speed of delivery, continuous adaptation, and frequent capability delivery sprints. To fully realize this potential, the JAIC will pioneer AI approaches across the full scale of the global enterprise in a manner that is jointly interoperable with allies, partners, military Services, and agencies. Specifically, JAIC will identify and implement new organizational approaches, establish key AI building blocks and standards, develop and attract AI talent, and introduce new operational models that will enable DoD to systematically take advantage of AI at enterprise scale. The JAIC will fulfill the National Security Strategy and NDS to ensure conventional overmatch through dual-use commercial technology and partnered DoD-developed AI. The JAIC will collaborate with non-governmental organizations, corporations, strategic influencers,

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and partners and allies. JAIC will seize the initiative to lead the world in the development and adoption of transformative defense AI solutions that are safe, ethical, and secure. JAIC will spearhead this effort, engaging with the best minds in government, the private sector, academia, and international community.

B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	0.000	208.834	34.134	-	34.134
Current President's Budget	0.000	183.834	132.058	-	132.058
Total Adjustments	0.000	-25.000	97.924	-	97.924
• Congressional General Reductions	-	-25.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustment	-	-	97.924	-	97.924

Change Summary Explanation

The decrease of -\$25.000 in FY 2020 is due to a Congressional general reduction.

The increase of +\$97.924 in FY 2021 is to accelerate delivery of Artificial Intelligence (AI) algorithms and upgrade AI capabilities for adoption by the Military Departments.

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Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0604532K / <i>Joint Artificial Intelligence Center (JAIC)</i>				Project (Number/Name) JA1 / <i>Joint Artificial Intelligence Center (JAIC)</i>			
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
JA1: <i>Joint Artificial Intelligence Center (JAIC)</i>	0.000	0.000	183.834	132.058	-	132.058	128.049	136.045	145.045	154.755	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. JAIC capabilities are commercial technology initiatives that insert commercial AI into existing programs of record.

JAIC will execute an initial sequence of cross-functional use cases to demonstrate value and create momentum, called National Mission Initiatives (NMI). NMIs will rapidly develop and deploy AI across the Joint Force for selected 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 selecting commercial and academic partners for prototypes, 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.

To support the National Defense Strategy (NDS), the JAIC will catalyze and develop AI capabilities to enhance readiness and lethality and ensure DoD maintains an advantage over adversaries. JAIC will spearhead this unique opportunity to expand the competitive space across all domains with AI. JAIC efforts will directly contribute to increased military readiness towards a more lethal Joint Force, it will strengthen alliances and attract new partners by focusing on global problems, and it will enable Departmental reform to increase performance and affordability. JAIC will cultivate workforce talent by recruiting, developing, and retaining high-quality personnel to enable the development and delivery of AI. This will bring critical skills into the department by drawing outside expertise, and leveraging small companies, start-ups, and universities. Implementing AI at a speed of relevance hinges on the ability to integrate AI better than our adversaries, and the JAIC will enable the Department to adapt AI into how it fights. JAIC will focus on speed of delivery, continuous adaptation, and frequent capability delivery sprints. To fully realize this potential, the JAIC will pioneer AI approaches across the full scale of the global enterprise in a manner that is jointly interoperable with allies, partners, military Services, and agencies. Specifically, JAIC will identify and implement new organizational approaches, establish key AI building blocks and standards, develop and attract AI talent, and introduce new operational models that will enable DoD to systematically take advantage of AI at enterprise scale. The JAIC will fulfill the National Security Strategy and NDS to ensure conventional overmatch through dual-use commercial technology and partnered DoD-developed AI. The JAIC will collaborate with non-

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governmental organizations, corporations, strategic influencers, and partners and allies. JAIC will seize the initiative to lead the world in the development and adoption of transformative defense AI solutions that are safe, ethical, and secure. JAIC will spearhead this effort, engaging with the best minds in government, the private sector, academia, and international community.

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

	FY 2019	FY 2020	FY 2021
<p>Title: Joint Artificial Intelligence Center (JAIC)</p> <p>Description: 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, 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.</p> <p>FY 2020 Plans: JAIC continues AI enabled product delivery to enable the National Defense Strategy across multiple National Mission Initiative (NMI) focus areas. JAIC continues to deliver AI Capability lines of effort begun during FY2019 in the areas of Predictive Maintenance (PMx) and Humanitarian Assistance and Disaster Relief (HA/DR), and expand into the National Mission Initiative Areas of Cyber Sense-making, Intelligence Business Automation, Joint Warfighting and Predictive Health. Second, the JAIC continues to build the Joint Common Foundation (JCF), a cloud enabler that provides foundational AI tools and to enable centralized direction, and decentralized development and experimentation. JAIC will develop and harden the JCF Development and Test environments to provide reusable AI workspaces, development tools, data repository and data ingestion and conditioning. Third, the JAIC will grow into the DoD AI Center of Excellence brokering partnerships among AI stakeholders, growing DoD-wide expertise in AI engineering, mathematics, cognitive services and data science, and providing a governance framework for synchronizing the DoD AI strategy and the implementation of FY2019 NDAA Section 238 tasks. The JAIC continues the Predictive Maintenance (PMx) NMI begun in FY19 to improve the availability of military airframes by minimizing downtime for maintenance. In FY20, the JAIC will work with the Army to operationalize an AI-enabled advance engine health model to replace imprecise, manually intensive aircraft maintenance schedule. AI-enabled predicted engine failures will allow operational planners, program offices, and supply personnel to anticipate and provide maintenance intervention ahead of otherwise reactive and costly depot maintenance. In FY20, the JAIC will work with stake holders to analyze and reform existing workflows, perform environmental data analysis and identify alternative ways to create a user interface for maintenance stakeholders to leverage high performance computing results to better anticipate fleet health and availability. The JAIC continues the HA/DR NMI begun in FY19 to create AI-enabled geo-rectified disaster response maps in minutes rather than hours or days. This capability will be used to transform disaster center response operations that currently rely on time consuming, manually curated maps to identify disaster perimeters (e.g. fire or flood lines), vulnerable infrastructure and to direct</p>	-	183.834	132.058

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

	FY 2019	FY 2020	FY 2021
<p>first responders with greater speed, precision and agility. In FY20 the JAIC will work with component transition partners to test end-to-end integration of AI model performance in delivering Keyhole Markup Language (KML) map layers for use in response center’s Common Operating Picture (COP). This will require the test and evaluation of each part of the AI pipeline from sensors, to models, to integrating data feeds and ultimately designing a user interface that emergency response operators will use to understand, edit, validate and employ the use of AI-enabled map layers to protect infrastructure and save lives.</p> <p>In FY20 the JAIC will begin the Joint Warfighting NMI to increase the speed, precision and agility of warfighting through improved Joint All-Domain Command and Control (JADC2), the autonomous application of systems, sensors, and targeting solutions, and accelerated AI-enabled mission command. Currently, structuring and organizing operations and intelligence data sources is manual, slow and imprecise. The Joint Warfighting NMI will develop an application platform for JADC2 using open-API tools to automate the fusion and curation of a unified purpose-built information set. During FY20, the Joint Warfighting NMI will conduct an exhaustive assessment of current tools, techniques and data sources within scope for the JADC2 platform, build a viable architecture and repeatable data curation and fusion pipeline. This open API data fusion platform, will provide the foundation for future AI enabled workflows related to the identification, tracking and targeting within a well understood and appropriately governed data-driven command and control eco system.</p> <p>In FY20 the JAIC will begin the Warfighter Health NMI to accelerate health classification, individual diagnoses, and enable resilient field medicine. AI enabled capabilities can enable population inferences about treatments, readiness, and work conditions with greater speed and precision. In FY20 this NMI will focus on building a structured Medical Readiness repository of data that fuses multiple sources of health care, physical performance and veterans affairs assessments in order to leverage AI capabilities to reduce the time it takes to perform Readiness and Disability Adjudications hours to minutes per warfighter. The Warfighter Health NMI will create a repeatable AI architecture and pipeline for classifying disability conditions during FY20, setting the conditions for FY21.</p> <p>FY 2021 Plans: JAIC will begin to transition the lines of effort in the areas of Predictive Maintenance (PMx) and Humanitarian Assistance and Disaster Relief (HA/DR) to service and component partners. These capabilities are expected to be available on the JCF for reuse by many. As soon as an NMI has fully transitioned ongoing lines of effort, those JAIC resources will be aligned to kick off new AI Capability lines of effort in accordance with the direction of the DOD AI ESG. The JAIC will mature AI enabled capabilities in the National Mission Initiative Areas of Cyber Sense-making, Intelligence Business Automation, Joint Warfighting and Predictive Health and will begin to plan and prepare for their transition to component transition partners. The JAIC will begin up to 5 new lines of effort within the six National Mission areas. By FY21, 90% of NMIs Development and Test will be accomplished in the JCF. The JCF will provide a collaboration portal for the DoD, a registry for DoD AI Projects and optimized JCF virtual environments provisioned with the right tools, suited to the users and developers assigned to given project. In FY21 the JCF will begin testing capabilities on the SIPR domain.</p>			

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

	FY 2019	FY 2020	FY 2021
<p>In FY21 the JAIC will continue the Cyber Sense-making NMI that was begun in FY20 to shrink timelines for cyber-threat situational awareness using AI anomaly detection and network exploration techniques. In FY21 the NMI will leverage the CSSP gold standard benchmark dataset, and the completed GOTS assessments o AI-enabled cyber threat detection applications to deploy the highest performing tools and models, along with the lessons learned, to the Joint Common Foundation for wide-spread adoption.</p> <p>In FY21 the JAIC will begin the Intelligent Business Automation (IBA) NMI to increase the effectiveness and efficiency of routine tasks by enabling DoD staff to use robotic process automation (RPA) and other AI tools. In FY21, based on the most promising RPA technologies and workflows, this NMI will gain temporary authority to operate (ATO) and authority to connect (ATC), and will conduct operational experiments. The Intelligent Business Automation (IBA) will deliver a platform of Robotic Process Automation (RPA) services and platform to save manhours, reduce routine errors in back-office processes.</p> <p>In FY21 the JAIC will continue the Joint Warfighting NMI started in FY20 to increase the speed, precision and agility of warfighting through improved Joint All-Domain Command and Control (JADC2), the autonomous application of systems, sensors, and targeting solutions, and accelerated AI-enabled mission command. The Joint Warfighting NMI will continue to develop and mature the application platform for JADC2 using open-API tools to automate the fusion and curation of a unified purpose-built information set. Based on the FY20 assessment of current tools, techniques and data sources within scope for the JADC2 platform, the approved architecture and a repeatable data curation and fusion pipeline, the JW NMI will design and build AI enabled workflows related to the identification, tracking and targeting within a well understood and appropriately governed data-driven command and control eco system.</p> <p>In FY21 the JAIC will continue the Warfighter Health NMI to accelerate health classification, individual diagnoses, and enable resilient field medicine. In FY21, this NMI will leverage the structured Medical Readiness repository of data created in FY20 to reduce the time it takes to perform Readiness and Disability Adjudications hours to minutes per warfighter. In FY21 this NMI will expand on early successes dynamically classifying disabling conditions. The NMI will leverage the Medical Readiness data, architecture, and repeatable AI pipeline to train a machine to recognize all 50 categorically disabling conditions, in anticipation of wide deployment during subsequent fiscal years.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: The decrease of -\$51.776 from FY 2020 to FY 2021 reflects the transfer of several enhance AI-enabled capabilities within the National Mission Initiatives (NMI) begun in FY 2020 in the areas of Humanitarian Assistance and Disaster Relief, Predictive Maintenance, and Cyber Sensemaking.</p>			
Accomplishments/Planned Programs Subtotals	-	183.834	132.058

C. Other Program Funding Summary (\$ in Millions)

N/A

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C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

The JAIC acquisition, management, and contracting strategy follows guidance outlined in the DoD 5000 series directives, Federal Acquisition Regulation (FAR) and FAR supplement policies and procedures. Management uses project management tools and meetings to ensure delivery of stated capabilities and performance criteria.

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Defense Information Systems Agency		Date: February 2020
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	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 Center (JAIC)																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Defense Information Systems Agency		Date: February 2020
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Joint Artificial Intelligence Center (JAIC)</i>				
Joint Artificial Intelligence Center (JAIC)	2	2020	4	2025