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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Defense Information Systems Agency **Date:** April 2022

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0303153K / <i>Defense Spectrum Organization</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	217.602	18.123	19.302	19.708	-	19.708	36.730	26.616	21.618	16.702	Continuing	Continuing
JS1: <i>Joint Spectrum Center</i>	217.602	18.123	19.302	19.708	-	19.708	36.730	26.616	21.618	16.702	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Defense Spectrum Organization (DSO) provides a full array of electromagnetic spectrum services and capabilities, ranging from short notice on-the-ground operational support at the forward edge, to long range planning in pursuit of national strategic objectives. These services/capabilities are in direct support of Combatant Commanders, the Department of Defense (DoD) Chief Information Officer, Military Services, and Defense Agencies. The DSO is the focal point for electromagnetic spectrum analysis and the development of integrated spectrum plans and strategies to address current and future needs for DoD spectrum access. In addition, DSO serves as DoD's spectrum advocate at national and international forums and conducts extensive outreach to both industry and government. DSO also implements enterprise spectrum management capabilities to enhance spectrum efficiency and agility to improve spectrum-dependent capabilities in support of United States and Coalition operations. This includes acquiring, implementing and sustaining the Global Electromagnetic Spectrum Information System (GEMSIS) which provides an integrated catalog of joint net-centric spectrum management tools and services. Electromagnetic Spectrum Management enables information dominance through effective spectrum operations.

The FY23 funding request was reduced by $-\$ (6.742)$ million to account for the availability of prior year execution balances.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	18.123	19.302	0.000	-	0.000
Current President's Budget	18.123	19.302	19.708	-	19.708
Total Adjustments	0.000	0.000	19.708	-	19.708
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustment to Budget Year	0.000	-	19.708	-	19.708

Change Summary Explanation

FY2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. No significant program changes.

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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
<i>JS1: Joint Spectrum Center</i>	217.602	18.123	19.302	19.708	-	19.708	36.730	26.616	21.618	16.702	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Spectrum Center (JSC), which is a division of Defense Spectrum Organization (DSO), designs, develops, and maintains Department of Defense (DoD) automated spectrum management systems, evaluation tools, and databases. The databases are the prime sources of information for DoD use of the electromagnetic (EM) spectrum. The JSC provides technical measurement and analysis in support of DoD spectrum policy decisions to ensure the development, acquisition, and operational deployment of systems are compatible with other spectrum dependent systems operating within the same EM environment (EME). Additional efforts focus on improving future warfighter EM spectrum utilization through technological innovation, and influencing research and development emerging technology efforts.

Improved spectrum support includes the Global Electromagnetic Spectrum Information System (GEMSIS), a net centric capability that will provide commanders with an increased common picture of spectrum situational awareness of friendly and hostile forces while transparently deconflicting competing mission requirements for spectrum use. This capability will enable the transformation from the current preplanned and static assignment strategy into autonomous and adaptive spectrum operations.

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

	FY 2021	FY 2022	FY 2023
Title: Advanced Spectrum Tools	0.000	0.000	0.000
Description: The Joint Spectrum Data Repository and Tools program supports development of spectrum management tools, spectrum modeling and simulation capabilities, spectrum database development, and spectrum data transformation and standardization. This program provides the Combatant Commands (COCOMs) and Military Services with the spectrum management tools and associated databases to manage spectrum resources at the strategic and operational level. It also provides the DoD acquisition community with analytical tools to conduct Electromagnetic Environmental Effects (E3) analyses and Spectrum Supportability Risk Assessments (SSRA).			
FY 2022 Plans: N/A			
FY 2023 Plans: N/A			
FY 2022 to FY 2023 Increase/Decrease Statement: N/A			
Title: DoD Electromagnetic Environmental Effects (E3) Program	2.566	3.074	3.431

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: The DoD E3 Program supports the Joint Capabilities Integration and Development System (JCIDS) process and the DoD acquisition process to ensure that E3 control and spectrum supportability are incorporated into the development, testing, and procurement of information technology and National Security Systems. The E3 Program also supports the development of the Joint Ordnance E3 Risk Assessment Database (JOERAD) and Hazards of Electromagnetic Radiation to Ordnance (HERO) electromagnetic environmental effects surveys in support of the COCOMs and Joint Task Forces. JOERAD develops algorithms and provides analytical capabilities to perform real-time risk assessments to evaluate platform/system safety and identify equipment limitations in the operational EM environment. JOERAD enables operators to make critical decisions about the hazards associated with the use of ordnance within complex EM environments. A SSRA is performed by program managers and materiel developers on all programs that are acquiring or incorporating spectrum-dependent systems or equipment per DoDI 4650.1. These assessments encompassed regulatory, technical, and operational spectrum and E3 issues and associated risks.</p> <p>FY 2022 Plans: Will continue to conduct JOCG HERO Subgroup meetings, support the JOCG Executive Steering Committee and develop and maintain the Services' HERO susceptibility data records. Will conduct forward deployed base HERO surveys for the COCOMs/ Services, and CONUS based emitter surveys for ordnance safety database validation and update the DoD ordnance RF safety requirements. Will update MIL-HDBK-235, "EME Profiles" and develop EME profiles to address blue force jammer and electronic warfare environments. Will conduct monthly DoD E3 Integrated Product Team (IPT) Meetings. Will provide technical support to DoD CIO, the Joint Staff, and other DoD Components on E3, spectrum, hazards of EM radiation matters. Will review JCIDS and ISP acquisition documents assigned by the Joint Staff and DoD CIO and update guidance instructions as necessary. Will provide E3 and SS training to the DoD Components and develop/maintain training curricula at the Defense Acquisition University.</p> <p>FY 2023 Plans: Will continue to conduct JOCG HERO Subgroup meetings, support the JOCG Executive Steering Committee and develop and maintain the Services' HERO susceptibility data records. Will conduct forward deployed base HERO surveys for the COCOMs/ Services, and CONUS based emitter surveys for ordnance safety database validation and update the DoD ordnance RF safety requirements. Will update MIL-HDBK-235, "EME Profiles" and develop EME profiles to address blue force jammer and electronic warfare environments. Will conduct monthly DoD E3 Integrated Product Team (IPT) Meetings. Will provide technical support to DoD CIO, the Joint Staff, and other DoD Components on E3, spectrum, hazards of EM radiation matters. Will review JCIDS and ISP acquisition documents assigned by the Joint Staff and DoD CIO and update guidance instructions as necessary. Will provide E3 and SS training to the DoD Components and develop/maintain training curricula at the Defense Acquisition University.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
The increase of \$0.357 from FY 2022 to FY 2023 is due to a projected increase in number of forward deployed base HERO surveys for CCMDs/Services and any CONUS based emitter surveys for ordnance safety database validation and an increase in the number of E3 and SS Training.				
<p>Title: Emerging Spectrum Technologies (EST)</p> <p>Description: DSO has the responsibility to investigate emerging spectrum related technologies and evaluate their applicability to improve future warfighter EM spectrum utilization through technological innovation. The goal of the EST program is to identify the opportunities and risks associated with emerging spectrum-related technologies in the early stages of the technology development, influence and lead technology development in order to maximize DoD spectrum utilization, and ensure that spectrum policies incorporate optimal technology to meet DoD mission requirements. Within EST there is an increased focus on Dynamic Spectrum Access (DSA). DSA is realized through wireless networking architectures and technologies that enable wireless devices to dynamically adapt their spectrum access according to criteria such as policy constraints, spectrum availability, propagation environment, and application performance requirements.</p> <p>FY 2022 Plans: N/A</p> <p>FY 2023 Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: N/A</p>		0.000	0.000	0.000
<p>Title: Global Electromagnetic Spectrum Information System (GEMSIS)</p> <p>Description: The GEMSIS is a net centric capability that will provide operational commanders with an increased common picture of spectrum situational awareness of friendly and hostile forces while transparently deconflicting competing mission requirements for spectrum use. This capability will enable the transformation from the current preplanned and static assignment strategy into autonomous and adaptive spectrum operations.</p> <p>FY 2022 Plans: Will continue (SXXI) Legacy, E2ESS, and JSDR maintenance and version releases .</p> <p>FY 2023 Plans: DSO will continue to development version releases for Joint Spectrum Data Repository (JSDR) tool.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		14.659	0.751	0.598

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
The decrease of -\$0.153 from FY 2022 to FY 2023 is due to the decrease for JSDR version release updates.			
<p>Title: Electromagnetic Battlefield Management (EMBM) (C2 Capabilities/Data Interface&Visualization, EW Planning/Mgt Tool)</p> <p>Description: The Electromagnetic Battle Management (EMBM) mission capability responds to a Department of Defense (DoD) Electronic Warfare (EW) Strategy objective to field advanced EMBM capabilities and to a DoD Electromagnetic Spectrum Strategy goal to increase the agility of DoD electromagnetic spectrum (EMS) operations by developing the capabilities to preform near-real-time EMS operations (EMSO). As part of planning, resourcing, implementing and assessing Joint Electromagnetic Spectrum Operations (JEMSO), an EMBM technical solution will provide a secure and globally connected suite of dynamic tools to provide situational awareness, command and control (C2), decision support and training. The system is planned to provide a range of capabilities that will improve upon existing software applications useful for JEMSO and access information from other related operational systems to provide a long-term solution for operational EMS planning, execution and assessment capabilities.</p> <p>FY 2022 Plans: DSO will continue to develop the Electromagnetic Battlespace Management (EMBM) mission capability IAW DoD's Electromagnetic Spectrum Strategy goal to increase the agility of DoD spectrum operations. Will continue to develop new C2 Capabilites, Data Interface & Visualization requirements, and the EW planning and management tool.</p> <p>FY 2023 Plans: DSO will continue to develop the Electromagnetic Battlespace Management (EMBM) mission capability IAW DoD's Electromagnetic Spectrum Strategy goal to increase the agility of DoD spectrum operations. Will continue to develop new C2 Capabilites, Data Interface & Visualization requirements, and the EW planning and management tool.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: The increase of \$0.693 from FY 2022 to FY 2023 is due to an increase of efforts in the development of C2 capabilities.</p>	0.000	12.620	13.313
<p>Title: New Spectrum Paradigms</p> <p>Description: DSO new spectrum paradigms is to investigate emerging spectrum related technologies and evaluate their applicability to improve future warfighter EM spectrum utilization through technological innovation. The goal of the EST program is to identify the opportunities and risks associated with emerging spectrum-related technologies in the early stages of the technology development, influence and lead technology development in order to maximize DoD spectrum utilization, and ensure that spectrum policies incorporate optimal technology to meet DoD mission requirements. Within EST there is an increased focus on Dynamic Spectrum Access (DSA). DSA is realized through wireless networking architectures and technologies that enable wireless devices to dynamically adapt their spectrum access according to criteria such as policy constraints, spectrum availability, propagation environment, and application performance requirements. DSO has the responsibility to investigate emerging spectrum related technologies and evaluate their applicability to improve future warfighter EM spectrum utilization</p>	0.898	2.857	2.366

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

through technological innovation. The goal of the EST program is to identify the opportunities and risks associated with emerging spectrum-related technologies in the early stages of the technology development, influence and lead technology development in order to maximize DoD spectrum utilization, and ensure that spectrum policies incorporate optimal technology to meet DoD mission requirements. Within EST there is an increased focus on Dynamic Spectrum Access (DSA). DSA is realized through wireless networking architectures and technologies that enable wireless devices to dynamically adapt their spectrum access according to criteria such as policy constraints, spectrum availability, propagation environment, and application performance requirements. The Joint Spectrum Data Repository and Tools program supports development of spectrum management tools, spectrum modeling and simulation capabilities, spectrum database development, and spectrum data transformation and standardization. This program provides the Combatant Commands (COCOMs) and Military Services with the spectrum management tools and associated databases to manage spectrum resources at the strategic and operational level. It also provides the DoD acquisition community with analytical tools to conduct Electromagnetic Environmental Effects (E3) analyses and Spectrum Supportability Risk Assessments (SSRA).

FY 2021	FY 2022	FY 2023

FY 2022 Plans:

Will continue to make enhancements to Spectrum Technology and Testbed Initiative in support of Spectrum Engineering Analysis and Relocation efforts. Supports evaluation of future and existing spectrum analysis tools. Will continue collaboration efforts with the Science and Technology community (including ASDR&E, Service Labs and DARPA) to develop and execute the technology roadmaps and integration strategies that result in system flexibility and operational agility. Revisions will be made to the current spectrum management architecture to reflect transforming spectrum operations through application of EST in accordance with the new DoD EMS Spectrum Strategy. Prototype capabilities that provide increased operational agility will be developed and demonstrated. Continue to develop initiatives that include the roadmap, standards, architecture, and business processes to exploit and/or minimize the impact of emerging technologies on DoD spectrum operations.

FY 2023 Plans:

Will continue to make enhancements to Spectrum Technology and Testbed Initiative in support of Spectrum Engineering Analysis and Relocation efforts. Supports evaluation of future and existing spectrum analysis tools. Will continue collaboration efforts with the Science and Technology community (including ASDR&E, Service Labs and DARPA) to develop and execute the technology roadmaps and integration strategies that result in system flexibility and operational agility. Revisions will be made to the current spectrum management architecture to reflect transforming spectrum operations through application of EST in accordance with the new DoD EMS Spectrum Strategy. Prototype capabilities that provide increased operational agility will be developed and demonstrated. Continue to develop initiatives that include the roadmap, standards, architecture, and business processes to exploit and/or minimize the impact of emerging technologies on DoD spectrum operations.

FY 2022 to FY 2023 Increase/Decrease Statement:

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
The decrease of -\$0.491 from FY 2022 to FY 2023 is due to reduction in number of prototype initiatives for Spectrum Operations.			
Accomplishments/Planned Programs Subtotals	18.123	19.302	19.708

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• O&M, DW/PE 0303153K: O&M, DW	34.902	35.743	31.023	-	31.023	-	-	-	-	-	Continuing Continuing

Remarks

D. Acquisition Strategy

Engineering support services are provided by the use of a contract. Competition is being used under existing Indefinite Delivery Indefinite Quantity (IDIQ) contracts. Task orders will be a mix of Firm Fixed Price (FFP) and Cost Plus Fixed Fee (CPFF) as dictated by specific tasks to be accomplished.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Defense Information Systems Agency **Date:** April 2022

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Technical Engineering Services 1	C/FFP	Multi : Various	188.118	8.181	Nov 2020	9.786	Apr 2022	10.070	Jan 2023	-		10.070	Continuing	Continuing	Continuing
Technical Engineering Services 2	MIPR	Various : Various	17.783	9.578	Oct 2020	9.152	Nov 2021	9.143	Nov 2022	-		9.143	Continuing	Continuing	Continuing
Subtotal			205.901	17.759		18.938		19.213		-		19.213	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Test & Evaluation	MIPR	JITC : Ft. Huachuca	2.312	-		-		-		-		-	0.000	2.312	-
Subtotal			2.312	-		-		-		-		-	0.000	2.312	N/A

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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
Management Services	FFRDC	MITRE : Ft. Monmouth, NJ	9.389	0.364	Nov 2020	0.364	Nov 2021	0.495	Nov 2021	-		0.495	Continuing	Continuing	Continuing
Subtotal			9.389	0.364		0.364		0.495		-		0.495	Continuing	Continuing	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		217.602	18.123	19.302	19.708	-	19.708	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Defense Information Systems Agency		Date: April 2022
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	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	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 Spectrum Center																												
Spectrum Tool (SXXI, Coalition Joint Spectrum Management Planning Tool (CJSMPT), JSDR) Version Releases																												
JOERAD Releases																												
Emerging Spectrum Technology Research Projects																												
Spectrum Data Sharing Capability Deployments																												
Increment Two GEMISIS																												
E3 Program Outputs																												
EMBM SA Capability																												

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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 Spectrum Center																												
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	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
EMBM SA Capability																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Defense Information Systems Agency		Date: April 2022
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Joint Spectrum Center				
Spectrum Tool (SXXI, Coalition Joint Spectrum Management Planning Tool (CJSMPT), JSDR) Version Releases	3	2017	4	2025
JOERAD Releases	3	2017	4	2025
Emerging Spectrum Technology Research Projects	3	2017	4	2025
Spectrum Data Sharing Capability Deployments	3	2017	4	2025
Increment Two GEMISIS	1	2017	4	2019
E3 Program Outputs	1	2017	4	2026
EMBM SA Capability	2	2020	4	2026