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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense **Date:** May 2021

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 0305199D8Z / <i>Net Centricity</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	108.124	22.400	21.793	13.471	-	13.471	-	-	-	-	-	-
199: <i>GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities</i>	108.124	22.400	21.793	13.471	-	13.471	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Net Centricity program provides technical analysis, systems engineering and capability management oversight of programs, projects, initiatives and activities to maximize the Department's return on investment in information technology resources and affect a comprehensive approach for assessing and procuring critical information systems from initial design, through development to capability delivery in support of improved systems performance and military operations. Emphasis is placed on the information transport, information assurance/cyber security, network and spectrum management, electromagnetic spectrum integration and agile electromagnetic spectrum operations, command and control (C2) applications, systems and services, information sharing capabilities, commercial mobile devices (CMD), applications and infrastructure, and enterprise services activities focused on the development, integration, testing and technical assessment of capabilities and applications in joint and coalition warfighter support environments. Resources support collaborative efforts to demonstrate the interoperability and performance requirements of command, control, and communications (C3) capabilities and programs. This program is funded under Budget Activity 7, Operational System Development.

This project provides the resources necessary to implement net centric processes and authoritative analytic methods that provide the capability to synchronize interdependent C3 capabilities across all layers (ground, air, space, maritime, cyberspace) of the joint information environment (JIE), to forecast and achieve a balance in supply and demand for network capacity, and field effective capabilities more rapidly and efficiently as an enabler for C3 capabilities applications and services. Resources are required to transform current networks and information infrastructure into an operationally unified and architecturally diverse and secure joint information environment that will provide end-to-end communications transport layer, computing networks, and mission application capabilities that are optimized and integrated with all other joint capability areas with a focus on the tactical edge faced with disconnected, intermittent, and latency (DIL) environments. There will be technical assessments, modeling and simulation, and analysis of the Joint space communications layer, Joint aerial network layer, contested communications on the move, Position Navigation and Timing (PNT), C2 mission applications, commercial mobile devices, and information sharing capabilities. These funds provide the capability for the warfighter to manage and deconflict radio frequencies through ground, air, and space communication networks. The funds will be used to develop and synchronize information assurance and mission assurance capabilities with other joint information environment capabilities to provide secure access to information and services (e.g. Cryptographic Modernization Management plan).

In addition, funding will continue to be used to support the Defense Information System's Agency's (DISA) and Services' interoperable improvement efforts and processes in the development of common standards and protocols. This effort includes the Joint Interoperability Enhancement Process (IEP) that allows operators,

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engineers, and program managers to verify capabilities and identify issues in a design with Joint /Allied units prior to system fielding, or with fielded systems to identify required systems changes for systems upgrade planning. DISA and the Joint Forces Combatant Command lead the effort to transform the current standards and interoperability management tools to a common set of Joint network-enabled standards to ensure adherence to the DoD Information Network (DODIN) enterprise-wide technical baseline and for implementation of future Tactical Data Link (TDL) capabilities. These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDL capabilities are synchronized with the development and integration timelines of other planned network-enabled DODIN initiatives. The threats to the networking waveforms and the Joint NC migration will also be looked at in cooperation with the Intelligence agencies. In support of the National Defense Strategy (NDS), rebuilding the warfighting readiness of the Joint Force (Lethality); Net Centricity improves strategic and tactical C2 and Communications, CIO is actively supporting the services to accelerate modernization of Command and Control and Communication (C3) systems. As outlined in the NDS, the return of great power competition elevates the requirement for the Joint Force to dominate a highly contested conflict. DoD cannot assume the same robust, uninterrupted, tactical-to-strategic command and control network will remain intact against a peer-level adversary. Rather than existing across a single domain, these new network paths must leverage space, air, land, surface, sub-surface, and cyber to ensure redundancy against attack. To build confidence in our communication ability in a contested theater, DoD must make targeted investments that increase communication resiliency. This resilient architecture leverages multiple waveforms carried across space, air, land, surface, sub-surface and cyber minimizes periods that C2 will be degraded when communicating in a highly contested environment.

B. Program Change Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	21.384	21.793	17.708	-	17.708
Current President's Budget	22.400	21.793	13.471	-	13.471
Total Adjustments	1.016	0.000	-4.237	-	-4.237
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.811	-			
• SBIR/STTR Transfer	-0.795	-			
• Program Adjustment	-	-	-4.237	-	-4.237

Change Summary Explanation

The FY 2022 funding request was reduced by \$4.913 million to account for the availability of prior year execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
Title: Net Centricity Plans and Accomplishments	22.400	21.793	13.471
FY 2021 Plans: – Continue technical assessment/refine commercial wireless policy guidance to support CMD strategy implementation; continue assessments of the effects of cybersecurity policies.			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> - Continue to refine CMD certification processes, Mobile Application Management (MAM)/Mobile Device Management (MDM) guidelines, and guidelines for personal user based enforcement; update approved product matrix for CMD. - Continue implementation assessments to refine mobile application and device strategies. - Review/refine mobile application approval process guides, DoD Mobile PKI guides, and procedure for the Electronic Flight Bag (EFB). - Development of an analytical model that facilitates rapid, safe, and operationally adequate access to the 1030/1090MHz spectrum. - Continue technical and business case analyses for Commercial mobile devices and voice encryption. - Update the Radio and Communication Security modernization plan for tactical radios. Assess Service implementation. - Continue analysis to update the CJTF Architecture to reflect Component C4II capability plans. - Continue development of interoperable Land Mobile Radio (LMR) standards to support public safety communications. - Continue analysis to of LMR policy implementation; refine procedures to support LMR implementation in the DoD. - Continue analysis of Waveform Development and Management in the DoD. - Continue analysis to maintain authoritative list of DoD-approved waveforms and supporting repository to maintain waveform baseline. - Continue technical analysis on methods for securing ISR data over wireless platforms and extended encryption of these devices, conduct implementation assessments through UAS encryption data calls. - Continue technical analysis and support for Protected, Wideband, Narrowband, and Commercial SATCOM. Assess strategy alignment. - Update SATCOM Synchronization Architectures for Protected, Wideband, Narrowband and Commercial SATCOM capabilities. - Continue compliance reviews of select programs; identify shortfalls in program bandwidth supportability planning and analysis and provide recommendations for corrective action. - Continue efforts to implement SATCOM Gateway Right-sizing approaches to optimize SATCOM gateways across the defense enterprise. - Continue technical/requirements analysis and feasibility assessments for implementing legacy narrowband solutions for MUOS payload. - Continue analysis to support implementation approaches for JIPM alternatives. - Conduct follow-on analysis in support of the Protected SATCOM AoA recommendations and preferred alternative. - Continue support for the WCS AOA and follow-on analysis. - Continue technical analysis to improve DoD utilization of Commercial SATCOM capabilities. - Conduct Airborne ISR (AISR) transport analysis of alternatives follow on analysis based on AoA recommendations and preferred alternatives. Update AISR transport reference and solution architecture artifacts to support implementation. - Continue technical analysis of Coalition C2 and MNIS, analyze Coalition C2 functional requirements, strategic policy development and capability strategies to guide Mission Partner Environment (MPE) development. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> - Continue technical analysis of selected joint and Service C2 programs/initiatives to promote enterprise approaches for data and services. - Continue technical analysis for the implementation of Common Mission Network Transport (CMNT) capability. - Continue technical analysis of MNIS programs and initiatives, related acquisition strategies, and functional requirements. - Continue analyses to address adoption and evolution of mission services as candidate enterprise services for the JIE. - Conduct follow-on analysis to inform implementation of the EoA recommendations for the GCCS Family of Systems. - Continue analysis of capability needs to enable command and control across the JIE. Evaluate Enterprise Operations Center architectures, and information requirements to support investment decisions in JIE C2 capabilities. - Continue analysis of requirements, capability gaps and integrated priority lists of all joint requirements for C3 capabilities to support DoD CIO engagement in the C4/Cyber Functional Capability Board. - Continue wireless architecture and advanced technologies analysis to inform Department-wide policies and implementation of mobility solutions. - Continue technical analysis to support compliance oversight of waveform policies and technical profile specifications. - Continue efforts to refine communications policies and analysis technologies applicable to commercial mobile devices. - Continue DoD Commercial Mobility implementation and systems engineering analysis Defense Mobile Unclassified and Classified Capabilities (DMUC/DMCC). - Continue analysis to support DMUC derived credentials implementation. - Continue analysis of 5G technology for DoD tactical use. - Develop 5G standards engagement plan. - Continue technical analysis for Network Management (NM) interoperability, architecture and data artifacts. - Continue systems engineering and architecture analysis for JIE tactical processing nodes (TPNs). - Continue analysis to address implementation of TSVSIC for tactical radios. - Continue efforts to determine strengths, weaknesses, and uses of waveforms and network management capabilities; identified gaps; assesse new technologies in support of waveform and network management efforts. - Continue technical analysis to support implementation of the network management strategy and roadmap. - Continue development of data ontologies and NIEM compliant IEPDs for network management. - Continue technical analysis in support of C3 policies, plans, studies, roadmaps, and capability assessments. - Continue end-to-end analysis of the SATCOM environment; support technical evaluations of end-to-end capabilities. - Continue studies and analysis in support of the DoD CIO's Mobile Device Strategy and Mobile Device Security Efforts. - Continue Hub-Based HF Communications Concept to provide protected high rate communications needed for long range connectivity in satellite-denied environments - Continue Wideband SATCOM AoA user demand projections develop planning decks and scenario guidance with Joint Staff/J6 coordinated scenarios description paper and CAPE concurrence. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> – Continue oversight of Positioning, Navigation and Timing efforts and capability development through PNT Oversight Council and associated working groups. – Continue Space-Based Positioning, Navigation, and Timing (PNT) EXCOM collaboration on path forward to develop formal CPNT system requirements to support U.S. Critical Infrastructure. – Continue support for Interagency PNT efforts, including outreach, advocacy, and education. – Continue to lead development efforts of the annual Federal Radionavigation Plan (FRP). – Continue to provide secretariat support for the PNT Oversight Council, PNT Executive Management Board, and to lead associated PNT and navigation warfare working groups. – Continue to provide secretariat support to the C5 Leadership Board. – Continue PNT Trilateral MOA development (DoD, DOT, DHS) efforts. – Continue precise time dissemination Trilateral MOA (DoD, DoC, DHS) efforts. – Continue development of the roadmap for fielding Modernized GPS User equipment (MGUE). – Continue oversight and direction of efforts to develop and field resilient software assurance measures for MGUE. – Continue support for Multi-GNSS policy development. – Continue support and leadership role in NATO CaP2 efforts. – Continue to support secure voice interoperability and desires to drive planning for UHF anti-jam (SATURN) planning through NATO channels. – Continue technical analysis/studies related to the migration of current applications and services to DoD Core Data Centers and support rationalization of applications for the JIE. – Continue technical analysis to support implementation of JIE capability upgrades and technical planning. – Continue studies and analysis to progress of JIE technical implementation actions. – Continue technical analysis and studies related to SDN as an approach to network normalization and security. – Continue Joint IEP analysis for Link 16 and work on adding Variable Message Format (VMF), Link 11/22, Multifunction Advanced Data Link (MADL), and Common Data Link (CDL) through the FYDP. – Continue technical and policy assessments to enable TDL migration. – Continue efforts to finalize Joint MIL-SPEC for CDL and initiate documentation for MADL in coordination with JSF team. – Continue support for Allied and Coalition interoperability efforts including NATO migration plan, JSF partner interoperability, US/ Swedish MIEA, and integration of US and foreign communications and C2 systems. – Assess developing waveform technologies for improving the robustness and scalability of current TDL networks. – Continue efforts to refine and implement gateway right sizing options; evaluate RF terminal solutions and baseband equipment suites including the number and types of equipment needed to meet the future needs of the war fighter. Coordinate and facilitate Teleport Program Office oversight initiatives. – Continue analysis to evolve SATCOM networks toward EOIP modem architecture. Continue support of video dissemination and two-way GBS capabilities to inform follow on implementation across the Department. 			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> - Continue analysis for the SATCOM International Standards Committee (SISC). Participate in the development of US lead Standardized Agreements (STANAGS) and provide a technical review of other nation's STANAG's for accuracy, completeness, and feasibility. - Continue efforts to evaluate and implement acquisition strategies for U.S. support to NATO SATCOM. - Continue technical analysis and facilitate execution of the SATCOM Systems Engineering Group (SSEG). - Continue efforts to review, assess, and process DISN Tech Refresh plans for CIO approval. - Coordinate, facilitate, and record DISN Quarterly reviews to assessed progress and issues in transport and network infrastructure, unified capabilities and network management. - Continue efforts to maintain JIE Infrastructure Framework and synchronization roadmap to track infrastructure deployment or implementation. - Continue acquisition like review of JIE objectives, plans, technical approaches, schedules and cost factors to support technical reviews of JIE implementation. - Support the development of business case activities as required. <p>Develop guidance (e.g., information system security engineering guidance) and programming recommendations to ensure the integration of Trusted Systems Networks concepts and processes into the acquisition and maintenance of DoD information systems, enclaves, and services, including the purchase and integration of tactical communication commodities.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue technical assessment/refine commercial wireless policy guidance to support CMD strategy implementation; continue assessments of the effects of cybersecurity policies. - Continue to refine CMD certification processes, Mobile Application Management (MAM)/Mobile Device Management (MDM) guidelines, and guidelines for personal user based enforcement; update approved product matrix for CMD. - Continue implementation assessments to refine mobile application and device strategies. - Review/refine mobile application approval process guides, DoD Mobile PKI guides, and procedure for the Electronic Flight Bag (EFB). - Development of an analytical model that facilitates rapid, safe, and operationally adequate access to the 1030/1090MHz spectrum. - Modernize DoD's spectrum dependent systems to a fully integrated information and decision support architecture for all-domain maneuver and fires superiority. - Modernize spectrum data, data collection, storage retrieval, and aggregation. - Develop AI-enabled spectrum data analytics. - Modernize Electromagnetic Battle Management, Situational Awareness and C2 integration. - Continue 5G experimentation for dynamic, bidirectional, cognitive spectrum sharing. - Continue technical and business case analyses for Commercial mobile devices and voice encryption. 			

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<ul style="list-style-type: none"> – Continue efforts to maintain JIE Infrastructure Framework and synchronization roadmap to track infrastructure deployment or implementation. – Continue acquisition like review of JIE objectives, plans, technical approaches, schedules and cost factors to support technical reviews of JIE implementation. – Support the development of business case activities as required. Develop guidance (e.g., information system security engineering guidance) and programming recommendations to ensure the integration of Trusted Systems Networks concepts and processes into the acquisition and maintenance of DoD information systems, enclaves, and services, including the purchase and integration of tactical communication commodities.				
FY 2021 to FY 2022 Increase/Decrease Statement: The FY 2022 funding request was reduced by \$4.913 million to account for the availability of prior year execution balances.				
Accomplishments/Planned Programs Subtotals		22.400	21.793	13.471
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks Starting in FY 2022, PE 0303191D8Z Joint Electromagnetic Technology (JET) Program transfers to PE 0305199D8Z Net Centricity.				
E. Acquisition Strategy N/A				

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Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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Net Centricity					
PE 0305199D8Z	10/1/2022	10/1/2023	10/1/2024	10/1/2025	10/1/2026
FY2022 Program Execution					
FY2023 Program Execution					
FY2024 Program Execution					
FY2025 Program Execution					
FY2026 Program Execution					

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Exhibit R-4A, RDT&E Schedule Details: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
*** SUBPROJECT TITLE ***				
FY 2021 Projected Execution	3	2021	2	2022
FY 2022 Projected Execution	3	2022	2	2023
FY 2023 Projected Execution	3	2023	2	2024
FY 2024 Projected Execution	3	2024	2	2025
FY 2025 Projected Execution	3	2025	2	2026
FY 2026 Projected Execution	3	2026	4	2026