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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense **Date:** March 2023

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603923D8Z I <i>Coalition Warfare Program (CWP)</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	102.263	5.000	11.154	12.103	-	12.103	10.430	10.207	10.418	10.635	-	-
923: <i>Coalition Warfare</i>	102.263	5.000	11.154	12.103	-	12.103	10.430	10.207	10.418	10.635	-	-

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Aggression, Defend the Homeland, and Build Sustainable and Long-Term Advantage.

The Coalition Warfare Program (CWP) supports the DoD organizations that: 1) work with foreign partners to collaboratively address strategic technology gaps for current and future missions; 2) develop interoperability solutions for coalition operations; and 3) develop and strengthen defense relationships. It comprehensively supports the 2022 National Security and Defense Strategies. In the National Security Strategy, the President states we will "fully engage all countries and institutions to cooperate on shared threats" and "redouble our efforts to deepen our cooperation with like-minded partners." In the National Defense Strategy, the Secretary of Defense states, we will "use every tool at the Department's disposal, in close coordination with our counterparts across the US Government and with Allies and partners to ensure potential foes understand the folly of aggression." The CWP provides a broad base of technological, operational, and logistical support for military operations and eases the U.S. financial and manpower burdens associated with meeting military goals and objectives. Coalitions and relationships with international partners are high priorities for the nation and the DoD.

The CWP supplements U.S. Government proponents' funding for cooperative efforts, ensuring U.S. funds are sufficient to complete the engagement with the foreign partners. When the CWP funds are used to help fund a cooperative project, that project leverages technical and financial contributions of the foreign partners and accelerates the development and delivery of technical solutions to the warfighter. For every \$1 the CWP has invested in cooperative projects with 81 partners since 2001, the program has leveraged \$3 in foreign partner resources and \$2 in other U.S. Government resources. The CWP funding enables the DoD project teams to transition technology to operational use, further development, or integration into other systems. These projects may also form the basis for future cooperation with international partners.

UNCLASSIFIED

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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603923D8Z I <i>Coalition Warfare Program (CWP)</i>
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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	5.074	11.154	12.266	-	12.266
Current President's Budget	5.000	11.154	12.103	-	12.103
Total Adjustments	-0.074	0.000	-0.163	-	-0.163
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-0.074	-	-0.163	-	-0.163

Change Summary Explanation

FY 2024 minimal decrease due to programmatic adjustments.

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Office of the Secretary Of Defense **Date:** March 2023

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603923D8Z / <i>Coalition Warfare Program (CWP)</i>	Project (Number/Name) 923 / <i>Coalition Warfare</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
923: <i>Coalition Warfare</i>	102.263	5.000	11.154	12.103	-	12.103	10.430	10.207	10.418	10.635	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Coalition Warfare Program (CWP) supports the DoD organizations that: 1) work with foreign partners to collaboratively address strategic technology gaps for current and future missions; 2) develop interoperability solutions for coalition operations; and 3) develop and strengthen defense relationships. It comprehensively supports the 2022 National Security and Defense Strategies. In the National Security Strategy, the President states we will "fully engage all countries and institutions to cooperate on shared threats" and "redouble our efforts to deepen our cooperation with like-minded partners." In the National Defense Strategy, the Secretary of Defense states, we will "use every tool at the Department's disposal, in close coordination with our counterparts across the US Government and with Allies and partners to ensure potential foes understand the folly of aggression." The CWP provides a broad base of technological, operational, and logistical support for military operations and eases the U.S. financial and manpower burdens associated with meeting military goals and objectives. Coalitions and relationships with international partners are high priorities for the nation and the DoD.

The CWP supplements U.S. Government proponents' funding for cooperative efforts, ensuring U.S. funds are sufficient to complete the engagement with the foreign partners. When the CWP funds are used to help fund a cooperative project, that project leverages technical and financial contributions of the foreign partners and accelerates the development and delivery of technical solutions to the warfighter. For every \$1 the CWP has invested in cooperative projects with 86 partners since 2001, the program has leveraged \$3 in foreign partner resources and \$2 in other U.S. Government resources. The CWP funding enables the DoD project teams to transition technology to operational use, further development, or integration into other systems. These projects may also form the basis for future cooperation with international partners.

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

	FY 2022	FY 2023	FY 2024
Title: Coalition Warfare Program (Continuing Projects)	5.000	11.154	12.103
Description: The CWP provides funding on a competitive basis to the DoD organizations to conduct cooperative research, development, test, and evaluation projects with foreign partners. The goals of the CWP program are to: collaboratively address strategic technology gaps for current and future missions, develop interoperability solutions for coalition operations, and strengthen current and future defense partnerships. The CWP selects projects for funding through an annual competitive selection process in accordance with Department of Defense and Combatant Command needs.			
In addition to funding newly selected projects, the program also provides funding to projects that began in earlier selection cycles (for a total of up to three years of funding for each project). Currently, the funded portfolio includes 53 active projects governed by negotiated/signed international agreements with 21 foreign partners.			

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Post-funding CWP projects that are currently executing will:</p> <ul style="list-style-type: none"> • Develop and validate a new class of multirole 5000 series aluminum-magnesium alloys for improved welded strength, ballistics, and marine corrosion resistance to replace current alloy 5083 used in ground, amphibious, and sea systems (AL MGS ALLOYS) (US Army) • Over the Horizon Radar Accuracy (DETAILS CLASSIFIED) • Robotics collaboration and progressive demonstrations to improve Coalition exploitation of WMD underground facilities (ATE) (DTRA) • Develop and assess a low light level, digital fused goggle with augmented reality for enhanced Soldier mobility and lethality (DELTA-I) (US Army) • Develop, test, and demonstrate terrestrial lasercomm network system to provide uninterrupted, anti-jam, real-time data/video links and ISR operations. (LASERCOMMNET) (US Army) • Build, fly, and demonstrate microsattellites with onboard AIS and imagery-based ship detection fused to provide Maritime Domain Awareness (MICROSAT MDA) (US Navy) • Establish the capability for space solar cell calibration to enable accurate calculation on orbit power for all spacecraft, military and commercial (SOLARCELLCAL) (US Air Force) • Develop dynamic Resource Allocation Management (RAM) applications and decision aids to allow both coalition warfighters to operate efficiently in the electromagnetic spectrum (EMW RAM) (US Navy) • Develop Long Wavelength Infrared (LWIR)/Very Long Wavelength Infrared (VLWIR) camera for standoff detection of buried Improvised Explosive Devices (IED) (IED CAM) (US Navy) • Develop a standards based Mission Partner Gateway eXtended (MPGW-X) solution to improve the exchange of command and control information during contingency operations (MPGW-X) (OSD) • Develop shared, automated infrasonic detection and localization software for persistent surveillance (MSAIW) (US Army) • Develop and demonstrate a gas-generator (solid propellant) fueled rotating detonation engine through static firing tests under relevant flight conditions for high speed operation and demonstrate performance characteristics that will translate into a tactical missile propulsion system with 2-5 times longer range (SPEAR) (US Navy) • Advance understanding of near sunset ionospheric structures to improve predictions for space environment disturbance effects that impact operational radio telecommunications, surveillance systems, and GPS signals propagation (SPORT) (US Army) • Create a distributed contextually aware, heterogeneous collaborative Counter Unmanned Aerial System (CUAS) capability against multi-agent UAS threats (CHCUAS) (US Army) • Develop a shared, persistent, affordable and accessible distributed simulation test bed capability, with a repository of released data and models for reuse, connected to FVEY nation defense labs to facilitate rapid prototype testing and experimentation to address warfighter challenges (VIPRE) (US Army) • Develop a fieldable prototype man portable system that is immune to detection (WARWS) (US Navy) 			

UNCLASSIFIED

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

- Flight-test multiple guidance, navigation, and control technologies to validate sensor apertures and design tools in representative flight conditions. (HSMAC) (US Air Force)
- Develop a manufacturing process with a novel high temperature alloy that fabricates small/medium scale turbine engine components for high-speed propulsion (MANTAS) (US Air Force)

Interoperability and Collaboration Initiatives: Program provides funds in support of new or planned acquisition programs with the aim of 1) promoting coalition interoperability early in the requirements or technical development phases, 2) harmonizing common goals between U.S. and foreign partners, 3) improving management of collaborative efforts. These funds support workshops, risk reduction efforts, standards development, architecture analysis, and information management initiatives.

FY 2023 Plans:

Including FY 2023 selection cycle new-starts and prior year project selections, the following projects encompass the CWP funding in FY 2023 and FY 2024:

- Develop, test and field AI algorithms to enhance sonar operator performance by improving situational awareness, increasing decision-making bandwidth, and reducing decision making time (AI for ASW ACOUSTICS) (US Navy)
- Develop a capability to provide beyond line of sight wide area volume surveillance, target track and cueing over large forward areas from a sanctuary-based HF OTH radar to support microwave fire-control radars on forward stationed blue platforms hiding in contested environments, enhancing platform survivability (BIFOCAL) (US Navy)
- Develop and refine neurocognitive optimization training tools for improving Soldiers' physical and psychological resiliency to combat operational stress (BPOC IPCFEx) (US Army)
- Develop a Fire and Forget (F&F) Counter FIAC swarm modeling and analysis (M&A) capability to support follow-on war gaming and at sea experimentations activities (COUNTER FIAC) (US Navy)
- Develop, test, improve, and evaluate prototype cyber defensive technologies (e.g., Intrusion Detection/Prevention Systems, or IDPSs) for protecting ground vehicle systems from cyber threats. (CYBER GEMINI) (US Army)
- Integrate live, virtual and constructive (LVC) environments across Joint and Coalition warfighter training continuums in order to maximize pilot training and readiness (ELITE) (US Air Force)
- Develop an airborne optical communications model terminal and interface documentation to connect distributed coalition forces through the aerial layer with secure, interoperable information transport (IOT) (US Marine Corps)
- Assure Positioning, Navigation, and Timing (PNT) availability in Global Positioning System (GPS)-challenged and denied marine environments (MARINE PNT W/O GPS) (US Navy)
- Create software that will autonomously detect, characterize, identify causation, and recover from a satellite fault (REFLEX) (US Air Force)
- Develop an autonomous sensor emplacement capability for persistent indoor surveillance (RISES) (US Army)

FY 2022	FY 2023	FY 2024

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> • Develop and test structural steel prototypes that exhibit non-magnetic and self-damping characteristics and achieve high-yield and tensile strength for DoD structural applications (SELF-DAMPING STRUCTURES) (US Navy) • Development, Test, and Evaluate the Binocular Near Infrared Optical Augmentation (NIRO) Device (BINO NIRO) (US Marine Corps) • Develop a capability for Chemical Biological Wide Area Decontamination (CBWAD) (US Army) • Develop a Solid State High Power Microwave (HPM) Cannon (COMPACT HPM) (US Air Force) • Develop a Robust Anti-Submarine Warfare (ASW) Detection & Tracking Capability for High Clutter Environments (ROBUST ASW) (US Navy) • Selective Cyber Information Access (SCIA) (US Air Force) • Develop an open standards architecture to enable “plug-n-play” insertion of assistive artificial intelligence (AI) agents into coalition intelligence processing systems and build a new generation of AI enabled smart sensors (CATE) (US Army) • Design, develop, and produce air-launched UAS and carriage/launch systems to address extended range communication needs (ALUAS) (USAF) • Deliver real-time hazard awareness using the Mission Partner Environment (MPE) for the automated exchange of digital threat data and analytics in a multinational common operating picture (ITAC) (US Army) • Develop low-cost non-cooperative space-based maritime surveillance technologies (LLAMDA) (US Navy) • Integrate ultra-low power sensors into stealth underwater power sources (LPS) (US Navy) • Develop a lightweight transparent armor (LWTA) to defeat 7.62X39 threats using revolutionary energy guiding layer concept (LWTA) (US Navy) • Test quality assurance Non-destructive Inspection (NDI) surface analysis devices for surface preparation inspections prior to structural adhesive bonding on composites (SAT REVIEW) (US Navy) • Develop advanced technology demonstration of next-generation air-breathing munition for long-range precision fires to achieve range increase on the order of 3-6 times from existing gun weapon systems (ABLRMD) (US Navy) • Develop space environment sensors and tools for common Space Situational Awareness (SSA) picture enabling a neighborhood watch capability for space attack assessment (Common SSA) (US Air Force) • Develop a low-cost, low-weight chemical detection payload for a Black Hornet 3 micro UAS (MCS) (US Army) • Characterize region-specific threats to coalition warfighters subject to infectious diseases (severe acute respiratory infections (SARI), Middle East Respiratory Syndrome (MERS), and Coronavirus (CoV) and establish clinical trials (SARI) (US Army) • Develop launch, recovery, and teaming of Hybrid/Vertical Take-off and Landing Unmanned Aerial Systems (UAS) with autonomous sea and ground vehicles (VTUAS) (US Navy) • Develop a boost to ramjet operation burn of a liquid-fueled integral rocket ramjet in full-scale ground experimentation (THRESHER B2B) (US Air Force) <p>FY 2024 Plans:</p>			

UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
CWP project nominations for the FY 2024 selection cycle will be selected for funding approximately April 2023 with initial funding beginning in FY 2024.			
<i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> An increase of approximately \$1M from FY 2023 to FY 2024 is the result of funds being restored after the 2022 reduction of CWP funding to support higher-priority DoD requirements. 60% of the \$4.388M FY 2022 reduction was restored in FY 2023 and the remaining 40% will be restored in FY 2024.			
Accomplishments/Planned Programs Subtotals	5.000	11.154	12.103

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

Remarks

D. Acquisition Strategy
The Combatant Commands, Services, Defense Agencies, and the Office of the Secretary of Defense nominate candidate projects on an annual basis. CWP provides selected projects up to three years of funding. The Program selects projects that address DoD priorities and meet the needs and requirements specified by the Joint Staff and the Combatant Commanders. Projects have equitable contributions from international partners, strong potential for transition, Combatant Command endorsement, and contribute to allied interoperability and/or meet a user need.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense **Date:** March 2023

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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Coalition Warfare Program Project Product Development Costs	Various	Various : Various	76.315	3.764		9.341		9.708		-		9.708	-	-	-
Subtotal			76.315	3.764		9.341		9.708		-		9.708	-	-	N/A

Remarks
 The typical appropriation for CWP is approximately \$10M per year. The Department re-phased \$4.388M of the planned FY 2022 CWP appropriation to support higher-priority DoD requirements, with funds being restored later in the FYDP. The FY 2022 reduction has been restored in the FY 2023 and FY 2024 CWP appropriation request by \$4.388M above the prior planned FYDP amount (60% in FY 2023 and 40% in FY 2024). An estimated \$.940M was added to the total FY2024 estimate to account for an overall 8% inflation rate.

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Coalition Warfare Program Project Test and Evaluation Costs	Various	Various : Various	14.721	0.386		0.933		1.500		-		1.500	-	-	-
Subtotal			14.721	0.386		0.933		1.500		-		1.500	-	-	N/A

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Coalition Warfare Program Project Management Services Costs	Option/ FFP	Analygence, INC. : Fulton, MD	11.227	0.850		0.880		0.895		-		0.895	-	-	-
Subtotal			11.227	0.850		0.880		0.895		-		0.895	-	-	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			102.263	5.000	11.154	12.103	-	12.103	-	-	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Office of the Secretary Of Defense							Date: March 2023			
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603923D8Z / <i>Coalition Warfare Program (CWP)</i>			Project (Number/Name) 923 / <i>Coalition Warfare</i>				
	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2024 Office of the Secretary Of Defense **Date:** March 2023

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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
FY 2021 CWP Project Execution																												
FY 2022 CWP Project Selection																												
FY 2022 CWP Project Execution																												
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FY 2026 CWP project Selection																												
FY 2026 CWP Project Execution																												
FY 2027 CWP project Selection																												
FY 2027 CWP Project Execution																												

	FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
	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
FY 2021 CWP Project Execution																												
FY 2022 CWP Project Selection																												
FY 2022 CWP Project Execution																												
FY 2023 CWP Project Selection																												
FY 2023 CWP Project Execution																												
FY 2024 CWP Project Selection																												
FY 2024 CWP Project Execution																												
FY 2025 CWP Project Selection																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Office of the Secretary Of Defense		Date: March 2023
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY 2021 CWP Project Execution	1	2021	4	2022
FY 2022 CWP Project Selection	3	2021	3	2021
FY 2022 CWP Project Execution	1	2022	4	2023
FY 2023 CWP Project Selection	2	2022	2	2022
FY 2023 CWP Project Execution	1	2023	4	2024
FY 2024 CWP Project Selection	2	2023	2	2023
FY 2024 CWP Project Execution	1	2024	4	2025
FY 2025 CWP Project Selection	2	2024	2	2024
FY 2025 CWP Project Execution	1	2025	4	2026
FY 2026 CWP project Selection	2	2025	2	2025
FY 2026 CWP Project Execution	1	2026	4	2027
FY 2027 CWP project Selection	2	2026	2	2026
FY 2027 CWP Project Execution	1	2027	4	2027