Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Office of the Secretary Of Defense	Date: April 2022
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*

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	139.585	25.884	39.761	109.535	0.000	109.535	42.618	43.885	44.806	45.702	Continuing	Continuing
375: *Technology Innovation*	139.585	25.884	25.323	109.535	0.000	109.535	42.618	43.885	44.806	45.702	Continuing	Continuing
376: *Quantum Information Science Technology Innovation*	0.000	0.000	14.438	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Note

New Start (Y/N): Partial, $74.505M National Security Council Efforts program

A. Mission Description and Budget Item Justification

This program supports the Department's initiatives to Deter Strategic Attacks, Defend the Homeland, and Build a Resilient Joint Force and Defense Ecosystem.

The Department of Defense (DoD) has a long history of technological breakthroughs and innovations originating from within the Department. In order to sustain technological superiority, the Department must take advantage of the rapid evolution of emerging technologies that will be a source of battlefield advantage, when integrated with military systems and novel concepts of operation.

Leveraging innovative technologies from both defense and commercial sources, to include non-traditional sources such as startup companies, has the potential to rapidly address warfighter problem sets in areas where commercial innovation outstrips government investment in the same technology areas. This funding is currently focused on demonstrating quantum and biotechnology efforts within the Department's Modernization Technology Areas that contribute to the broader joint mission needs.

B. Program Change Summary ($ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	27.693	54.433	0.000	0.000	0.000
Current President's Budget	25.884	39.761	109.535	0.000	109.535
Total Adjustments	-1.809	-14.672	109.535	0.000	109.535
• Congressional General Reductions	-	-14.500			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.844	-			
• SBIR/STTR Transfer	-0.960	-			
• Other Reprogramming	-0.005	-	-	-	-
• FFRDC	-	-0.172	-	-	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Office of the Secretary Of Defense				Date: April 2022	
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*		**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*			
• Adjustments to Budget Year	-	-	33.822	-	33.822
• Economic Assumption	-	-	1.208	-	1.208
• Higher Classification	-	-	74.505	-	74.505

Change Summary Explanation

In FY 2022, program reduced by $14.500 million for unjustified growth.

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

FY 2023 funding increase of $74.505 million is intended for R&D efforts to support the DoD aspects of the National Security Council-led efforts to understand the biological and physical mechanisms that may relate to emerging Anomalous Health Incidents affecting DoD and other U.S. Government personnel.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense			Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603375D8Z / *Technology Innovation*	Project (Number/Name) 375 / *Technology Innovation*	

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
375: *Technology Innovation*	139.585	25.884	25.323	109.535	0.000	109.535	42.618	43.885	44.806	45.702	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program focuses on rapid innovation and demonstration efforts to address priority warfighter problem sets and National Defense Strategy focus areas. The current effort is focused on development of atomic clocks and biotechnology to accelerate progress along these two DoD Modernization priority roadmaps. Combatant Commanders and the Intelligence Community (IC) continue to receive signals that adversaries are looking to deny access to Global Positioning System (GPS) time as a way to disrupt the common networked tactical picture. Under this program, commercial companies will mature DARPA's investment in innovative atomic clocks with tri-service technical oversight, creating a prototype Next Generation Atomic Clock (NGAC) for commercial production. This program will also demonstrate emerging biotechnology advancements to stimulate additional investment in biotechnology that can address DoD needs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Technology Innovation	25.884	25.323	35.030

Description: The program focuses rapid innovation and demonstration in emerging defense and commercial technology areas to address the National Defense Strategy technology focus areas and priority warfighter problem sets. Prior year projects included funding of promising commercial advanced technology demonstration projects in the areas of biotechnology, quantum science, fully networked command, control, and communications, and space.

FY 2022 Plans:

Maintain support for the following Quantum and Biotechnology efforts:
(1) Transition path for DARPA's atomic clock with enhanced stability to reach technology readiness level (TRL) 7 by FY 2025 and commercial availability by FY 2027; FY 2022 efforts will be focused on clock component development and initial build, with technology development to mitigate risks through integration, analysis, and testing.
(2) Advanced emerging biotechnologies demonstrated against operational use cases; projects will be competitively selected from proposals across DoD, with a focus on multi-lab and multi-Service efforts that will build partnerships across the DoD biotechnology community.

FY 2023 Plans:

(1) Component maturation and clock demonstrations will result in a technology readiness assessment for a final Next Generation Atomic Clock (NGAC) design by the end of FY 2023. Future reductions in size, weight, and power target a technology readiness level (TRL) 7 by FY 2025 and commercial availability for DoD use by FY 2027.
(2) Demonstration of biotechnology methods that address warfighter needs.

FY 2022 to FY 2023 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense		Date: April 2022
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 375 / *Technology Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
FY 2023 increase in support of biotechnology methods that address warfighter needs.			
Title: National Security Council-led Efforts ***FY 2023 Plans:*** Initiate R&D efforts to support the DoD aspects of the National Security Council-led efforts to understand the biological and physical mechanisms that may relate to emerging Anomalous Health Incidents affecting DoD and other U.S. Government personnel ***FY 2022 to FY 2023 Increase/Decrease Statement:*** FY 2023 funding increase is intended for R&D efforts to support the DoD aspects of the National Security Council-led efforts to understand the biological and physical mechanisms that may relate to emerging Anomalous Health Incidents affecting DoD and other U.S. Government personnel.	-	-	74.505
Accomplishments/Planned Programs Subtotals	25.884	25.323	109.535

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

N/A

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2023 Office of the Secretary Of Defense			Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603375D8Z / *Technology Innovation*	Project (Number/Name) 376 / *Quantum Information Science Technology Innovation*	

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
376: *Quantum Information Science Technology Innovation*	0.000	0.000	14.438	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Department of Defense (DoD) has pioneered and advanced quantum information science (QIS) for nearly thirty years. In order to sustain technological superiority, the Department must continue to proactively engage in QIS research and development in timing, sensing, computing, and networking applications.

Leveraging innovative technologies from both defense and commercial sources, to include non-traditional sources such as startup companies, has the potential to rapidly advance this field to address warfighter problem sets. This funding will be used to demonstrate and mature emerging QIS technologies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2021	FY 2022	FY 2023
Title: Quantum Information Science Technology Innovation	-	14.438	-
FY 2022 Plans: Maintain and expand support across OUSD(R&E) Quantum Science Roadmap technology areas: (1) Quantum Inertial Measurement Unit Experiment: Pursuing prototyping phase. (2) Optical Clock Prototyping: Acceleration of prototyping.			
FY 2022 to FY 2023 Increase/Decrease Statement: FY 2022 OMB Passback Settlement funding for Quantum Information Science Technology Innovation.			
Accomplishments/Planned Programs Subtotals	-	14.438	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Office of the Secretary Of Defense		Date: April 2022
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 376 / *Quantum Information Science Technology Innovation*

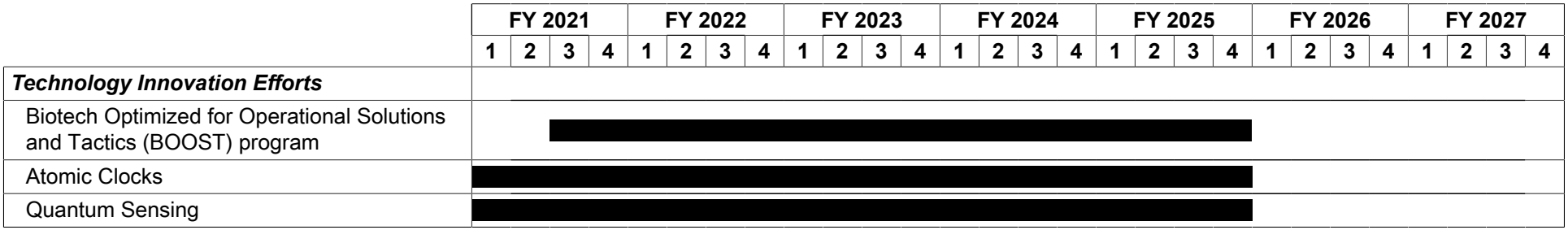

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Office of the Secretary Of Defense		Date: April 2022
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 376 / *Quantum Information Science Technology Innovation*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Technology Innovation Efforts				
Biotech Optimized for Operational Solutions and Tactics (BOOST) program	3	2021	4	2025
Atomic Clocks	1	2021	4	2025
Quantum Sensing	1	2021	4	2025