Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Office of the Secretary Of Defense	Date: May 2021
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 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	110.576	29.009	27.693	54.433	-	54.433	-	-	-	-	-	-
375: *Technology Innovation*	110.576	29.009	27.693	25.433	-	25.433	-	-	-	-	-	-
376: *Quantum Information Science Technology Innovation*	-	0.000	0.000	29.000	-	29.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

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 will be used to mature and demonstrate emerging technologies, such as the Department's Modernization Technology Areas, that contribute to the broader joint mission needs.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	30.000	27.709	25.735	-	25.735
Current President's Budget	29.009	27.693	54.433	-	54.433
Total Adjustments	-0.991	-0.016	28.698	-	28.698
• Congressional General Reductions	-	-0.016			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.986	-			
• Program Adjustment	-	-	28.698	-	28.698
• Cancelled Account	-0.005	-	-	-	-

Change Summary Explanation

FY 2022 increase supports Quantum Information Science Research and Development.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense			Date: May 2021
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 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
375: *Technology Innovation*	110.576	29.009	27.693	25.433	-	25.433	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program focuses on rapid innovation and demonstration with emerging technology to address priority warfighter problem sets and National Defense Strategy technology focus areas. By leveraging Service activities and establishing partnerships with other government agencies (OGAs) such as the Intelligence Community (IC) and the Department of Homeland Security, a wide variety of emerging military and commercial technologies are rapidly assessed for applicability to the National Defense Strategy technology focus areas and a broad spectrum of priority DoD problem sets. Enabling the warfighter to execute short duration pilots with these emerging technologies provides a cost effective way to leverage commercial investment for DoD purposes, share costs with OGA partners, inform warfighter requirements for follow-on acquisition through traditional DoD channels, and allow other DoD research and development (R&D) organizations to focus their resources on both the integration of commercial technologies showing promise in these warfighter pilots as well as on traditional R&D in technologies not well served by commercial start-up companies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Technology Innovation	29.009	27.693	25.433
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 2021 Plans: Further expand support across National Defense Strategy technology focus areas in alignment with the DoD technology modernization roadmaps. Establish Service partners to facilitate transition of successful work program pilots into enterprise solutions for the warfighter, to include the following Biotechnology and Quantum efforts: (1) Advanced emerging biotechnologies; and (2) 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 Plans: Maintain support for the following Biotechnology and Quantum efforts: (1) 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
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 2020	FY 2021	FY 2022
(2) 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 design and build, with technology development to mitigate risks through integration, analysis, and testing. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Changes reflect minor budget fluctuation.			
Accomplishments/Planned Programs Subtotals	29.009	27.693	25.433

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 2022 Office of the Secretary Of Defense			Date: May 2021
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 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
376: *Quantum Information Science Technology Innovation*	-	0.000	0.000	29.000	-	29.000	-	-	-	-	-	-
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, leading the field to its current state. 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 2020	FY 2021	FY 2022
Title: Quantum Information Science Technology Innovation	-	-	29.000
FY 2022 Plans: Maintain and further expand support across OUSD(R&E) Quantum Science Roadmap technology areas: (1) Next Generation DoD Atomic Clock: Acceleration in risk reduction toward FY 2025 goals. (2) Quantum Inertial Measurement Unit Experiment: Pursuing prototyping phase. (3) Optical Clock Prototyping: Acceleration of prototyping. (4) Quantum computing cloud access for medium and small businesses: In response to FY 2021 NDAA, Section 214. (5) Quantum networking: Funding innovative interagency efforts for the Washington Metro Quantum Network Research Consortium.			
FY 2021 to FY 2022 Increase/Decrease Statement: Increase due to OMB Passback for Quantum efforts.			
Accomplishments/Planned Programs Subtotals	-	-	29.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 376 / *Quantum Information Science Technology Innovation*

D. Acquisition Strategy

N/A

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 376 / *Quantum Information Science Technology Innovation*

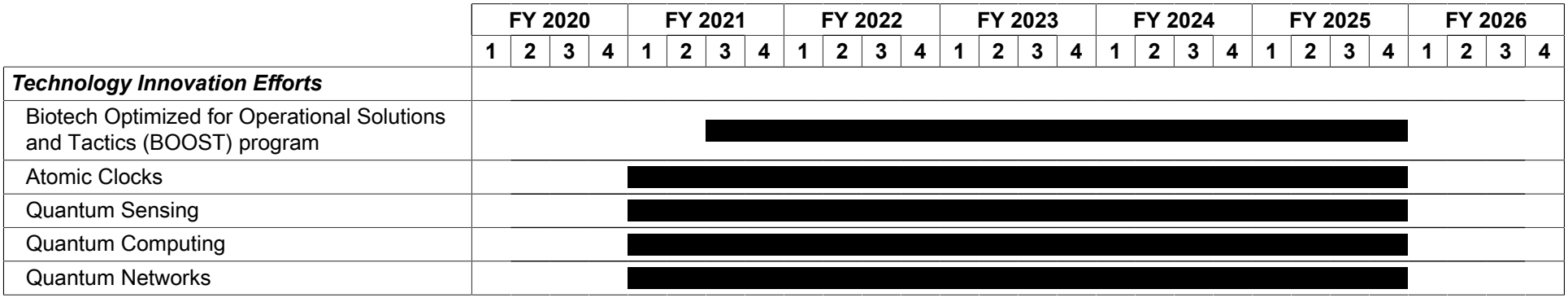

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Office of the Secretary Of Defense		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** 376 / *Quantum Information Science Technology Innovation*

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
Quantum Computing	1	2021	4	2025
Quantum Networks	1	2021	4	2025