Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Office of the Secretary Of Defense	Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	35.000	24.895	64.863	83.143	-	83.143	96.256	97.223	98.153	99.369	Continuing	Continuing
375: *Technology Innovation*	35.000	24.895	64.863	83.143	-	83.143	96.256	97.223	98.153	99.369	Continuing	Continuing

Note

Service Requirements Review Board (SRRB) efficiencies are included.

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 commercial technologies that will be a source of battlefield advantage, when integrated with military systems and novel concepts of operation.

Leveraging innovative technologies from commercial startup companies has the potential to rapidly address warfighter problem sets in areas where commercial innovation outstrips government investment in the same technology areas. Through a unique partnership with other government agencies, we gain access to and vetting of innovative technologies from commercial startup companies where much of the research and development (R&D) funds are provided by the venture capital community. Small DoD investments in these companies, often in partnership with other U.S. Government agencies, further leveraging the dollars spent, provides short work programs to adapt the commercial technologies for warfighter applications. The deliverables from the work program allow the warfighters to rapidly pilot technology and concepts, with the ability to fail early and cheaply, and provide the avenue to refine warfighter requirements and transition technology from successful pilots to traditional DoD activities for integration into broader R&D efforts or acquisition programs of record.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	39.923	59.863	79.749	-	79.749
Current President's Budget	24.895	64.863	83.143	-	83.143
Total Adjustments	-15.028	5.000	3.394	-	3.394
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	-			
• SBIR/STTR Transfer	-	-			
• Congressional Reduction	-20.000	-	-	-	-
• Other Program Adjustments	-0.006	-	3.952	-	3.952
• FFRDC Transfer	-0.022	-	-	-	-

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• Economic Assumption	-	-	-0.558	-	-0.558
• Prior Approval Reprogramming Action	5.000	-	-	-	-
• FY 2018 Missile Defeat and Defense Enhancements	-	5.000	-	-	-

Change Summary Explanation

FY 2017 Missile Defeat Enhancements Reprogramming (FY 17-26 PA): $+5.000 million was required to address emergency warfighting requirements in support of various classified projects. Additional details are available at a higher classification level.

FY 2018 Missile Defeat and Defense Enhancements (MDDE) Budget Amendment: $+5.000 million is required to address emergency warfighting requirements in support of various classified projects. Additional details are available at a higher classification level.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Office of the Secretary Of Defense			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
375: *Technology Innovation*	35.000	24.895	64.863	83.143	-	83.143	96.256	97.223	98.153	99.369	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Program focuses on three main areas: 1) Core Datahub pilot program; 2) Expansion of the Datahub pilot program to address the issues in the rest of the DoD 4+1 problem sets; and 3) Further innovation across other warfighter problem sets.

Core Datahub pilot program. This effort focuses on maturing and demonstrating the automated processing of space-based Intelligence, Surveillance, and Reconnaissance (ISR), Artificial Intelligence-driven Geospatial Intelligence (GEOINT), and Fix-Find-Finish-Exploit-Assess (F3EA) into an integrated capability to aid the Combatant Commander and Component forces in defeating threats posed by nuclear-capable, mobile missile - a problem set often plagued by sparse data. The approach is composed of three innovative building blocks: 1) Machine learning techniques applied to commercial GEOINT and other commercial data sources for automated country-wide anomaly and change detection - crucial element for enhancing indications and warnings required for precision strikes; 2) Machine-Human collaboration architecture to accelerate the F3EA joint forces targeting and decision-making cycle; and 3) Autonomous weaponeering demonstration - Exercise secure (C2S) cloud for timely precision strikes to hold mobile missile systems at risk.

Expansion of the Datahub Pilot Program. Following a successful demonstration of Datahub and its leverage of commercial data sources and automation in early 2017, the team was directed to expand Datahub to address applicable issues in the remainder of the DoD 4+1 problem sets. Some of these problem sets may leverage similar technologies to the pilot program, with data coverage for different parts of the world and algorithms tuned for different targets of interest, while other problem sets may require completely different data, algorithms, and/or technologies. Although FY 2017 funding was only 50% of what was expected, the team is executing preliminary efforts to execute the expansion when FY 2018 funds become fully available.

Innovation for other warfighter problem sets: Through the unique partnership in place for this effort, DoD is exposed to a wide variety of emerging commercial technologies which have potential applicability to a wide spectrum of DoD problem sets. Enabling the warfighter to execute short duration pilots with these evolving technologies provides a cost effective way to leverage commercial investment for DoD purposes, informing warfighter requirements for follow-on acquisition through traditional DoD channels, and allowing DoD R&D organizations to focus their resources on both the integration of commercial technologies showing promise in these warfighter pilots, and on traditional R&D in technologies not well served by the commercial start-up companies.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Technology Innovation	24.895	64.863	83.143
Description: The Program focuses on developing space-based Intelligence, Surveillance, and Reconnaissance (ISR), Artificial Intelligence-driven Geospatial Intelligence (GEOINT), and Fix-Find-Finish-Exploit-Assess (F3EA) into an integrated capability for defeating threats posed by nuclear-capable, mobile missile - a problem set often plagued by sparse data.			
FY 2018 Plans: - Finalize unclassified user-based training			

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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 2017	FY 2018	FY 2019
- Test/Validate ML algorithms in Secure C2S Cloud - Transition initial prototype (UNCLAS/CLAS) to user - Test/Validate SAR ML algorithms for Airborne Assets - Demonstrate integration and validation of SAR data from airborne assets within Secure (C2C) Cloud - Development of SAR ML for space-based imagery - Test/Validate micro-SAR space assets ***FY 2019 Plans:*** - Continue Datahub expansion into the DoD 4+1 problem sets - Integrate additional commercial data sources into Core datahub and datahub expansion, as they become available. - Expand non-Datahub innovation into other warfighter problem sets. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** - This project is on a planned ramp up from ~$60M in FY 2018 to ~$80M in FY 2019 to allow this innovative approach to address a greater number of DoD problem sets.			
Accomplishments/Planned Programs Subtotals	24.895	64.863	83.143

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A