Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Office of the Secretary Of Defense	Date: May 2017
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 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	10.000	25.000	89.923	59.863	-	59.863	79.749	99.191	98.856	100.934	Continuing	Continuing
P375: *Technology Innovation*	10.000	25.000	89.923	59.863	-	59.863	79.749	99.191	98.856	100.934	Continuing	Continuing

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

The Program is focused 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. Our approach is composed of three innovative building blocks: 1) Machine learning techniques applied to commercial GEOINT for automated anomaly and change detection throughout the country of interest - crucial element for enhancing our 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. These blocks will serve to overcome the sparse data problem set and reduce the decision-making process.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	0.000	39.923	59.917	-	59.917
Current President's Budget	25.000	89.923	59.863	-	59.863
Total Adjustments	25.000	50.000	-0.054	-	-0.054
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	25.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.054	-	-0.054
• FY2017 Request for Additional Appropriations	-	50.000	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Project: P375: *Technology Innovation*		

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Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2016	FY 2017
Congressional Add: *Technology Innovation IQT*	25.000	-
Congressional Add Subtotals for Project: P375	25.000	-
Congressional Add Totals for all Projects	25.000	-

Change Summary Explanation

FY 2017 Request for Additional Appropriations: $50.000 million is required to address emergency warfighting readiness requirements in support of the Advanced Analytics and Intelligence, Surveillance and Reconnaissance (ISR) projects

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense			Date: May 2017
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603375D8Z / *Technology Innovation*	Project (Number/Name) P375 / *Technology Innovation*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
P375: *Technology Innovation*	10.000	25.000	89.923	59.863	-	59.863	79.749	99.191	98.856	100.934	Continuing	Continuing

A. Mission Description and Budget Item Justification

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Technology Innovation	0.000	89.923	59.863
Description: The Program is focused 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 2016 Accomplishments: - Awarded/acquired multiple data sources and analytic performers - Successfully integrated multiple data sources into a "Big Data" environment - Executed analytical tests to establish small subset of baseline patterns of life			
FY 2017 Plans: - Illustrate machine learning (ML) techniques applications to commercial GEOINT for automated anomaly and change detection - ML algorithm development/testing multiple data sources within an integrated unclassified cloud - Development of Synthetic Aperture Radar (SAR) ML algorithms for Air assets - Conduct unclassified user-based training - Machine-Human collaboration architecture to accelerate the F3EA joint forces targeting and decision making cycle - Initiate integration and validation of ML algorithms in Secure (C2S) cloud			

Exhibit R-2A, RDT&E Project Justification: FY 2018 Office of the Secretary Of Defense		Date: May 2017
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603375D8Z / *Technology Innovation*	**Project (Number/Name)** P375 / *Technology Innovation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Acquire micro-SAR space assets HW for development ***FY 2018 Plans:*** - Finalize unclassified user-based training - Test/Validate ML algorithms in Secure C2S Cloud - Transition initial prototype (UNCLAS/CLAS) to user - Test/Validate SAR ML algorithms for Air Assets - Initiate integration and validation of SAR within Secure (C2C) Cloud - Development of SAR ML for space-based imagery - Test/Validate micro-SAR space assets			
Accomplishments/Planned Programs Subtotals	0.000	89.923	59.863

	FY 2016	FY 2017
Congressional Add: Technology Innovation IQT	25.000	-
FY 2016 Accomplishments: - Awarded/acquired multiple data sources and analytic performers - Successfully integrated multiple data sources into a "Big Data" environment - Executed analytical tests to establish small subset of baseline patterns of life		
Congressional Adds Subtotals	25.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A