| Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Office of the Secretary Of Defense | Date: February 2016 |
|---|---|
| **Appropriation/Budget Activity**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)* | **R-1 Program Element (Number/Name)**<br>PE 0603375D8Z / *Technology Innovation* |

| COST ($ in Millions) | Prior Years | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total | FY 2018 | FY 2019 | FY 2020 | FY 2021 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Program Element | - | 10.000 | 25.000 | 39.923 | - | 39.923 | 59.917 | 79.919 | 99.921 | 99.921 | Continuing | Continuing |
| P375: *Technology Innovation* | - | 10.000 | 25.000 | 39.923 | - | 39.923 | 59.917 | 79.919 | 99.921 | 99.921 | 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 innovated 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 Black Cloud for timely precision strikes to hold mobile missile systems at risk. These innovation blocks will serve as the foundation for all the investment selection criteria for the pilot program.

| B. Program Change Summary ($ in Millions) | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | - | 0.000 |
| Current President's Budget | 10.000 | 25.000 | 39.923 | - | 39.923 |
| Total Adjustments | 10.000 | 25.000 | 39.923 | - | 39.923 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | 25.000 | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Technology Innovation | - | - | 40.000 | - | 40.000 |
| • Other Reprogrammings | 10.000 | - | - | - | - |
| • Economic Assumptions | - | - | -0.077 | - | -0.077 |

| Exhibit R-2A, RDT&E Project Justification: PB 2017 Office of the Secretary Of Defense | | | Date: February 2016 |
|---|---|---|---|
| Appropriation/Budget Activity<br>0400 / 3 | R-1 Program Element (Number/Name)<br>PE 0603375D8Z / *Technology Innovation* | Project (Number/Name)<br>P375 / *Technology Innovation* | |

| COST ($ in Millions) | Prior Years | FY 2015 | FY 2016 | FY 2017 Base | FY 2017 OCO | FY 2017 Total | FY 2018 | FY 2019 | FY 2020 | FY 2021 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P375: *Technology Innovation* | - | 10.000 | 25.000 | 39.923 | - | 39.923 | 59.917 | 79.919 | 99.921 | 99.921 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification**

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| B. Accomplishments/Planned Programs ($ in Millions) | FY 2015 | FY 2016 | FY 2017 |
|---|---|---|---|
| ***Title:*** Technology Innovation | 10.000 | 25.000 | 39.923 |
| ***Description:*** The purpose of this project is to explore innovative technologies and to enable the efficient incorporation of technologies, into the weapons systems and operations capabilities. | | | |
| ***FY 2015 Accomplishments:***<br>The Technology Innovation Program is on track to conduct a demonstration in December 2016. When tailored with deep algorithms, the state-of-the-art Graphic Processing Units (GPUs) opened up the option to perform on-board processing, conducting object detection and target recognition directly on the Unmanned Aerial Vehicle (UAV) in real-time, thereby eliminating the need to send dense Synthetic Aperture Radar (SAR) or Full Range Motion Video (FMV) to downlink stations for further processing. In addition, the detected objects can be used to populate coordinate mensuration and weaponeering models for on-board processing of fix and finish solutions in real-time. This approach will be a game changer by drastically decreasing the execution timeline of sensor-to-shooter from hours to possibly minutes. | | | |
| ***FY 2016 Plans:***<br>Identify and assess technologies and products of potential benefit to DoD. Modify and demonstrate technologies to facilitate meeting DoD needs. | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2017 Office of the Secretary Of Defense | | Date: February 2016 |
|---|---|---|
| **Appropriation/Budget Activity**<br>0400 / 3 | **R-1 Program Element (Number/Name)**<br>PE 0603375D8Z / *Technology Innovation* | **Project (Number/Name)**<br>P375 / *Technology Innovation* |

| B. Accomplishments/Planned Programs ($ in Millions) | FY 2015 | FY 2016 | FY 2017 |
|---|---|---|---|
| The PE will seek to broaden DoD's access to innovative companies and technologies for application beyond the intelligence community to the<br>wider DoD mission set.<br><br>***FY 2017 Plans:***<br>Identify and assess technologies and products of potential benefit to DoD. Modify and demonstrate technologies to facilitate meeting DoD needs.<br><br>The PE will seek to broaden DoD's access to innovative companies and technologies for application beyond the intelligence community to the<br>wider DoD mission set. | | | |
| **Accomplishments/Planned Programs Subtotals** | 10.000 | 25.000 | 39.923 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

N/A

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