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 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*

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	743.688	209.014	219.199	211.325	-	211.325	248.116	250.187	281.064	286.833	Continuing	Continuing
940: *Central Test and Evaluation Investment Program (CTEIP)*	743.688	209.014	219.199	211.325	-	211.325	248.116	250.187	281.064	286.833	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Since its inception in FY 1990, this program element has been used to fund the development of critically needed, high priority Test and Evaluation (T&E) capabilities for joint/multi-Service requirements. The Central Test and Evaluation Investment Program (CTEIP) uses a corporate investment approach to combine Service, Defense, and other government agencies T&E needs, maximize opportunities for joint efforts, and avoid unwarranted duplication of test capabilities. CTEIP focuses investments on projects that will have high productivity returns on investment. Projects under the CTEIP Program Element (PE) support two basic tasks: investments to improve the test capabilities base (Joint Improvement and Modernization (JIM) projects) and development of near-term solutions to test capability shortfalls in support of ongoing operational test programs (Resource Enhancement Project (REP)).

The JIM funds critically needed T&E investments in the major functional areas of: air combat; armament and munitions; Command, Control Communication, Computer and Intelligence (C4I) and networks; common range instrumentation; electronic combat; cyber warfare; land combat; sea combat; space combat; target systems; and test environments. Examples of project subject matter include: highly accurate time-space-position information, network enhanced telemetry, electronic warfare test capability developments to address critical testing shortfalls against advanced threats, information assurance and cyber testing and analysis capabilities, ground testing for hypersonic systems, end-to-end testing of infrared countermeasures systems, net-centric weapons and unmanned systems. CTEIP continues as the focal point for fostering common architectures throughout the test and training communities to enhance the sharing of resources and linkages between test and training ranges.

CTEIP has provided special focus to institutionalize the use of modeling and simulation (M&S) as a practical test tool; to link ranges through internetting to enhance inter-range and inter-Service cooperation and resource sharing; and, to ensure development and acquisition of common instrumentation necessary for a more efficient test infrastructure.

Analyses of alternative solutions are conducted for each investment project to validate T&E requirements, to define integrated support systems, and to determine overall cost effectiveness of the proposed test investments. The use of Department of Defense (DoD)-wide criteria for requirement validation, prioritization, and risk assessment ensures an effective test resource investment program.

The REP funds development of near-term solutions for critical ongoing operational tests supporting decisions on major, high priority defense acquisition programs. These unanticipated operational test (OT) capability requirements arise from several sources such as a new threat system identified during OT planning, acquisition of foreign military assets that are critical in determining weapon system operational effectiveness, short timelines between system design maturity and scheduled OT, and emerging technologies and test requirements resulting from operational concept changes mandated by Congress or Director, Operational Test & Evaluation (DOT&E),

or system-of-systems testing. Funding these activities under the CTEIP provides the opportunity to coordinate and integrate these near-term test requirements with the total DoD test and evaluation investment planning, and ensures their availability and legacy for other programs that may have similar testing requirements.

This Budget Activity 6 PE includes special studies, analyses, and strategic planning related to test capabilities and infrastructure, and supports the development and application of proven technologies to provide major test and evaluation capabilities required to meet DoD component weapon system test requirements.

The FY2018 Central Test and Evaluation Program budget is described in detail below. As part of the DoD reform agenda, the CTEIP budget was reduced for consolidation and reduction of service contracts.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	213.668	219.199	220.566	-	220.566
Current President's Budget	209.014	219.199	211.325	-	211.325
Total Adjustments	-4.654	0.000	-9.241	-	-9.241
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.654	-			
• SRRB Reduction	-	-	-9.241	-	-9.241

Change Summary Explanation

• FY2018 strategic efficiency reductions in management headquarters funding and staffing for better alignment and to provide support to a smaller military force.
• SRRB - Service Requirement Review Board - As part of the Department of Defense reform agenda, the incremental reduction accounts for consolidation and reduction of service contracts.

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
Title: Central Test and Evaluation Investment Program	209.014	219.199	211.325
FY 2016 Accomplishments: JIM Projects: - Completed requirements development and planning, and awarded contract for system design for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Completed system development and initiated production and sustainment for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Completed the Next Generation Range Control and Data Distribution project to enhance and modernize range control and data distribution systems at the Pacific Missile Range Facility (PMRF). - Completed the B-2 Defense Management System project to upgrade test capabilities at the Benefield Anechoic Facility (BAF) to support B-2 testing in a modern radio frequency (RF) signal threat environment. - Completed a requirements review for a Common Development Environment to combine the specifications, models, tools, policy, and best practices needed to enhance interoperability among live, virtual, and constructive T&E capabilities throughout the acquisition lifecycle. - Initiated requirements development and planning multiple projects improving hypersonic ground test capabilities to address critical shortfalls in developmental and operational testing of cruise missile and boost glide vehicles. - Continued system development for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Continued system development of the Integrated Network Enhanced Telemetry project Block I capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Continued system development for the Next Generation Electronic Warfare Environment Generator Build B project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Continued threat system simulator development efforts to improve integration, reduce potential duplication, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Fielded the initial operational capability for the Synthetic Battlefield Emitter Systems project to provide a controlled, high density open air environment for testing of C4ISR systems. Continued development of the Full Operation Capability. - Completed system design and continued development for the Vertical Electromagnetic Pulse (EMP) and High Power Microwave (HPM) Test Sources project to provide vertical high-altitude EMP and HPM external electromagnetic environments for testing in accordance with applicable Military Standards. - Completed system design and continued development for the Network Centric Weapon (NCW) T&E Environment project to provide an enhanced capability to test and evaluate NCW in a distributed end-to-end simulation environment. - Completed system design and continued development for the Cyber Test Analysis and Simulation Environment project to enhance current Information Assurance / Cyber testing and analysis capabilities and modeling and simulations tools for testing against increasingly robust Cyber threats. - Completed system design and development, and initiated acceptance testing for the Radar Signal Emulator project to provide open-loop, transmit-only systems that will accurately emit waveforms of threat radar systems operating in the C and S radio frequency (RF) bands.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Completed preliminary design and continued system development for the Advanced Dynamic Transmitter Array project to develop a complex, dynamic radio frequency (RF) threat environment that will accurately represent signal characteristics, increase signal densities while reducing test system set up and calibration times at the Benefield Anechoic Facility (BAF). - Continued system development of the Closed Loop PESA Simulator project to develop a closed-loop radar system that will closely replicate the performance of a widely fielded Western Pacific (WESTPAC) long-range surface-to-air missile (SAM) system. - Continued system development of Integrated Air Defense System (IADS) Enhancements that will add comprehensive threat-representative IADS capabilities based on the development and integration of several high-priority, threat-representative Command Post (CP) models to open-air test ranges, test laboratories and modeling and simulation (M&S) facilities. - Continued Integrated Technical Evaluation and Analysis of Multiple Sources (ITEAMS) activities to provide detailed analysis and validation of threat system designs and operational techniques. - Continued concept development and preliminary design for the Commercial Derivative Aircraft Based Instrumentation Telemetry System project to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios. - Fielded an initial operational capability and continued system development for Full Operational Capability for the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide end-to-end ground testing of IRCM systems. - Continued the Common Operational Data Analytics for Continuous T&E project that provides big-data analytics capability at the Army Test Center, Aberdeen Proving Grounds. - Continued the Joint Strike Fighter Knowledge Management (KM) project to establish a next-generation KM capability that utilizes the latest in virtualization technologies, methodologies, and best practices for efficient and effective use of T&E data. - Completed requirements development and planning, and initiated concept development and preliminary design for the Advanced Weapons Effects Test Capability project to develop a capability to more accurately measure fragment characteristics of explosive weapons and more accurately estimate collateral damage distances. - Completed requirements development and planning, and initiated concept development and preliminary design for the Mid-Pressure Arc Heater project to expand the H2 Hypersonic Test Facility at Arnold Engineering Development Center, TN to provide higher enthalpy at the mid-pressure altitudes to enable ground materials testing of components of hypersonic systems. - Continued requirements development and planning for the Pulsed Neutron Environment project to provide a Low Enriched Uranium (LEU) facility to replace the current HEU reactor, providing higher fluence over a larger test area. It will also develop a Dense Plasma Focus (DPF) system to meet short pulse requirements necessary for both weapons certification and testing new circuit designs. - Completed requirements development and planning, and initiated concept development and preliminary design for the Radar Cross Section Range Relevance Project to upgrade radar cross section measurement capabilities to measure and evaluate advanced low observable technologies at the Atlantic Test Range, Patuxent River NAS and the National RCS Test Facility, Holloman AFB, NM.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Completed requirements development and planning, and initiated concept development and preliminary design for the Swarm Autonomy and Scoring project to upgrade existing High Speed Maneuverable Surface Target (HSMST) with semi-autonomous control, develop a Real Time Casualty Assessment capability, and UAS scoring capabilities for testing against representative surface swarming threats. - Initiated risk reduction activities under the Enhanced Solutions Process for potential FY18 multi-service T&E developments, as recommended by Service Test and Evaluation Executives. Resource Enhancement Project: - Completed the Automated Test Case Generator Web Service (ATC-GEN WS) to provide Joint Interoperability Test Command (JITC) with the capability to develop BMDS and Mode 5 IFF MIL-STD-6016E compliance test cases and an automated test tool on a test network. - Completed development of DIADS Weapons Control (DWC) to develop operationally representative weapons control algorithms for mixed brigade SAM players within DIADS. - Completed development of MSALTS Ultraviolet Emitter Enhancement (MUVEE) to upgrade Multi Spectral Sea and Land Target Simulator (MSALTS) with LED-based UV source for short shot hostile fire IRCM end-to-end threat engagements. - Completed the Wideband Configurable Control Jammer (WCCJ) Enhancement to develop and integrate an Electronic Support Measures (ESM) direction finding subsystem into WCCJ, thus improving its ability to monitor and prioritize signals during operational test events such as Network Integrated Exercise. - Continued development of Airborne Early Warning Interoperability Simulator (AEIS) to develop the hardware and software necessary to generate a properly spaced, dense target and ECM environment for injection-mode Installed Systems Test Facility testing of the E-2D Hawkeye mission system. - Continued development of Advanced Mine Simulation System (AMISS) Upgrade, which provides the existing AMISS asset with five new mine triggering emulations, as well as sensor and improved compartmentalization enhancements. - Continued development of Boosted Zombie Target (BZT) to develop multi-stage, economical targets for PAC-3 by integrating a GFE booster onto a blue "Zombie" maneuvering target. - Continued development of C2 and Urban Background Environment Simulator (CUBES) to incorporate modern urban communication background signals and selected closed-loop communications for Installed System Test Facility communications jamming purposes. - Continued the Digital Integrated Air Defense System (DIADS) Sensor Reactivity Upgrade (SRU) to upgrade DIADS radars with enhanced ECM response features in support of F-35 and F-22 operational testing. - Continued development of Joint Standard Instrumentation Suite (JSIS) to measure and collect signature, TSPI, and related data of threat missile and hostile fire munitions (e.g., small arms and RPG) firings to support evaluation of the missile/hostile fire warning systems such as the Advance Threat Warning (ATW) system.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Continued development of Submarine Launched Modular 3-inch Device (SLAM-3D), which provides a Cluster Duncan countermeasure emulator that will help resolve the Anti-Submarine Warfare COI for the Mk 54 Mod 1 Torpedo. - Continued development of Torpedo Operational Testing Using Modeling and Simulation (TOTUMS) to enhance torpedo OT&E by upgrading an HITL simulator and environment simulator for high-fidelity, OT-ready realism. - Initiated development of the Medium Range Target Engagement Radar (MR-TER) Radar System Emulator (RSE) to develop and integrate TER waveform replication capability into C-Band RSEs. - Initiated development of Tactical Datalink (TDL) and Full Motion Video (FMV) Accuracy Assessment Tool (T-FAAT) to interface COTS tool suites to create a net-enabled weapon situational awareness during live testing.			
FY 2017 Plans: JIM Projects: - Complete system development and field the Synthetic Battlefield Emitter Systems project to provide a controlled density open air environment for testing of C4ISR systems. - Complete system development for the Joint Distributed Infrared Countermeasures (IRCM) Ground Test System project to provide an end-to-end ground test system enabling complete testing of IRCM systems. - Complete system development for Block 1 and continue Block 2 concept development and preliminary design for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Compete initial operational capability (IOC) and continue system development for the Network Centric Weapon (NCW) T&E Environment project to provide an enhanced capability to test and evaluate NCW in a distributed end-to-end simulation environment. - Complete early operational capability (EOC) and continue development for the Cyber Test Analysis and Simulation Environment project to enhance current Information Assurance / Cyber testing and analysis capabilities and modeling and simulations tools for testing against increasingly robust Cyber threats. - Complete system development and transition to production and sustainment of the Radar Signal Emulator project to provide open-loop, transmit-only systems that will accurately emit waveforms of threat radar systems operating in the C and S radio frequency (RF) bands. - Continue system development for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Continue the Commercial Derivative Aircraft Based Instrumentation Telemetry System project with contract award for design and system development to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Continue production and sustainment for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Continue system development for the Next Generation Electronic Warfare Environment Generator Build B project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Continue system development for the Advanced Dynamic Transmitter Array project to develop a dense, complex, dynamic radio frequency (RF) signal threat environment that will accurately represent signal characteristics, increase signal densities, while reducing test system set up and calibration times at the Benefield Anechoic Facility (BAF). - Continue system development of the Closed Loop PESA Simulator project to develop a closed-loop radar system that will closely replicate the performance of a widely fielded Western Pacific (WESTPAC) long-range surface-to-air missile (SAM) system. - Continue system development of Integrated Air Defense System (IADS) Enhancements that will add comprehensive threat-representative IADS capabilities based on the development and integration of several high-priority, threat-representative Command Post (CP) models to open-air test ranges, test laboratories and modeling and simulation (M&S) facilities. - Continue Integrated Technical Evaluation and Analysis of Multiple Sources (ITEAMS) activities to provide detailed analysis and validation of threat system designs and operational techniques. - Complete concept development and preliminary design and initiate system development for the Advanced Weapons Effects Test Capability project to develop a capability to more accurately measure fragment characteristics of explosive weapons and more accurately estimate collateral damage distances. - Complete concept development and preliminary design and initiate system development for the Mid-Pressure Arc Heater project to expand the H2 Hypersonic Test Facility at the Arnold Engineering Development Center, TN to provide higher enthalpy at the mid-pressure altitudes to enable ground materials testing of components of hypersonic systems. - Complete requirements development and planning and enter concept development and preliminary design for the Pulsed Neutron Environment project to provide a Low Enriched Uranium (LEU) facility to replace the current HEU reactor, providing higher fluence over a larger test area. It will also develop a Dense Plasma Focus (DPF) system to meet short pulse requirements necessary for both weapons certification and testing new circuit designs. - Complete concept development and preliminary design and initiate system development for the Radar Cross Section Range Relevance Project to upgrade radar cross section measurement capabilities to measure and evaluate advanced low observable technologies at the Atlantic Test Range, Patuxent River NAS and the National RCS Test Facility, Holloman AFB, NM. - Complete concept development and preliminary design and initiate system development for the Swarm Autonomy and Scoring project to upgrade existing High Speed Maneuverable Surface Target (HSMST) with semi-autonomous control, develop a Real Time Casualty Assessment capability, and improved scoring capabilities for testing against representative surface swarming threats. - Continue system development of the Integrated Network Enhanced Telemetry project capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Continue risk reduction activities under the Enhanced Solutions Process for potential multi-service T&E developments, as recommended by Service Test and Evaluation Executives. - Continue threat system simulator development efforts to improve integration, reduce potential duplication, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Complete concept development and initiate design for Hypersonic Test Capability Improvement project that will test models of hypersonic systems in a realistic clean air environment up to Mach 7.5 at Arnold Engineering and Development Center, TN. - Continue requirements development and planning for improved hypersonics ground test capabilities to address critical shortfalls in developmental and operational testing of cruise missile and boost glide vehicles. - Initiate requirements development and planning for the upgrade of the Arnold Engineering Center Hypervelocity Wind Tunnel 9, Maryland to a Mach 18 capability to conduct testing in support of hypersonic system development and hypersonic vehicle technologies. - Initiate requirements development and planning for the upgrade of the Arnold Engineering Center, TN G-Range Weather Erosion Facility to conduct erosion testing of hypersonic materials and vehicle technologies in weather and particulate environments (rain, ice and dust). - Initiate requirements development and planning for the upgrade of the Holloman AFB, NM Sled Track to conduct erosion testing of hypersonic materials and vehicle technologies. - Initiate requirements development and planning to develop a Light Detecting and Ranging (LiDAR) atmospheric measurement system for enhanced ground-based atmospheric measurements to support open-air range flight testing of hypersonic vehicles. -Initiate a study of open-air ranges for hypersonic testing. Resource Enhancement Project: - Complete development of Advanced Mine Simulation System (AMISS) Upgrade, which provides the existing AMISS asset with five new mine triggering emulations, as well as sensor and improved compartmentalization enhancements. - Complete development of C2 and Urban Background Environment Simulator (CUBES) to incorporate modern urban communication background signals and selected closed-loop communications for Installed System Test Facility communications jamming purposes. - Complete the Digital Integrated Air Defense System (DIADS) Sensor Reactivity Upgrade (SRU) to upgrade DIADS radars with enhanced ECM response features in support of F-35 and F-22 operational testing. - Complete development of Joint Standard Instrumentation Suite (JSIS) to measure and collect signature, TSPI, and related data of threat missile and hostile fire munitions (e.g., small arms and RPG) firings to support evaluation of the missile/hostile fire warning systems such as the Advance Threat Warning (ATW) system. - Complete development of Submarine Launched Modular 3-inch Device (SLAM-3D), which provides a Cluster Donut countermeasure emulator that will help resolve the Anti-Submarine Warfare COI for the Mk 54 Mod 1 Torpedo.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Complete development of Tactical Datalink (TDL) and Full Motion Video (FMV) Accuracy Assessment Tool (T-FAAT) to interface COTS tool suites to create a net-enabled weapon situational awareness during live testing. - Complete development of Torpedo Operational Testing Using Modeling and Simulation (TOTUMS) to enhance torpedo OT&E by upgrading an HITL simulator and environment simulator for high-fidelity, OT-ready realism. - Continue development of Airborne Early Warning Interoperability Simulator (AEIS) to develop the hardware and software necessary to generate a properly spaced, dense target and ECM environment for injection-mode Installed Systems Test Facility testing of the E-2D Hawkeye mission system. - Continue development of Boosted Zombie Target (BZT) to develop multi-stage, economical targets for PAC-3 by integrating a GFE booster onto a blue "Zombie" maneuvering target. - Continue development of the Medium Range Target Engagement Radar (MR-TER) Radar System Emulator (RSE) to develop and integrate TER waveform replication capability into C-Band RSEs. - Initiate development of additional enhancements to Air Warfare Battle Shaping (AWBS) investments to improve air-to-air range infrastructure for NAWC-WD. - Initiate development of Cognitive Electronic Warfare (Cognitive EW) Flight Test to evaluate an advanced EW system against emerging threat representations. - Initiate development of General Threat Torpedo (GTT) to develop a threat torpedo surrogate with upgradable interchangeable segments as an upgrade replacement for the current threat surrogate torpedo. -Initiate development of the Pulsed Doppler Emitter Capability Payload for Aerial Targets (PDEC-163) to develop kinematic threat representations and threat representative emissions to provide the DDG-1000 OT SUT with the ability to collect data necessary for COTF to accredit the DDG-1000's fire control loop weapons system response to threat targets. - Initiate development of Space Fence Evaluation of Radar Effectiveness (SFERES) to fabricate a 3-axis stabilized CubeSat which will launch two spheres to support accurate evaluation of the Space Fence radar.			
FY 2018 Plans: JIM Projects: - Initiate CTEIP FY2018 New Start test environment and test instrumentation test capability development projects based results of the completed FY16-17 Enhanced Solutions Process and nominations by Service Test and Evaluation Executives. - Complete critical design and continue system development for the Advanced Range Tracking and Imaging System project to provide an integrated next generation suite of optical tracking mounts needed to increase performance, reduce costs, and effectively deliver secure reliable optical throughput. - Complete critical design and continue development for the Advanced Weapons Effects Test Capability project to develop a capability to more accurately measure fragment characteristics of explosive weapons and more accurately estimate collateral damage distances.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Complete preliminary design and continue system development for the Commercial Derivative Aircraft Based Instrumentation Telemetry System project to provide expanded capability and capacity telemetry support for aircraft and missile defense testing in inter-range and broad ocean area test scenarios. - Continue production and interim contractor logistics support for the Common Range Integrated Instrumentation System project to develop a common range instrumentation system to address next generation range data requirements. - Complete Initial Operational Capability (IOC) and continue development for the Cyber Test Analysis and Simulation Environment project to enhance current Information Assurance / Cyber testing and analysis capabilities and modeling and simulations tools for testing against increasingly robust Cyber threats. - Continue system development of the Integrated Network Enhanced Telemetry project capability to develop a network-enhanced aeronautical telemetry capability for T&E ranges and facilities. - Complete Full Operational Capability (FOC)for Block 1 and Initial Operational Capability (IOC) for Block 2 for the Multi-Level Secure (MLS) Joint/Coalition Network Environment project to develop a standardized, DoD multi-level secure and cross-domain data management T&E network architecture. - Continue system development for the Network Centric Weapon (NCW) T&E Environment project to provide an enhanced capability to test and evaluate NCW in a distributed end-to-end simulation environment. - Continue concept development and preliminary design for the Pulsed Neutron Environment project to provide a Low Enriched Uranium (LEU) facility to replace the current HEU reactor, providing higher fluence over a larger test area. It will also develop a Dense Plasma Focus (DPF) system to meet short pulse requirements necessary for both weapons certification and testing new circuit designs. - Complete critical design and continue system development for the Radar Cross Section Range Relevance Project to upgrade radar cross section measurement capabilities to measure and evaluate advanced low observable technologies at the Atlantic Test Range, Patuxent River NAS and the National RCS Test Facility, Holloman AFB, NM. - Complete critical design and continue system development for the Swarm Autonomy and Scoring project to upgrade existing High Speed Maneuverable Surface Target (HSMST) with semi-autonomous control, develop a Real Time Casualty Assessment capability, and improved scoring capabilities for testing against representative surface swarming threats. - Continue threat system simulator development efforts to improve integration, reduce potential duplication, and ensure that accurate, cost-effective representations of threat systems are available to support testing. - Continue system development for the Advanced Dynamic Transmitter Array project to develop a dense, complex, dynamic radio frequency (RF) signal threat environment that will accurately represent signal characteristics, increase signal densities, while reducing test system set up and calibration times at the Benefield Anechoic Facility (BAF). - Complete Initial Operational Capability (IOC) and continue system development of the Closed Loop PESA Simulator project to develop a closed-loop radar system that will closely replicate the performance of a widely fielded Western Pacific (WESTPAC) long-range surface-to-air missile (SAM) system.			

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Complete Full Operational Capability (FOC) for the Integrated Air Defense System (IADS) Enhancements that will add comprehensive threat-representative IADS capabilities based on the development and integration of several high-priority, threat-representative Command Post (CP) models to open-air test ranges, test laboratories and modeling and simulation (M&S) facilities. - Continue Integrated Technical Evaluation and Analysis of Multiple Sources (ITEAMS) activities to provide detailed analysis and validation of threat system designs and operational techniques. - Complete Initial Operational Capability and continue system development for the Next Generation Electronic Warfare Environment Generator Build B project to provide electronic warfare simulation capabilities for testing future Electronic Attack and Electronic Support Measures systems. - Complete system integration and Full Operational Capability (FOC) for the Radar Signal Emulator project to provide open-loop, transmit-only systems that will accurately emit waveforms of threat radar systems operating in the C and S radio frequency (RF) bands. - Complete critical design and continue system development for the Mid-Pressure Arc Heater project to expand the H2 Hypersonic Test Facility at the Arnold Engineering Development Center, TN to provide higher enthalpy at the mid-pressure altitudes to enable ground materials testing of components of hypersonic systems. - Complete design and continue system development for Hypersonic Test Capability Improvement project that will test models of hypersonic systems in a realistic clean air environment up to Mach 7.5 at Arnold Engineering and Development Center, TN. - Continue development and fabrication for the upgrade of the Arnold Engineering Center Hypervelocity Wind Tunnel 9, Maryland to a Mach 18 capability to conduct testing in support of hypersonic system development and hypersonic vehicle technologies. - Continue development for the upgrade of the Arnold Engineering Center, TN G-Range Weather Erosion Facility to conduct erosion testing of hypersonic materials and vehicle technologies in weather and particulate environments (rain, ice and dust). - Continue development for the upgrade of the Holloman AFB, NM Sled Track to conduct erosion testing of hypersonic materials and vehicle technologies. - Continue development of a Light Detecting and Ranging (LiDAR) atmospheric measurement system for enhanced ground-based atmospheric measurements to support open-air range flight testing of hypersonic vehicles. -Continue the study of open-air ranges for hypersonic testing. - Continue development of the Transient Thermal Analysis Software to predict aerothermal responses to high speed, high temperature air flow. - Continue activities to improve capabilities of the hypersonics workforce with industry and academia. - Start requirements development of a new high-fidelity automated airborne reconfigurable tracking system for hypersonic systems. - Start planning for a set of integrated UAV telemetry, optical, and LIDAR flight demonstrations. - Start requirements development of a new non-intrusive aerothermal test techniques for hypersonic systems. Resource Enhancement Project:			

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 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0604940D8Z / *Central Test and Evaluation Investment Program (CTEIP)*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018
- Complete development of Airborne Early Warning Interoperability Simulator (AEIS) to develop the hardware and software necessary to generate a properly spaced, dense target and ECM environment for injection-mode Installed Systems Test Facility testing of the E-2D Hawkeye mission system. - Complete development of Boosted Zombie Target (BZT) to develop multi-stage, economical targets for PAC-3 by integrating a GFE booster onto a blue "Zombie" maneuvering target. - Complete development of the Medium Range Target Engagement Radar (MR-TER) Radar System Emulator (RSE) to develop and integrate TER waveform replication capability into C-Band RSEs. - Complete development of additional enhancements to Air Warfare Battle Shaping (AWBS) investments to improve air-to-air range infrastructure for NAWC-WD. - Complete development of Space Fence Evaluation of Radar Effectiveness (SFERES) to fabricate a 3-axis stabilized CubeSat which will launch two spheres to support accurate evaluation of the Space Fence radar. - Continue development of General Threat Torpedo (GTT) to develop a threat torpedo surrogate with upgradable interchangeable segments as an upgrade replacement for the current threat surrogate torpedo. - Continue development of the Pulsed Doppler Emitter Capability Payload for Aerial Targets (PDEC-163) to develop kinematic threat representations and threat representative emissions to provide the DDG-1000 OT SUT with the ability to collect data necessary for COTF to accredit the DDG-1000's fire control loop weapons system response to threat targets. - Initiate development of instrumented facilities to evaluate our next generation of sensors, weapons, platforms, and C4ISR systems in a realistic urban environment in response to near-term documented OT shortfalls. - Initiate development of hardware simulators to test missile warning systems of new generation electronic warfare (EW) suites in a dynamic environment in response to near-term documented OT shortfalls. - Initiate the development of non-intrusive instrumentation to address near term OT capability shortfalls to evaluate advanced sensor system performance in harsh environments in response to near-term documented OT shortfalls.			
Accomplishments/Planned Programs Subtotals	209.014	219.199	211.325

D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

A portion of CTEIP projects that were developed and delivered to the DoD test community over the past five years.