Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 6: *RDT&E Management Support*					R-1 Program Element (Number/Name) PE 0605602A *I Army Technical Test Instrumentation and Targets*							
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	-	70.523	49.242	62.379	-	62.379	50.257	51.595	52.975	54.137	0.000	391.108
628: *Developmental Test Technology & Sustainment*	-	61.011	33.948	45.625	-	45.625	33.498	34.357	35.267	36.060	0.000	279.766
62C: *Modeling and Simulation Instrumentation*	-	9.512	15.294	16.754	-	16.754	16.759	17.238	17.708	18.077	0.000	111.342

A. Mission Description and Budget Item Justification

This Program Element (PE) provides critical front-end investments for development of new test methodologies; test standards; advanced test technology concepts for long range requirements; future test capabilities; advanced development of Modeling and Simulation and Instrumentation (MS&I) prototypes; and the full development of test instrumentation for the United States Army Test and Evaluation Command (ATEC), which includes the Operational Test Command (OTC) at Ft Hood, Texas; Aberdeen Test Center (ATC), Aberdeen Proving Ground, Maryland; White Sands Test Center (WSTC) at White Sands Missile Range (WSMR), New Mexico; Electronic Proving Ground (EPG), Fort Huachuca, Arizona; Yuma Test Center (YTC) at Yuma Proving Grounds (YPG), Arizona (including the Cold Regions Test Center (CRTC), Fort Greely, Alaska and the Tropics Regions Test Center (TRTC), at various locations); and Redstone Test Center (RTC), Redstone Arsenal, Alabama. OTC consists of three forward Test Directorates (Airborne and Special Operations Test Directorate, Fort Bragg, North Carolina; Air Defense Artillery Test Directorate, Fort Bliss, Texas; and the Fires Test Directorate, Fort Sill, Oklahoma) together with four other Test Directorates (Aviation; Maneuver; Mission Command; Maneuver Support and Sustainment) at Ft Hood, Texas. These activities support the development and fielding cycle of all Army acquisition programs including rapid fielding initiatives. Sustainment funding maintains existing testing capabilities at all locations by replacing unreliable, uneconomical, and irreparable instrumentation, as well as incremental upgrades of hardware and software for MS&I systems to assure adequate test data collection capabilities. This data supports acquisition milestone decisions for all commodity areas throughout the Army including programs such as the Joint Light Tactical Vehicle (JLTV), Advanced Multi-Purpose Vehicle (AMPV), Network Integration Evaluation (NIE), Patriot Advance Capability Phase 3 (PAC-3), Warfighter Information Network - Tactical (WIN-T), Stryker, Bradley, Abrams, Guided Multiple Launch Rocket System (GMLRS), Joint Tactical Radio System (JTRS),and the Distributed Common Ground System - Army (DCGS-A).

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605602A *I Army Technical Test Instrumentation and Targets*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	64.127	49.242	57.601	-	57.601
Current President's Budget	70.523	49.242	62.379	-	62.379
Total Adjustments	6.396	0.000	4.778	-	4.778
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	20.000	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.857	-			
• Adjustments to Budget Years	-11.723	-	4.778	-	4.778
• FFRDC Transfer	-0.024	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2017	FY 2018
Project: 628: *Developmental Test Technology & Sustainment*		
Congressional Add: *Program Increase (ATEC) / Cybersecurity of Space and Missile Defense Assets (SMDC)*	20.000	-
Congressional Add Subtotals for Project: 628	20.000	-
Congressional Add Totals for all Projects	20.000	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605602A / *Army Technical Test Instrumentation and Targets*	Project (Number/Name) 628 / *Developmental Test Technology & Sustainment*	

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
628: *Developmental Test Technology & Sustainment*	-	61.011	33.948	45.625	-	45.625	33.498	34.357	35.267	36.060	0.000	279.766
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Fiscal Year 2017 Congressional Add (CA) includes a $10 million program increase for Army Test and Evaluation Command Developmental Test Technology & Sustainment along with $10 million for "Cybersecurity of space and missile defense assets." Cybersecurity CA funds are being utilized by Space and Missile Defense Command (SMDC) to develop test technologies and capabilities necessary to address developmental test needs. Specifically, SMDC will use these funds to develop three fundamental technologies: 1.) a system analysis tool capable of assessing vulnerabilities of SMDC key terrain, 2.) Cyber Operational Risk Tool Suite (CORTS) capabilities to test network robustness, and 3.) developing the necessary live, virtual, and constructive test environment as well as the capabilities for test controls.

A. Mission Description and Budget Item Justification

This Project provides critical front-end investments for development of new test methodologies, test standards, advanced test technology concepts for long range requirements, future test capabilities, and advanced instrumentation prototypes for subordinate commands of the Army Test and Evaluation Command (ATEC). These capabilities are required to support developmental testing requirements of high priority Army systems supporting Army modernization efforts. Where practical, efficiencies will be gained through the common use of developmental instrumentation in operational testing. A key element is sustaining aging instrumentation which maintains existing capabilities at test facilities by replacing unreliable, uneconomical and irreparable instrumentation, as well as lifecycle replacement and incremental upgrades of instrumentation and software, reducing their average age to assure adequate testing capabilities. This Project develops and sustains developmental test instrumentation and capabilities that provide the data necessary to support acquisition milestone decisions for all commodity areas throughout the Army. Significant examples include new instrumentation for the testing of Command, Control, Communication and Computer (C4) systems, upgrades to existing radars to extend their economic life, common data collection and analysis tools, non-intrusive instrumentation to test Unmanned Ground Vehicles and sensors, high speed - high definition digital imaging systems to capture missile flight events, and automation software to improve data collection of reliability, availability, and maintainability (RAM) testing.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Developmental Test Technology Investment	41.011	33.948	45.625
Description: Develops, acquires and sustains critical test technology and instrumentation. Provides the necessary test instrumentation, computer and communications systems, data collection, analysis and reporting equipment and other test capabilities to successfully develop and test Army weapons and equipment. Provides the necessary live, virtual and constructive environment, hardware-in-the-loop capabilities and models and simulations needed for testing the Army materiel. Acquires instrumentation to measure performance of C4 systems; RAM data collection on tracked and wheeled vehicles; ballistic transducers for measuring chamber pressures during ammunition tests; supports development of common data collection instrumentation and data management systems used in testing across all test commodity areas and test lifecycles; continues			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605602A / *Army Technical Test Instrumentation and Targets*	**Project (Number/Name)** 628 / *Developmental Test Technology & Sustainment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
replacement and upgrade of range control instrumentation, radar, optics and telemetry equipment used in missile testing; acquires data recorders, signal conditioning equipment, data processing equipment and other instrumentation for various aircraft tests; upgrades natural environments test instrumentation used for testing weapon systems, vehicles, munitions and support equipment in extreme hot desert environments as well as extreme cold conditions; continues upgrade of survivability/vulnerability test capabilities in support of live fire testing; upgrades and replaces mobile range communications equipment and digital end devices; and improves test efficiency through the use of smart devices as data collectors.			
FY 2018 Plans: Test centers will continue to provide, acquire and upgrade instrumentation for C4, RAM, ballistics, missile, aviation and environmental testing across all test commodity areas and enhance/expand the use of common data collectors, smart devices, and enterprise data management tools. The RTC will continue the procurement of critical hardware in support of their ongoing aviation and missile flight test telemetry enhancements. This project will greatly support the testing of the UH-60V, AH-64E, CH-47F, and Joint Air-to-Ground missile programs. The ATC will continue procuring body armor test instrumentation and crew survivability instrumentation. The EPG will initiate the development of a system that will enable test engineers to collect data from C4 systems with high fidelity and allow evaluators to correlate information for complete network analysis. The WSTC will continue updating, replacing, and modifying the obsolete ground stations and control infrastructure in support of the surrogate threat target capabilities (QF-4, QF-16, and subscale drones) at the test range. The YTC will continue to procure essential test support equipment to maintain machine shop capabilities that support test program utilizing ballistic pressure transducers and adapters. This program will continue to support ballistics testing at Aberdeen Proving Ground, Dugway Proving Ground, and Picatinny Arsenal.			
FY 2019 Plans: Test centers will continue to provide, acquire and upgrade instrumentation for C4, RAM, ballistics, missile, aviation and environmental testing across all test commodity areas and enhance/expand the use of common data collectors, smart devices, and enterprise data management tools. This includes the continuation and completion of previous fiscal year initiatives in addition to the execution of new initiatives to modernize test infrastructure. The RTC will complete a critical storage backup system modernization program that will permit them to store the significant data that the developmental systems are producing. The ATC will continue its body armor test instrumentation and crew survivability instrumentation developments. The EPG will continue the development of their data collection system to store, analyze, and fully characterize the increased volume of data from high throughput network systems. The WSTC will continue with flight termination systems modernization to improve the reliability of timing distribution in a GPS denied environment. The YTC will upgrade their Kineto Tracking Mount (KTM) instrumentation, providing upgraded computer systems, video recording, and transmissions systems that meet required standards.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605602A / *Army Technical Test Instrumentation and Targets*	**Project (Number/Name)** 628 / *Developmental Test Technology & Sustainment*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Project funding restores planned funding profile.			
Accomplishments/Planned Programs Subtotals	41.011	33.948	45.625

	FY 2017	FY 2018
Congressional Add: Program Increase (ATEC) / Cybersecurity of Space and Missile Defense Assets (SMDC) ***FY 2017 Accomplishments:*** N/A	20.000	-
Congressional Adds Subtotals	20.000	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605602A / *Army Technical Test Instrumentation and Targets*	Project (Number/Name) 62C / *Modeling and Simulation Instrumentation*	

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
62C: *Modeling and Simulation Instrumentation*	-	9.512	15.294	16.754	-	16.754	16.759	17.238	17.708	18.077	0.000	111.342
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The United States (U.S.) Army Test and Evaluation Command (ATEC) plans, conducts and reports on operational tests, assessments and experiments in order to provide essential information for the acquisition and fielding of War Fighting Systems. Operational Test (OT) Modeling Simulation and Instrumentation (MS&I) collects required data from systems under test and the systems which they integrate with to support effectiveness, survivability, and suitability analysis; these systems also provide real-time position location and status tracking to support test control. The Army's Operations Tempo (OPTEMPO) has reduced the number of tactical units and vehicles available to support OT, making enhancement of live forces through simulation essential for testing in a realistic, operational environment by simulating tactical engagements, additional units, message traffic, effects, and terrain. ATEC OT MS&I 62C funding is used to adapt capabilities from other organizations (including within ATEC), purchase off-the-shelf systems, and develop and sustain OT-unique simulation and instrumentation systems. As required, the Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI) Project Manager for Instrumentation, Targets and Threat Simulators (PM ITTS) provides development and integration of major simulation and instrumentation systems such as Integrated Live, Virtual, and Constructive (LVC) Test Environment (ILTE). The MS&I (Sustainment and Minor Development) program funds the expertise and the adaptation, purchases, minor development and sustainment requirements that support systems undergoing OT. Costs unique to specific systems under test may require Program Manager (PM) funding.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Modeling, Simulation and Instrumentation	9.512	15.294	16.754
Description: Develops and enhances ATEC's simulation/stimulation of Mission Command, Fire Support, Air Defense, Command, Control, Communication Computer Intelligence, Surveillance and Reconnaissance (C4ISR), and Network systems. Improves and sustains Real-Time Casualty Assessment (RTCA) (including ILTE capabilities). Also develops, enhances, and sustains Performance Instrumentation Systems, Time Space Positioning Information (TSPI), Telemetry Systems, and Imaging Systems together with their associated data management.			
FY 2018 Plans: Will continue to sustain ATEC's Fire Support, Air Defense, C4ISR, and Network OT tools. Will improve our RTCA secure network and tactical engagement capabilities to support JLTV, Apache Block III, M109 Family of Vehicles, Gray Eagle, Spider, and Stryker PIP OTs. Will prepare for the Abrams and the Bradley PIP, AN/TPQ-53 Radar, Distributed Common Ground System - Army (DCGS-A), and Joint Warning and Reporting Network (JWARN) OTs. Will sustain Performance Instrumentation Systems, TSPI, and Telemetry and Imaging Systems and associated data management capabilities. Will transition to Windows 10, replace IT			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 6	**R-1 Program Element (Number/Name)** PE 0605602A / *Army Technical Test Instrumentation and Targets*	**Project (Number/Name)** 62C / *Modeling and Simulation Instrumentation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
systems not compliant with new and emerging cyber security requirements, and acquire additional Airborne Position Location System (APLS) to sustain Airborne and Special Operation OTs. ***FY 2019 Plans:*** Will continue to sustain ATEC's Fire Support, Air Defense, C4ISR, and Network OT tools. Will improve our RTCA secure network and tactical engagement capabilities to support future Army Integrated and Missile Defense (AIAMD), Joint Tactical Radio System (JTRS), Leaders Radio, Mid-Tier Networking Vehicular Radio (MNVR), Joint Enterprise Network Manager (JENM), and Shadow (RQ-7BVN) TUAS OTs. Will support the Abrams and Bradley PIP, AN/TPQ-53, DCGS-A, and JWARN OTs. Will sustain Performance Instrumentation Systems, TSPI, and Telemetry and Imaging Systems and associated data management capabilities. Will execute life cycle replacement of MS&I systems which have reached their end of life. Will sustain and upgrade MS&I systems used for operational tests. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding represents planned progression of Modeling, Simulation, and Instrumentation efforts.			
Accomplishments/Planned Programs Subtotals	9.512	15.294	16.754

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A