Department of Defense
Fiscal Year (FY) 2022 Budget Estimates

May 2021

Defense Threat Reduction Agency

Defense-Wide Justification Book Volume 5 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Exhibit R-1, RDT&E Programs
Defense Threat Reduction Agency
Fiscal Year (FY) 2022 Budget Estimates

Appropriation: RDT&E, Defense-Wide **Date: May 2021**

OVERVIEW

The Defense Threat Reduction Agency (DTRA) is the Department of Defense's (DoD) principle Research, Development, Test & Evaluation (RDT&E) program for combating and countering the danger posed by foreign weapons of mass destruction (WMD) and emerging threats. These threats present an immediate, persistent, and evolving risk to our nation's security. Detecting, deterring, and defeating these threats is a DoD priority, and DTRA's mission. Driven by overarching National, Departmental, and Agency level strategic policy, DTRA's RDT&E portfolio addresses these threats. This RDT&E portfolio aligns with and remains appropriately risk balanced to support the strategic objectives of the National Defense Strategy (NDS) and Nuclear Posture Review (NPR). The portfolio addresses complex WMD threat problems for the Warfighter, including understanding the environment, threats and vulnerabilities; controlling, defeating, disabling, and disposing of threats; and enhancing DoD's ability to safeguard the force and manage consequences and outcomes. DTRA accomplishes this through three thrust areas:

- Understand the Environment, Threats, and Vulnerabilities: Provides the technical underpinnings to anticipate, detect, identify, locate, characterize, and assess WMD. DTRA's portfolio will prioritize capabilities that enable U.S. forces for more effective operations in environments where their traditional strengths in battlespace awareness are being actively countered.

- Control, Defeat, Disable, and Dispose of Threats: Provides the technical underpinnings to counter WMD proliferation and emerging threats. DTRA's portfolio will prioritize innovative capabilities that permit warfighters to defeat, interrupt, or otherwise render useless WMD and emerging threats well ahead of actual threat employment.

- Safeguard the Force and Manage Consequences and Outcomes: Support operating forces capability to monitor and respond to chemical, biological, radiological, or nuclear incidents; mitigate hazards and their effects; and allow military personnel and other mission-critical personnel to continue operating effectively. Operating forces must be prepared to recover casualties, decontaminate personnel and equipment, and establish a protective posture. In response to these emerging and other enduring challenges, the portfolio supports developing and transitioning innovative and evolving technologies to protect mission-essential personnel, capabilities and associated control and support systems.

DTRA's enduring mission is to enable DoD, the USG, and International Partners to detect, deter, and defeat weapons of mass destruction and emerging threats including those that pose risk to a credible and effective U.S. nuclear deterrent. Our RDT&E programs develop and field CWMD capabilities for the Joint Force, while at the same time exploring potential technologies to identify, characterize, and counter emerging threats. The FY 2022 request reflects realignments to more effectively support Combatant Commands and Military Departments. This includes the realignment of resources to develop cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD, by anticipating new threats while responding to current and evolving threats.

Footnotes

FY 2020 Actuals: Includes Division A, Title IX and X of the Consolidated Appropriations Act, 2020 (P.L. 116-93), Division F, Title IV and V from the Further Consolidated Appropriations Act, 2020 (P.L. 116-94) and the Coronavirus Aid, Relief, and Economic Security Act (P.L. 116-136).

FY 2021 Enacted: Includes Division C, Title IX and Division J, Title IV of the Consolidated Appropriations Act, 2021 (P.L. 116-260).

Department of Defense
FY 2022 President's Budget
Exhibit R-1 FY 2022 President's Budget
Total Obligational Authority
(Dollars in Thousands)

06 May 2021

Appropriation	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request
Research, Development, Test & Eval, DW	708,056	594,138	634,930
Total Research, Development, Test & Evaluation	708,056	594,138	634,930

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 6, 2021 at 07:55:30

Department of Defense
FY 2022 President's Budget
Exhibit R-1 FY 2022 President's Budget
Total Obligational Authority
(Dollars in Thousands)

06 May 2021

Summary Recap of Budget Activities	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request
Basic Research	25,359	14,617	11,828
Applied Research	165,278	177,920	197,011
Advanced Technology Development	375,168	360,520	399,362
Advanced Component Development & Prototypes	113,590	19,931	7,166
System Development & Demonstration	28,661	21,150	19,563
Total Research, Development, Test & Evaluation	708,056	594,138	634,930

Summary Recap of FYDP Programs			
Research and Development	708,056	594,138	634,930
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Defense-Wide
FY 2022 President's Budget
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Defense-Wide
FY 2022 President's Budget
Exhibit R-1 FY 2022 President's Budget
Total Obligational Authority
(Dollars in Thousands)

06 May 2021

Appropriation: 0400D Research, Development, Test & Eval, DW

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Sec
1	0601000BR	DTRA Basic Research	01	25,359	14,617	11,828	U
		Basic Research		25,359	14,617	11,828	
11	0602134BR	Improvised Threat Reduction Applied Research	02	1,677	3,699		U
22	0602718BR	Counter Weapons of Mass Destruction Applied Research	02	163,601	174,221	197,011	U
		Applied Research		165,278	177,920	197,011	
30	0603134BR	Counter Improvised-Threat Simulation	03	49,528	3,861		U
31	0603160BR	Counter Weapons of Mass Destruction Advanced Technology Development	03	325,640	356,659	399,362	U
		Advanced Technology Development		375,168	360,520	399,362	
100	0604134BR	Counter Improvised-Threat Demonstration, Prototype Development, and Testing	04	105,480	19,931		U
107	0604551BR	Catapult	04	8,110		7,166	U
		Advanced Component Development & Prototypes		113,590	19,931	7,166	
131	0605000BR	Counter Weapons of Mass Destruction Systems Development	05	15,332	15,650	14,063	U
140	0605141BR	Mission Assurance Risk Management System (MARMS)	05		5,500	5,500	U
143	0605502BR	Small Business Innovation Research	05	13,329			U
		System Development & Demonstration		28,661	21,150	19,563	
Total Research, Development, Test & Eval, DW				708,056	594,138	634,930	

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Defense Threat Reduction Agency
FY 2022 President's Budget
Exhibit R-1 FY 2022 President's Budget
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(Dollars in Thousands)

06 May 2021

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Program Element Table of Contents (by Budget Activity then Line Item Number)

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

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Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Program Element Table of Contents (Alphabetically by Program Element Title)

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ACRONYMS

AD	Agent Defeat
ANTS	Attack the Network Tool Suite
ATAC	Advanced Targeting Assessment Capability
ATAK	Android Tactical Assault Kit
ATD	Advanced Technology Development
BAA	Broad Agency Announcement
CBRNE	Chemical, Biological, Radiological, Nuclear, and High-yield Explosives
CCDR	Combatant Commander
CCMD	Combatant Command
C-IED	Counter-Improvised Explosive Device
COE	Consequence of Execution
CoE-NI	Consequence of Execution – Nuclear Integration

CONOPS	Concept of Operations
CONUS	Continental United States
C-sUAS	Counter-Small Unmanned Aerial Systems
CTBT	Comprehensive Nuclear Test Ban Treaty
CT/CP	Counterterrorism / Counterproliferation
CTS	Component Test Structure
C-UAS	Counter-Unmanned Aerial System
CWMD	Countering Weapons of Mass Destruction
CWMD-T	Combating Weapons of Mass Destruction –Terrorism
DAPSS	Denied Area Persistent Sensor System
DEL	DTRA Experimentation Lab
DIAMONDS	Defense Integration and Management of Nuclear Data Services
DIOCC/DIA	Defense Intelligence Operations Coordination Center/Defense Intelligence Agency
DITEC	DTRA Integration Technical Experimentation Center
DoD	Department of Defense

DO	DISCREET OCULUS
DPPG	Defense Policy and Planning Guidance
DRDC	Defense Research and Development Canada
DSCS	Defense Satellite Communications System
DTRA	Defense Threat Reduction Agency
DTRIAC	Defense Threat Reduction Information Analysis Center
DT&E	Development, Test, and Evaluation
ECA	Enhanced Consequence Analysis
ECBC	Edgewood Chemical Biological Center
EM-1	Capabilities of Nuclear Weapons: Effects Manual Number 1
EMP	Electromagnetic Pulse
EMREP	Electromagnetic Reliability and Effects Predictions
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
FEFLO	Finite Element Flow Solver

FFRDC	Federally Funded Research and Development Center
FOC	Full Operational Capability
FREAK	Force-on-Force Evaluation and Analysis of Key Performance Parameters
FYDP	Future Years Defense Program
HDBT	Hard and Deeply Buried Target
HPC	High Performance Computing
IED	Improvised Explosive Device
IIRM	Interaction of Ionizing Radiation with Matter
IMAAC	Interagency Modeling and Atmospheric Assessment Center
IMEA	Integrated Munitions Effects Assessment
IMS	International Monitoring System
IoT	Internet of Things
IR	Infrared
ISS	Integrated Sensor System
IT	Information Technology

JWICS	Joint Worldwide Intelligence Communications System
LAMP	Loop-mediated Isothermal Amplification
LLE	Laboratory for Laser Energetics
LLNL	Lawrence Livermore National Laboratory
MACS	Modular Autonomous Countering WMD System
MAGICS	Modular Airborne Gaseous Isotope Collection System
MDA	Missile Defense Agency
M&S	Modeling and Simulation
MSEE	Materials Science in Extreme Environments
NACT	Nuclear Arms Control Technology
NLAN	Non-Classified Local Area Network
NuCS	Nuclear Capabilities Services
NWE	Nuclear Weapons Effects
sUAS	Small Unmanned Aerial Systems
TXL	Transportable Xenon Laboratory

UAS	Unmanned Aerial Systems
UCP	Unified Command Plan
UGF	Underground Facility
UGT	Underground Test
UK	United Kingdom
USANCA	U.S. Army Nuclear and Combating WMD Agency
USEUCOM	U.S. European Command
USFK	U.S. Forces Korea
USG	United States Government
USNORTHCOM	U.S. Northern Command
USPACOM	U.S. Pacific Command
USSOCOM	U.S. Special Operations Command
USSTRATCOM	U.S. Strategic Command
UTAS	Underground Targeting and Analysis System
VAPO	Vulnerability Assessment Protection Option

VEO	Violent Extremist Organization
VIRTUS	Virtual Radiation Training through Ubiety System
VMS	Virtual Management System
V&V	Verification and Validation
WEP	Weapon Effects Phenomenology
WMD	Weapons of Mass Destruction
WSMR	White Sands Missile Range

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601000BR / *DTRA Basic Research*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	361.455	25.359	14.617	11.828	-	11.828	-	-	-	-	-	-
RU: *Basic Research for Countering WMD*	361.455	25.359	14.617	11.828	-	11.828	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Basic Research for Countering Weapons of Mass Destruction (CWMD) project, as the nation's primary basic research portfolio dedicated to combating threats posed by chemical, biological, or nuclear weapons and is a core strategic investor in future scientific and technological progress across the full spectrum of the Defense Threat Reduction Agency's (DTRA) mission areas. This project concentrates on high risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Executive Office of the President, the Department of Defense (DoD), and the broader WMD threat reduction and consequence management communities. The portfolio addresses this through fundamental research focused on making revolutionary scientific discoveries relevant to emerging and future CWMD challenges. Program managers drive interdisciplinary portfolios primarily drawing from physics, chemistry, biology, mathematics, and information and network sciences to: train the next-generation workforce; advance the fundamental knowledge and understanding in the sciences; promote university research to support the CWMD mission; and facilitate transition of research to support our warfighters.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	26.000	14.617	11.488	-	11.488
Current President's Budget	25.359	14.617	11.828	-	11.828
Total Adjustments	-0.641	0.000	0.340	-	0.340
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.641	-			
• Realignments	-	-	0.340	-	0.340

Change Summary Explanation

The increase in FY 2022 from the previous President's Budget is due to the realignment of funding from cross cutting research and development activities in PE 0603160BR to fund additional basic research grants as part of a portfolio rebalancing.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601000BR / *DTRA Basic Research*	Project (Number/Name) RU / *Basic Research for Countering WMD*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RU: *Basic Research for Countering WMD*	361.455	25.359	14.617	11.828	-	11.828	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Basic Research for Countering WMD project, as the nation's primary basic research portfolio dedicated to countering weapons of mass destruction (CWMD), is a core strategic investor in future scientific and technological progress across the full spectrum of the Defense Threat Reduction Agency's (DTRA) mission areas. This project concentrates on high risk, high-payoff basic research, leveraging world-class expertise in academia, government, and industry, to increase the foundational body of scientific knowledge supporting DTRA's Applied Research and Advanced Technology Development projects.

This project aligns with DTRA's strategic objectives that support policy and planning guidance from the Executive Office of the President, the DoD, and the broader WMD threat reduction community. The portfolio addresses this guidance through capability enhancements, projects, and Science and Technology (S&T) investments that support CWMD and reduce global nuclear dangers. Specifically, they include: accelerating the development of standoff radiological/nuclear detection capabilities; researching countermeasures and defenses to non-traditional agents; securing vulnerable materials; developing an in-depth understanding of the capabilities, values, intent, and decision making of potential adversaries, whether they are states, networks, or individuals; defeating WMD agents; researching biologically-based and inspired materials for DoD applications; and leveraging science, technology, and innovation through domestic and international partnerships and agreements.

This project solicits, coordinates, and conducts research to build a robust, forward-looking fundamental research portfolio targeting strategic, mission-focused, basic research with high potential impact for CWMD. The research projects are selected for scientific merit, technical quality, and the potential for innovation. Each research project offers opportunities to expand the knowledge base to help the warfighter, to bring to bear new science solutions with a fresh approach, or to leverage revolutionary approaches to technical surprise, building a foundation for future CWMD solutions. This research will enable new capabilities to: better understand the environment, threats and vulnerabilities; control, defeat, disable, and/or dispose of WMD threats; and safeguard the force by managing consequences.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: Project RU: Basic Research for Countering WMD	25.359	14.617	11.828
Description: Project RU funds the exploration and discovery of fundamental scientific knowledge related to DTRA's CWMD mission by research performers from academia, government, and industry. DTRA's Basic Research University Research Alliance (URA) program conducts revolutionary CWMD scientific research with broad applicability across multiple mission areas. DTRA's basic research sets conditions for disruptive gains in the future effectiveness of technology-enabled concepts of operation not possible through evolutionary research. In FY 2021, DTRA established two URAs; Materials Science in Extreme Environments (MSEE) and Interaction of Ionizing Radiation with Matter (IIRM).			
FY 2021 Plans: - Establish Initial Program Plans with the two university partnerships to map the first 12 months of research in the areas of: Material Science in Extreme Environments; and Interaction of Ionizing Radiation with Matter			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 1	**R-1 Program Element (Number/Name)** PE 0601000BR / *DTRA Basic Research*	**Project (Number/Name)** RU / *Basic Research for Countering WMD*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Address basic research gaps and warfighters' emerging technical needs. - Support the long-term development of a world-class STEM workforce focused on CWMD research. - Promote university research to support Counter Weapons of Mass Destruction and Improvised Threat Network (CWMDITN) challenges. ***FY 2022 Plans:*** - Enable new methods to disrupt WMD attacks, enhance conventional nuclear integration, and improve enhanced consequence analysis. This Materials Science in Extreme Environments (MSEE) is a URA of 18 institutions from across the nation led by Johns Hopkins University. - Enhance capabilities to counter nuclear threat networks, enhance WMD survivability, and improve understanding the WMD environment. Interaction of Ionizing Radiation with Matter (IIRM) URA is 15 institutions nationwide led by Penn State University. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to the residual impact of decreased investment in this project as part of a portfolio rebalancing to fund higher priority RDT&E programs.			
Accomplishments/Planned Programs Subtotals	25.359	14.617	11.828

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Procurement methods include competitive selection awards through university partnerships, DTRA's Broad Agency Announcement, and collaborative funding through other organizations.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602134BR / *Counter Improvised-Threat Advanced Studies*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	1.677	3.699	0.000	-	0.000	-	-	-	-	-	-
JC: *Enable Rapid Capability Delivery*	0.000	0.502	2.500	0.000	-	0.000	-	-	-	-	-	-
JS: *Assist Situational Understanding*	0.000	1.175	1.199	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) Counter Improvised - Threat Advanced Studies program element (PE) funds technology outreach to produce studies that will drive earlier understanding of technologies and scientific theories for future programs to enhance the Department of Defense's ability to effectively counter asymmetric threats. Asymmetric threats are characterized by an environment in which an adversary employs a combination of conventional weapons, irregular tactics, and/or terrorism to obtain their objectives. The end-state of the PE is to evaluate the feasibility and practicality of research projects, taking the most promising proposals and translating them into practical prototypes for use against asymmetric threats.

Activities within this PE are driven by efforts to understand, anticipate, illuminate, isolate, and enable timely research that hastens the development of new capabilities for countering global asymmetric threats and emerging technologies.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	1.677	3.699	7.340	-	7.340
Current President's Budget	1.677	3.699	0.000	-	0.000
Total Adjustments	0.000	0.000	-7.340	-	-7.340
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Realignments	0.000	0.000	-7.340	-	-7.340

Change Summary Explanation

The decrease in FY 2022 from the previous President's Budget is due to 1) the realignment of RDT&E resources from Project JC - Enable Rapid Capability Delivery to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR for technology-driven CWMD capability development and evaluation activities to develop cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD by anticipating new

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602134BR *I Counter Improvised-Threat Advanced Studies*

threats while responding to current and constantly evolving threats, and 2) the realignment of resources from Project JS - Assist Situational Understanding to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR for strategic research and dialogues program activities in support of National Defense Strategy priorities, 3) the realignment of resources from Project JC - Enable Rapid Capability Delivery to O&M for advisory services in support of cross-cutting research and development activities.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602134BR / *Counter Improvised-Threat Advanced Studies*	Project (Number/Name) JC / *Enable Rapid Capability Delivery*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
JC: *Enable Rapid Capability Delivery*	0.000	0.502	2.500	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Defense Threat Reduction Agency (DTRA) takes a deliberate, structured, and proactive approach to meet future capability gaps and requirements through continuous study. DTRA enables DoD, the U.S. Government, and International Partners to counter and deter Weapons of Mass Destruction and emerging threats. The mission is embodied in three capability areas: understand the environment, threats, and vulnerabilities; control, defeat, disable, and dispose of WMD and asymmetric threats; and safeguard the force and manage consequences.

Activities within this project are driven by current and anticipated asymmetric threats. The applied research enables the understanding and shaping of new theories and development of new technologies in support of Combatant Commands and the DoD. The applied research will drive programmatic action to anticipate, illuminate, isolate, and mitigate asymmetric threats.

This project will investigate emerging threat technologies as well as developing analysis support tools that identify emergent capability requirements and associated gaps. It provides timely acquisition and delivery of solutions to address evolving threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: JC: Enable Rapid Capability Delivery	0.502	2.500	0.000
Description: This project will assess current and emerging technologies that address the evolving asymmetric threat environment. ***FY 2021 Plans:*** - Support the three U.S. Military Service Academies' CAPSTONE research efforts, through guidance, mentoring, and funding projects associated with evolving asymmetric threats to foster next-generation research against these threats. - Support and facilitate exploration of progressive technology innovations in three to five white papers that address key asymmetric threats that directly support Combatant Commanders' requirements and grow the pipeline of potential capabilities to counter asymmetric threat networks. ***FY 2022 Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to 1) the realignment of resources from this project to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR for technology-driven CWMD capability development and			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602134BR / *Counter Improvised-Threat Advanced Studies*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
evaluation activities to develop organizationally cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD, by anticipating new threats while responding to current and constantly evolving threats, and 2) the realignment of RDT&E resources to O&M for advisory services in support of cross-cutting research and development activities to operationalize forecasting methodologies.			
Accomplishments/Planned Programs Subtotals	0.502	2.500	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 30/0603134BR/JC: *Counter Improvised-Threat Simulation*	49.528	3.861	0.000	-	0.000	-	-	-	-	-	-
• 100/0604134BR/JC: *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	103.793	11.491	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602134BR / *Counter Improvised-Threat Advanced Studies*	Project (Number/Name) JS / *Assist Situational Understanding*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
JS: *Assist Situational Understanding*	0.000	1.175	1.199	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This project sponsors innovative studies that leverage expertise from academia and world-class research institutions in government and industry. It cultivates research community partnerships and is forward-looking to: help understand the environment, threats and vulnerabilities; anticipate and plan for emerging improvised threats; and leverage innovative approaches for future Counter Improvised Threat (C-IT) solutions to prevent or mitigate battlefield operational surprise in support of Combatant Commands (CCMDs) and deployed Warfighters.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: JS: Assist Situational Understanding	1.175	1.199	0.000
Description: This project conducts analytical research studies to counter emerging improvised threats. ***FY 2021 Plans:*** - Conduct up to five research studies to support countering WMD and improvised threat networks. - Support collaborative relationships with the analytical community. - Conduct annual project reviews to ensure progress toward study objectives. - Assess the focus and scope of C-IT challenges within our internal portfolio and across the broader analytic community to synchronize efforts and ensure successful partnerships. - Focus on identifying and closing gaps in U.S. and Allies' technology vulnerabilities, developing methodologies to counter emerging threat networks, and in forming material solution investments. ***FY 2022 Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to the realignment of resources from this project to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR for strategic research and dialogues program activities in support of National Defense Strategy priorities.			
Accomplishments/Planned Programs Subtotals	1.175	1.199	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602134BR / *Counter Improvised-Threat Advanced Studies*	**Project (Number/Name)** JS / *Assist Situational Understanding*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 100/0604134BR/JS: *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	1.687	8.440	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill analytical development needs. Performer base includes best-of-breed researchers across the Department of Defense and other government agency laboratories, academia, industry, and international partner organizations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	592.968	163.601	174.221	197.011	-	197.011	-	-	-	-	-	-
RA: *CWMD Cross-Cutting Technical and Information Sciences*	301.322	45.359	40.615	48.112	-	48.112	-	-	-	-	-	-
RD: *Nuclear Technologies and Capabilities Development*	64.448	81.198	92.492	101.229	-	101.229	-	-	-	-	-	-
RG: *Counter WMD Technologies and Capabilities Development*	113.570	20.958	22.958	29.359	-	29.359	-	-	-	-	-	-
RR: *CWMD Test and Evaluation*	113.628	16.086	18.156	18.311	-	18.311	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) Counter Weapons of Mass Destruction (CWMD) Applied Research program element funds the application and advancement of basic scientific knowledge to develop novel materials, devices, systems, and methods supporting next generation concepts and technologies, to include advances in Weapons of Mass Destruction (WMD) surveillance, detection, defeat, prevention, nonproliferation, counterproliferation, consequence management, and treaty verification.

This Applied Research portfolio is aligned with strategic planning objectives and Science and Technology (S&T) investment direction established annually by DTRA, which directly support policy and planning guidance from the Executive Office of the President, the Department of Defense (DoD), and the broader WMD threat reduction community.

The portfolio advances DTRA's CWMD mission by balancing the following: invest in DTRA's applied research capabilities and increase the CWMD technology base to maximize future pay-off; capitalize on opportunities to deliver innovative, cost-effective solutions to technical challenges that must be resolved prior to system-specific technology investigations and development; and ensure applied research efforts are directly aligned to the mission-specific capability requirements of DTRA, the Military Departments, Combatant Commanders, other DoD and federal agencies, and international partners.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602718BR *I Counter Weapons of Mass Destruction Applied Research*

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	174.096	174.571	174.915	-	174.915
Current President's Budget	163.601	174.221	197.011	-	197.011
Total Adjustments	-10.495	-0.350	22.096	-	22.096
• Congressional General Reductions	-	-0.350			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-6.268	-			
• SBIR/STTR Transfer	-4.227	-			
• Realignments	-	-	22.096	-	22.096

Change Summary Explanation

The increase in FY 2022 from the previous President's Budget is due to the net impact of 1) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0602134BR and PE 0604134BR to Project RA - CWMD Cross-Cutting Technical and Information Sciences for technology-driven CWMD capability development and evaluation activities to develop organizationally cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD, by anticipating new threats while responding to current and constantly evolving threats, 2) the realignment of resources from Project JS - Assist Situational Understanding in PE 0602134BR to Project RA - CWMD Cross-Cutting Technical and Information Sciences for strategic research and dialogues program activities in support of National Defense Strategy priorities, 3) the realignment and integration of nuclear data analysis applications including operations analysis, modeling & simulation, hazard effects, and Integrated WMD Toolset (IWMDT) from Project RA - CWMD Cross-Cutting Technical and Information Sciences into Project RD - Nuclear Technologies and Capabilities Development in PE 0603160BR to support cloud-ready, cross-cutting platforms, supporting a fuller spectrum of nuclear operations, wargaming, and assessments, 4) Increased investment in Project RD - Nuclear Technologies and Capabilities Development for nuclear survivability priorities, and 5) a downward adjustment for revised economic assumptions (inflation).

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	Project (Number/Name) RA / *CWMD Cross-Cutting Technical and Information Sciences*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RA: *CWMD Cross-Cutting Technical and Information Sciences*	301.322	45.359	40.615	48.112	-	48.112	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The CWMD Cross-Cutting Technical and Information Sciences project develops concepts and technologies in the areas of high-speed information processing, modeling and simulation, signal detection, and data-driven decision analysis in support of the Defense Threat Reduction Agency's (DTRA's) technical reach-back teams. This project develops and maintains continuously improving collaborative architectures and Weapons of Mass Destruction (WMD) modeling and simulation codes that drive an integrated suite of decision support tools serving the Combatant Commands, other Department of Defense (DoD) agencies, and national and international Countering WMD (CWMD) partners. This effort also funds research activities that benefit the public through analysis and engagement to reduce and counter threats posed by WMD via the Strategic Trends Research Initiative (STRI). STRI cultivates national and international research community partnerships across domains, bringing scientific, technical, and social science experts together to help understand and anticipate WMD capabilities and threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RA: CWMD Cross-Cutting Technical and Information Sciences	45.359	40.615	48.112
Description: Project RA develops concepts and technologies in the areas of high - speed information processing, modeling and simulation, signal detection, and data-driven decision analysis. ***FY 2021 Plans:*** - Support select NATO nations' access to a shared WMD and explosives modeling capability as requested by individual nations through the Partnership of Cooperation agreements. - Enhance Force-on-Force Evaluation and Analysis of Key Performance Parameters (FREAK) cloud architecture to increase availability of chemical/biological personnel casualty and detector models that support Course of Action Analysis, Concept of Operations Development, and Sensor Performance Prediction. - Provide software releases to include DoD customer detector requests for Virtual Radiation Training through - Ubiety System (VIRTUS), which provides a mobile phone-based radiation sensor emulator for search training. - Provide stand-alone modeling capability for Android Tactical Assault Kit (ATAK), which incorporates CWMD capabilities into a mobile phone-based tactical common operating picture, to support new, emerging and updated modeling and simulation requirements. ***FY 2022 Plans:*** - Develop and sustain advanced information technology capabilities enabling CWMD situational understanding and leverage advanced data science techniques to improve threat analysis to better inform operational planning.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Transition new data science solutions to improve real-time threat analysis into regular operational use. - Leverage non-traditional acquisition means to develop and deliver technical capabilities responsive to urgent, emergent theater requirements in support of critical strategic partners. - Deliver timely technical capabilities in response to COCOM emergent needs that would otherwise not be met in the required timeline. - Provide integrated support for effective transition to advanced development partners by leveraging an overarching assessment approach to capability development efforts to identify promising efforts for potential transition, will improve transition effectiveness rate. - Assist in transition of additional projects that may otherwise not transition effectively to a sustainable partnership. - Utilize new and emergent advanced modeling and simulation tools and development activities to develop two new, integrated CWMD modeling capabilities to support in theater operational planning. - Generate timely and actionable recommendations on mitigation of anticipated future challenges based upon assessment/ analysis of foreign and domestic CBRN trends. - Develop timely and relevant table top exercises and refine strategic dialogues/symposia/fora to accommodate year-upon-year learning and advancement on anticipated future battlespace challenges. - Refine strategic research projects to improve tangible outcomes and achievable recommendations for future activities to counter WMD development and use. - Continue developing quarterly updates to forecasted changes/developments in geopolitical landscapes and the intersection of CBRN and WMD employment systems. - Leverage CBRN community resources to provide in-depth and expert analysis to current and future WMD problem sets.			
FY 2021 to FY 2022 Increase/Decrease Statement: The increase from FY 2021 to FY 2022 is due to the net impact of realigning resources from Project JC - Enable Rapid Capability Delivery in PE 0602134BR and PE 0604134BR to this project for technology-driven CWMD capability development and evaluation activities to develop organizationally cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD, by anticipating new threats while responding to current and constantly evolving threats, 2) realigning resources from Project JS - Assist Situational Understanding in PE 0602134BR to this project for strategic research and dialogues program activities in support of National Defense Strategy priorities, 3) realigning nuclear data analysis applications including operations analysis, modeling & simulation, hazard effects, and Integrated WMD Toolset (IWMDT) from Project RA - CWMD Cross-Cutting Technical and Information Sciences into Project RD - Nuclear Technologies and Capabilities Development to support cloud-ready, cross-cutting platforms, supporting a fuller spectrum of nuclear operations, wargaming, and assessments, 4) realigning WMD counterforce technologies from Project RA - CWMD Cross-Cutting Technical and Information Sciences to Project RG – Counter WMD Technologies and Capabilities Development for advanced analytics activities to increase capabilities			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
for DTRA developed characterization and defeat options for this evolving threat technology, and 5) a downward adjustment for revised economic assumptions (inflation).			
Accomplishments/Planned Programs Subtotals	45.359	40.615	48.112

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 31/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
• 107/0604551BR: *Catapult*	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-
• 143/0605502BR: *Small Business Innovation Research*	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency												Date: May 2021
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*				Project (Number/Name) RD / *Nuclear Technologies and Capabilities Development*			
COST ($ in Millions)	**Prior Years**	**FY 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
RD: *Nuclear Technologies and Capabilities Development*	64.448	81.198	92.492	101.229	-	101.229	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Nuclear Technologies and Capabilities Development encompasses the following related areas:

1. Research, development, test, and evaluation (RDT&E) to identify, develop, and exploit signatures associated with nuclear threats in support of U.S. capabilities that detect and interdict such threats; and locate, identify, and track special nuclear material and improve detection factors such as range, time, sensitivity, and accuracy to enhance Service and Special Mission Unit capabilities. These efforts support Department of Defense (DoD) requirements for countering terrorism, counterproliferation, nonproliferation, countering rogue states, and homeland defense.

2. RDT&E to systematically study signatures associated with adversary nuclear programs and nuclear detonations to gain knowledge or understanding necessary to: determine technical capabilities needed to improve DoD contingency planning activities; improve DoD situational awareness on the nuclear battlefield; and improve capabilities to attribute the source of a nuclear detonation.

3. Research and develop innovative technologies for the protection of mission-essential personnel, critical military and national defense capabilities, and associated control and support systems during a nuclear event. Research under this project supports the mission critical systems identified under DoD Instruction 3150.09, Chemical, Biological, Radiological, and Nuclear Survivability Policy. System vulnerability research develops nuclear assessment capabilities to support operational planning, weapons effects predictions, and strategic system design. This activity also provides the DoD's nuclear design and protection standards for new and existing systems, e.g., command and control facilities and aircraft. Key systems include the Nuclear Command and Control System, the net-centric thin-line, and both military and civilian satellites and associated support systems. Experimental capabilities research provides the warfighter with unique x-ray, gamma ray, and electromagnetic pulse (EMP) test capabilities in support of system survivability development, certification, and sustainment. These efforts also support international collaboration, user groups, case study reviews, and the Joint Atomic Information Exchange Group. The human survivability effort conducts research to develop and validate mortality and morbidity models associated with radiological and nuclear weapon effects.

4. Research and development modeling tools to support military operational planning, weapons effects predictions, and strategic system design decisions; consolidate validated modeling tools for integrated functionality; predict system responses to nuclear and radiological weapons producing electromagnetic, thermal, blast, shock, and radiation environments; provide detailed adversary nuclear infrastructure characterization to enhance counterforce operations and hazard effects; and, develop foreign nuclear weapon outputs.

5. Delivers integrated applications, data analysis, and AI-enhanced capabilities in cloud-ready, cross-cutting platform supporting full spectrum of nuclear operations, wargaming, and assessments. Provides timely electronic access to Nuclear Testing Archives supporting validation of the effectiveness of the Nuclear Deterrent and survivability of US military assets without a return to nuclear testing.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RD: Nuclear Technologies and Capabilities Development	81.198	92.492	101.229
Description: Project RD develops direct and indirect technologies for the detection of radiation and non- radiative signatures associated with nuclear threats, and advances warfighter capabilities to rapidly locate, characterize, and counter such threats. ***FY 2021 Plans:*** - Enhance existing contamination avoidance capabilities. - Develop an additional new radiation signature test device (RSTD) to expand test capabilities and detector evaluation. - Evaluate the performance of novel materials (e.g. CLLBC (Cs2LiLa(Br,Cl)6:Ce, Dual-sided micro-structured semiconductor neutron detectors (DSMSNDs)) as a replacement for both high energy resolution gamma-ray detectors and high pressure Helium-neutron detectors. - Further develop detailed studies to systematically identify new nuclear threat signatures, breaking down the problem geographically to distinguish between allies and foes, and to determine assets and coverage. - Generate additional tools for pre-detonation diagnostics, leveraging high spatial resolution nuclear imagers, multiplicity algorithms, trace analysis tools, and high-fidelity test objects to increase capability to characterize threats. - Support transitioning those technologies that demonstrate exceptional capabilities in radiation and nuclear threat detection to advanced technology development. ***FY 2022 Plans:*** - Sponsor/host one trial nuclear wargame with current Mission Impact of Nuclear Effects Software (MINES) capabilities; advance nuclear wargaming research to include other nuclear weapon effects and incorporate into MINES development. - Develop prototype sensors using novel materials (e.g. CLLBC (Cs2LiLa(Br,Cl)6:Ce, Dual-sided micro- structured semiconductor neutron detectors (DSMSNDs)) for evaluation of military applications. - Develop improved nuclear weapons outputs models that correctly account for radioactive debris, improving estimates of fallout-induced casualties and impacts on space and missile forces. - Develop improved nuclear weapons induced fire ignition models that correctly account for thick fuels, improving estimates of battle and collateral damages from nuclear plans. - Conduct test at the U.S. Army White Sands Missile Range (WSMR) Large Blast Thermal Simulator (LBTS) to quantify combined airblast and thermal effects, improving estimates of impacts to ground maneuver forces operating on a nuclear battlefield. - Integrate toolsets in cloud platform for nuclear planning, NCBRE assessments, and advanced analytics in support of Service and Combatant Command planning and assessments and Conventional Nuclear Integration situational awareness - includes tool development to synthesize necessary modeling data for tool sets. - Provide integration support for nuclear technology programs; support international activities, user groups, nuclear survivability program, and case study reviews. Also utilizes the Nuclear Science and Engineering Research Center to leverage DoD Degree Granting Institutions to develop new capabilities and advance DTRA's mission to support the warfighter.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Publish updates to nuclear survivability military standards for aircraft, ships, missiles and interceptor. - Support nuclear modernization through the certification of strategic materials and the upgrade of nuclear effects testing and diagnostics. - Provide nuclear survivability operational support through analyses, vulnerability assessments, and the review of mission critical systems. - Deliver enhanced cloud platform with integrated toolsets for nuclear planning, Nuclear, Chemical, Biological, Radiological, and high Explosive (NCBRE) assessments, and advanced analytics for warfighter and Conventional-Nuclear Integration (CNI) situational awareness. - Deliver integrated improved nuclear physics and effects model in theater nuclear planning tool, improving accuracy of nuclear planning capability for US Army and CCMDs. - Provide advanced search and discovery AI/ML algorithms for improved media retrieval capability documents (20%), photographs (2%), and films (.5%), enabling nuclear survivability and effects programs with higher fidelity data. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase from FY 2021 to FY 2022 is due to the realignment and integration of nuclear data analysis applications including operations analysis, modeling & simulation, hazard effects, and IWMDT from Project RA - CWMD Cross-Cutting Technical and Information Sciences into this project to support cloud-ready, cross-cutting platforms, supporting a fuller spectrum of nuclear operations, wargaming, and assessments.			
Accomplishments/Planned Programs Subtotals	81.198	92.492	101.229

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 31/0603160BR/RD: *Counter Weapons of Mass Destruction Advanced Technology Development*	62.407	50.816	50.417	-	50.417	-	-	-	-	-	-
• 131/0605000BR/RD: *Counter Weapons of Mass Destruction Systems Development*	9.870	15.650	14.063	-	14.063	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	Project (Number/Name) RG / *Counter WMD Technologies and Capabilities Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RG: *Counter WMD Technologies and Capabilities Development*	113.570	20.958	22.958	29.359	-	29.359	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Counter WMD Technologies and Capabilities Development encompasses the following areas.

1. Defeat Technologies develops innovative kinetic and non-kinetic weapon technologies to expand traditional and asymmetric options available to Combatant Commanders to deny, disrupt, and defeat adversarial use of WMD, while minimizing collateral effects. Technology development focuses on the physical or functional defeat of WMD threat materials, an adversary's ability to deliver the same, and the physical and nonphysical support networks enabling both. It does so through the systematic identification and maturation of technologies capable of defeating WMD agents or agent-based processes and selecting technologies for integration into weapons, delivery systems, or rapid WMD elimination capabilities. This effort includes developing specific WMD agent/agent-based process simulants, sub-scale test infrastructure, and sampling capability required for effective development, testing, and evaluation of next-generation CWMD capabilities. The project places a high priority on understanding, characterizing, and validating potential weapon effects within mathematical confidence as it relates to the unintended release of hazardous threat materials. Technologies with the potential for weapon and capability integration are transitioned to Budget Activity (BA) 3, Advanced Technology Development (ATD) efforts. On a limited basis, technology test data is shared with coalition partners.

2. WMD counterforce technologies research develops weapons effects modeling algorithms, full and sub-scale test series required to investigate CWMD weapon effects and sensor performance, and visualization and situational awareness tools to support the next generation Technical Reachback cell. These activities are critical enablers for the development of advanced CWMD planning tools. Energetics research develops materials and weapon design technology providing defeat capabilities for engaging hard and deeply buried targets that are beyond current high explosive blast/fragmentation warhead technology.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RG: Counter WMD Technologies and Capabilities Development	20.958	22.958	29.359
Description: Project RG develops innovative kinetic and non-kinetic weapons technologies to expand traditional and asymmetric options available to Combatant Commanders to deny, disrupt, and defeat adversarial use of WMD while minimizing collateral effects. ***FY 2021 Plans:*** - Develop offensive counter-proliferation, counter-WMD technologies in support of Combatant Command requirements. - Develop WMD pathway defeat technologies and threat-specific test articles and analyses. - Develop lighter, smaller, more effective breaching capabilities. - Develop next generation WMD detection technology applications.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RG / *Counter WMD Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Develop advanced data analytics and technical capabilities to rapidly capture, catalogue and illuminate nefarious activities to counter WMD threat networks and provide WMD situational awareness. - Build analytic capabilities that enhance the Fusion Analysis Development Effort (FADE)/Multi- Intelligence Spatial Temporal (MIST) tool suite for geospatial predictive analytics, and pattern of life and anomaly detection. This fusion of sources provides a central, tailorable asset for CWMD mission planning, mission execution, and supports CONPLAN 7599 for identifying and assessing threats. - Deliver mobile phone-based tactical common operating picture to U.S. Forces, to support new, emerging and updated modeling and simulation requirements. - Conduct biocide testing at larger scale to analyze prompt and persistent effects, improving capability to neutralize or destroy biological weapons or agents. - Develop environmental monitors for identification and characterization of CBRN production. - Develop CWMD weapon effects modeling algorithms and scaled test series for attack planning to investigate CWMD weapon effects enhance WMD defeat modeling and simulation planning tools and assess new WMD defeat mechanisms. - Conduct small scale testing of structural reactive materials and advanced thermal agent defeat devices to improve the capability to defeat and/or neutralize CWMD-related targets. - Research and investment in application of basic and applied research initiatives and support test and evaluation of emerging autonomous technologies to support future and emerging threat requirements. - Develop offensive counter-proliferation, counter-WMD technologies in support of Combatant Command requirements. - Initiate studies on novel next generation agent defeat warhead fills and design.			
FY 2022 Plans: - Initiate Next Generation Access Denial capability based on studies conducted in FY 2021. - Develop and transition next generation agent defeat capabilities utilizing enhanced energetics, advanced manufacturing techniques and tactics that improve performance and lethality and reduce production time and cost. - Complete Coalition Warfare Program-Autonomous Tunnel Exploitation with RoK. - Explore operationalizing nontraditional data; Transition WMDpedia. - Complete independent review of forecasting tactics, techniques, and procedures (TTPs), improve regional assessments, validate effectiveness of forecasting TTPs. - Program, plan, and manage Explosive Ordnance Disposal (EOD) diagnostics and defeat projects and deliver technologies. - Program, plan, and manage low-visibility and breaching projects and deliver technologies. - Provide Systems Engineering and Integration support for both internal DTRA programs and provide subject matter expertise to external organizations with efforts related to CWMD and hard and deeply buried target (HDBT) defeat. - Support CCMD operational planning activities while identifying warfighting capability gaps.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RG / *Counter WMD Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Deliver Targeting Recommendation Packages and conduct training activities as requested by the CCMDs. - Support weapons effects testing programs and weapons development activities. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase from FY 2021 to FY 2022 is due to the realignment of WMD counterforce technologies from Project RA - CWMD Cross-Cutting Technical and Information Sciences in this PE for advanced analytics activities to increase capabilities for DTRA developed characterization and defeat options for this evolving threat technology.			
Accomplishments/Planned Programs Subtotals	20.958	22.958	29.359

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 31/0603160BR/RG: *Counter Weapons of Mass Destruction Advanced Technology Development*	201.756	259.006	259.762	-	259.762	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	Project (Number/Name) RR / *CWMD Test and Evaluation*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RR: *CWMD Test and Evaluation*	113.628	16.086	18.156	18.311	-	18.311	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Countering WMD Test and Evaluation project provides a unique national test capability for simulated WMD facilities and processes. This capability provides structured and systematic end-to-end test event planning, preparation, management, execution, and data analysis. It also offers test instrumentation (data acquisition systems and optics), scientific analysis and predictions, test article construction, test article/test bed remediation, tunnel mining, architectural and engineering design, systems engineering and integration, and test data management. The project leverages 50 years of expertise in investigating weapons effects and target response across the spectrum of hostile environments that could be created by proliferant nations or terrorist organizations with access to advanced conventional weapons or WMD. Subject matter experts design full and sub-scale testing strategies focusing on weapon-target interaction with fixed soft and hardened facilities to include above ground facilities, cut-and-cover facilities, and deep underground tunnels. This capability does not exist anywhere else within the DoD and supports the counterproliferation pillar of the National Strategy to Counter WMD.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RR: Countering WMD Test and Evaluation	16.086	18.156	18.311
Description: Project RR provides a unique national test bed capability for the study of weapon-target interaction, simulated WMD facility characterization and defeat testing, and evaluation of asymmetric threats observed in theater, to evaluate the implications of WMD and other special weapon use against U.S. military and civilian assets. Additionally, Project RR develops instrumentation and identifies unique threat signatures that can support early detection and development of countermeasures to support Combatant Command needs.			
FY 2021 Plans: - Conduct modernization and reconstitution of CWMD testing and evaluation instrumentation and diagnostics in support of contemporary threats US Forces and interests abroad. - Develop additional diagnostics, instrumentation, and explosives handling research in support of evolving threat testing and compliance initiatives. - Replicate, test, and evaluate identified threat WMD systems and use tactics, techniques, and procedures to support the development of WMD detection, characterization, and countermeasures documented in CCMD requirements. - Develop identification, characterization, and defeat technologies, tools, and capabilities for signature characterization in support of Combatant Command Counter-Threat Test and Evaluation programs that leverage the Nevada National Security Site, as well as other CONUS testbeds. Design and build testbeds in small-, mid-, and large-scale environments capable of capturing data needed to improve and validate high-fidelity modeling and simulation tools used to predict US weapon and adversary threat effects on facilities of interest.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RR / *CWMD Test and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Provide a complete capability to characterize and evaluate the threat introduced by automated and autonomous systems when combined with WMD, as well as a means to evaluate the effectiveness of detection, identification, and countermeasures tools developed elsewhere in the DoD. - Develop the system engineering infrastructure to employ the transportable Data Architecture system that supports all DTRA research and development test and evaluation activities. - Develop tools and data analytics for delivery to CCMDs in direct response to existing capability gaps. - Continue the data architecture implementation to enable interagency partnerships at multiple classification levels. - Complete development of portals for all identified external collaborations at a classified and unclassified level. - Perform two data analytics demonstrations and deliver two tools to the CCMDs. ***FY 2022 Plans:*** - Continue to modernize and evolve instrumentation and diagnostics capability to support test and evaluation activities across the WMD spectrum, as well as develop new methods to address the evolving threats - Replicate, test, and evaluate identified threat WMD systems and use tactics, techniques, and procedures to support the development of WMD detection, characterization, and countermeasures documented in CCMD requirements. - Perform threat-relevant test and evaluation activities to document unique signatures that identify, characterize, and determine the effectiveness of defeat techniques for WMD proliferation and production facilities, leveraging the Nevada National Security Site, as well as a novel transportable capability that can replicate specifics threats of interest to the CCMDs. - Design and build testbeds in small-, mid-, and large-scale environments capable of capturing data needed to improve and validate high-fidelity modeling and simulation tools used to predict US weapon and adversary threat effects on facilities of interest. - Employ the capability developed in FY2021 to support the characterization and evaluation of observed automated and autonomous threat systems with WMD elements, and demonstrate progress in the development of algorithms to support the early detection and countermeasures development. - Complete the development of the data architecture, transportable data collection system, and portals to enable data acquisition for all DTRA research and development activities, and the interagency sharing of data at multiple classification levels. - Demonstrate advancement in data analysis techniques, data analytics, and signature-based algorithms to support the development of deliverable tools to the combatant commands. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase from FY 2021 to FY 2022 is due to inflation.			
Accomplishments/Planned Programs Subtotals	16.086	18.156	18.311

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 2	**R-1 Program Element (Number/Name)** PE 0602718BR / *Counter Weapons of Mass Destruction Applied Research*	**Project (Number/Name)** RR / *CWMD Test and Evaluation*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 31/0603160BR: *Counter Weapons of Mass Destruction Advanced Technology Development*	0.160	0.000	4.523	-	4.523	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection of most appropriate performers to fulfill science and technology development needs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603134BR / *Counter Improvised-Threat Simulation*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	37.014	49.528	3.861	0.000	-	0.000	-	-	-	-	-	-
JC: *Enable Rapid Capability Delivery*	37.014	49.528	3.861	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) advanced technology development program element funds the assessment, analysis, experimentation, evaluation, and testing of systems to counter asymmetric threats to determine feasibility for prototyping, spiral development, Program of Record investment and potential for immediate fielding.

Understanding asymmetric threats is the driving force behind DTRA's deliberate, structured, and proactive approach to understanding, anticipating, illuminating, isolating, and/or mitigating threats through identified needs. DTRA is working to bring concepts and theories forward to assist and hasten the development of subsystems and components along with integration into prototypes for field experiments and/or laboratory tests.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	49.528	3.861	59.179	-	59.179
Current President's Budget	49.528	3.861	0.000	-	0.000
Total Adjustments	0.000	0.000	-59.179	-	-59.179
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Realignments	0.000	0.000	-59.179	-	-59.179

Change Summary Explanation

The decrease in FY 2022 from the previous President's Budget is due to 1) the realignment of resources from Project JC - Enable Rapid Capability Delivery in this program element to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0603160BR for technology-driven CWMD capability development and evaluation activities to develop cross cutting innovative and agile new technologies that more effectively counter the full spectrum of weapons of mass destruction, by anticipating new threats while responding to current and constantly evolving threats, 2) the realignment of resources from Project JC - Enable Rapid Capability Delivery to Project RG - Counter WMD Technologies and Capabilities Development in PE 0603160BR to enable rapid capability delivery activities, and 3) the realignment of resources from Projects JC - Enable Rapid Capability Delivery to Project RR - Counter WMD Test and Evaluation in PE

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603134BR *I Counter Improvised-Threat Simulation*

0603160BR to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts and to facilitate the transition of CWMD capabilities into the next stage of development.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603134BR / *Counter Improvised-Threat Simulation*	Project (Number/Name) JC / *Enable Rapid Capability Delivery*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
JC: *Enable Rapid Capability Delivery*	37.014	49.528	3.861	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project is driven by current and projected threat activities. It enables the timely validation, resourcing, applied research and prototype development and delivery to counter threats that continue to impact US forces. The project supports the evaluation of integrated technologies or prototype systems in a realistic environment to counter asymmetric threats.

DTRA performs experiments and modeling and simulations in the pursuit of advanced technology development. The outcomes of these experiments are incorporated into new or existing prototypes to enhance system performance while reducing cost.

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: JC: Enable Rapid Capability Delivery	49.528	3.861	0.000

Description: This project employs technology development, modeling-and-simulation, and analysis support tools to meet Combatant Command requirements and anticipated threats. DTRA provides timely acquisition and delivery of solutions that respond to asymmetric threat requirements and gaps.

FY 2021 Plans:
- Develop 12 acquisition threat signal packages for databases with hardware and software implementation plans to update current capabilities across the Combatant Commands, ensuring a more robust capability response to asymmetric threats.
- Conduct two evaluation events to verify and analyze threat signal inputs to improve ability of capabilities to counter asymmetric threat networks.

FY 2022 Plans:
N/A

FY 2021 to FY 2022 Increase/Decrease Statement:

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603134BR / *Counter Improvised-Threat Simulation*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
The decrease from FY 2021 to F Y2022 is due to the realignment of resources from Project JC - Enable Rapid Capability Delivery to Projects RA - CWMD Cross-Cutting Technical and Information Sciences, RG - Counter WMD Technologies and Capabilities Development, and RR - Counter WMD Test and Evaluation in PE 0603160BR.			
Accomplishments/Planned Programs Subtotals	49.528	3.861	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 11/0602134BR/JC: *Counter Improvised-Threat Advanced Studies*	0.502	2.500	0.000	-	0.000	-	-	-	-	-	-
• 100/0604134BR/JC: *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	103.793	9.841	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Competitive selection to determine the optimal performer who can produce a viable deliverable within schedule and budget constraints.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	371.009	325.640	356.659	399.362	-	399.362	-	-	-	-	-	-
RA: *CWMD Cross-Cutting Technical and Information Sciences*	86.940	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
RD: *Nuclear Technologies and Capabilities Development*	86.139	62.407	50.816	50.417	-	50.417	-	-	-	-	-	-
RG: *Counter WMD Technologies and Capabilities Development*	197.930	201.756	259.006	259.762	-	259.762	-	-	-	-	-	-
RR: *CWMD Test and Evaluation*	0.000	0.160	0.000	4.523	-	4.523	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Advanced Technology Development portfolio is aligned with strategic planning objectives as well as with Science and Technology (S&T) investment direction established annually by the Defense Threat Reduction Agency (DTRA). The objectives directly support policy and planning guidance from the Executive Office of the President, the Department of Defense (DoD), and the broader Weapons of Mass Destruction (WMD) threat reduction community.

The portfolio advances the Countering WMD (CWMD) mission by selecting advanced technology development initiatives that meet the following criteria: (1) efforts are clearly defined and directly linked to mission-specific capability requirements of DTRA, the Military Departments, Combatant Commanders, other DoD and federal agencies, and international partners; (2) preliminary assessments of subsystems and components offer the highest potential for technological feasibility, operability, and producibility upon transition out of S&T research; (3) activities demonstrate cost effectiveness or cost reduction potential of technologies during field testing or simulation at scale.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603160BR *I Counter Weapons of Mass Destruction Advanced Technology Development*

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	330.065	366.659	340.184	-	340.184
Current President's Budget	325.640	356.659	399.362	-	399.362
Total Adjustments	-4.425	-10.000	59.178	-	59.178
• Congressional General Reductions	-	-15.000			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	5.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	3.713	-			
• SBIR/STTR Transfer	-8.138	-			
• Realignments	-	-	59.178	-	59.178

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2020	FY 2021
Project: RG: *Counter WMD Technologies and Capabilities Development*		
Congressional Add: *Strategic Systems Defeat*	0.000	5.000
Congressional Add Subtotals for Project: RG	0.000	5.000
Congressional Add Totals for all Projects	0.000	5.000

Change Summary Explanation

The increase in FY 2022 from the previous President's Budget is due to 1) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PEs 0603134BR and 0604134BR to Project RA - CWMD Cross-Cutting Technical and Information Sciences for Technology-Driven CWMD Capability Development and Evaluation activities to develop cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of WMD by anticipating new threats while responding to current and evolving threats, 2) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0603134BR to Project RR - CWMD Test and Evaluation to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts to facilitate transition of CWMD development capabilities into the next stage of development, 3) the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0603134BR to Project RG - Counter WMD Technologies and Capabilities Development, 4) the realignment of resources to O&M for specialized counter-terrorism activities to operationalize forecasting methodologies, and 5) a downward adjustment for revised economic assumptions (inflation). In FY 2021, there was a congressional add for Strategic Systems Defeat in this project.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RA: *CWMD Cross-Cutting Technical and Information Sciences*	86.940	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The CWMD Cross-Cutting Technical and Information Sciences project provides technical expertise through continuous reach-back and quick reaction support to the United States and its allies across the Countering Weapons of Mass Destruction (CWMD) mission space. The project performs continuous modeling of ad hoc computational analyses on the consequences of Weapons of Mass Destruction (WMD) in consultation with military and civilian planners, warfighters, and first responders, and leverages research performed by the Project on Advanced Systems and Concepts for CWMD at the Naval Postgraduate School. The project also supports international CWMD cooperation by developing technologies and concepts suitable for foreign release.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RA: CWMD Cross-Cutting Technical and Information Sciences	61.317	46.837	84.660
Description: Project RA develops modeling and simulation capabilities and provides technical reachback support to maintain and increase decision advantage for the United States and its allies through improved situational understanding across the complete CWMD mission space. ***FY 2021 Plans:*** - Develop processes, capabilities and expertise in order to deliver rapid responses to Requests for Information as DOD's only resource providing 24/7/365 WMD subject matter expertise and analyses to customers across the full spectrum of Chemical, Biological, Radiological, Nuclear, and high yield Explosives (CBRNE) in support of Combatant Command (CCMD) plans and operations. - Develop the global synthetic population and activity database for modeling infectious disease propagation and impacts of population behaviors and movement after a WMD event in support of CCMD force health protection and consequence management planning. - Utilize acquisition expertise, innovation tools, and agile contract solutions to deliver capabilities to the warfighter as urgent operational requirements emerge; transition material and non-material developmental technologies to fielded solutions as rapidly as possible.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Provide expanded/enhanced CWMD information sharing and data analysis to meet increasing CCMD and interagency demand for support. ***FY 2022 Plans:*** - Conduct Research and Development to maintain DTRA's cutting edge e 24/7 technical reach back assistance capability, decision support and planning support to CCMDs, Services, interagency and other government customers in support of immediate missions and operational environments. - Provide critical training support in CWMD-relevant models to strategic partner community. - Provide Quick Reaction Capability to urgent Warfighter requirements based on new or emerging gaps. - Provide best-of-breed applied research from elsewhere in the portfolio to develop prototypes for fielding with unique strategic customers to meet requirements aligned with the National Defense Strategy (NDS). - Apply AI/ML technology advances (from academia, industry, and other government organizations) to CWMD/ Counter Threat Network (CTN)-specific problem sets. - Provide CCMDs with operational prototypes of tools for CWMD data integration, analysis, and visualization. - Develop and sustain advanced information technology capabilities enabling CWMD situational understanding and leverage advanced data science techniques to improve threat analysis to better inform operational planning. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase from FY 2021 to FY 2022 is due to the net impact of the realignment of resources from Projects JC - Enable Rapid Capability Delivery and JS - Assist Situational Understanding in PEs 0603134BR and 0604134BR to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR for technology-driven CWMD capability development and evaluation activities to develop organizationally cross cutting innovative and agile new technologies to more effectively counter the full spectrum of weapons of mass destruction, by anticipating new threats while responding to current and evolving threats, 2) the realignment of CENTCOM counter threat technologies from RG - Counter WMD Technologies and Capabilities Development to this project. These realignments are designed to provide more agile and integrated counter-threat support capability development support to CCMDs, for urgent for emergent theater needs, with a focus on advanced enrichment and conversion analysis, data storage & analysis, detector design, wide area search capability development, defeat pathways, and critical test site technical advancements, and 3) a downward adjustment due to economic assumptions for inflation.			
Accomplishments/Planned Programs Subtotals	61.317	46.837	84.660

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 22/0602718BR: *Counter Weapons of Mass Destruction Applied Research*	45.359	40.615	48.112	-	48.112	-	-	-	-	-	-
• 107/0604551BR: *Catapult*	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-
• 143/0605502BR: *Small Business Innovative Research*	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Assessment and selection of best performer for developmental requirements to meet specific military capability needs

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	Project (Number/Name) RD / *Nuclear Technologies and Capabilities Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RD: *Nuclear Technologies and Capabilities Development*	86.139	62.407	50.816	50.417	-	50.417	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

1. Research, development, test, and evaluation (RDT&E) to identify, develop, and exploit signatures associated with nuclear threats in support of U.S. capabilities that detect and interdict such threats; and locate, identify, and track special nuclear material and improve detection factors such as range, time, sensitivity, and accuracy to enhance Service and Special Mission Unit capabilities. These efforts support Department of Defense (DoD) requirements for countering terrorism, counterproliferation, nonproliferation, countering rogue states, and homeland defense.

2. RDT&E to systematically study signatures associated with adversary nuclear programs and nuclear detonations to gain knowledge or understanding necessary to: determine technical capabilities needed to improve DoD contingency planning activities; improve DoD situational awareness on the nuclear battlefield; and improve capabilities to attribute the source of a nuclear detonation.

3. Research and develop innovative technologies for the protection of mission-essential personnel, critical military and national defense capabilities, and associated control and support systems during a nuclear event. Research under this project supports the mission critical systems identified under DoD Instruction 3150.09, Chemical, Biological, Radiological, and Nuclear Survivability Policy. System vulnerability research develops nuclear assessment capabilities to support operational planning, weapons effects predictions, and strategic system design. This activity also provides the DoD's nuclear design and protection standards for new and existing systems, e.g., command and control facilities and aircraft. Key systems include the Nuclear Command and Control System, the net-centric thin-line, and both military and civilian satellites and associated support systems. Experimental capabilities research provides the warfighter with unique x-ray, gamma ray, and electromagnetic pulse (EMP) test capabilities in support of system survivability development, certification, and sustainment. These efforts also support international collaboration, user groups, case study reviews, and the Joint Atomic Information Exchange Group. The human survivability effort conducts research to develop and validate mortality and morbidity models associated with radiological and nuclear weapon effects.

4 Research and development modeling tools to support military operational planning, weapons effects predictions, and strategic system design decisions; consolidate validated modeling tools for integrated functionality; predict system responses to nuclear and radiological weapons producing electromagnetic, thermal, blast, shock, and radiation environments; provide detailed adversary nuclear infrastructure characterization to enhance counterforce operations and hazard effects; and, develop foreign nuclear weapon outputs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RD: Nuclear Technologies and Capabilities Development	62.407	50.816	50.417

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Description: Project RD develops, integrates and transitions radiation detection technologies, as well as systems, tools, techniques, and procedures that take advantage of non-radiation based signatures, in order to advance warfighter capabilities to rapidly detect, localize, characterize, and interdict nuclear and radiological threats. ***FY 2021 Plans:*** -- Develop improved contamination identification and avoidance capabilities into Service sensor networks and command and control systems - Provide Long Dwell Spectrometer (LDS) with utility assessment for transition to Technical Support Group - Develop and evaluate a modern replacement for the Alpha Beta detector more suited to support DoD's mission - Evaluate the performance of prototype for use as a replacement for high-pressure Helium-3 tubes for neutron detection in support of the development of modern, novel detector solutions - Provide prototype next generation cadmium zinc telluride (CZT) high-resolution (0.5%) detectors with 200% increase in size - Provide prototype, novel neutron multiplicity detectors that are not Helium-3 based but meet or exceed the performance of Helium-3 based neutron detectors - Provide automated/autonomous system that combines 3D Light Detection and Ranging (LIDAR) mapping with radiation hazard detection and identification of point and wide area hazards for operational utility assessment - Provide improved aerial search/long dwell capabilities integrated into Mission Design Tool. - Provide novel, low profile, low power photomultiplier that can offer a significant reduction in size, weight and power requirements for radiation detectors -- Conduct Technology Demonstrations of an integrated sensor network able to rapidly identify and map a radiological contaminated area using mobile, unmanned, manned and unattended sensors - Conduct test and evaluation and utility assessments to inform acquisition decisions for selection of radiation imagers to support DoD missions. Develop and test prototype test articles for the integration of the Vehicle Integrated Platform Enhanced Radiac (VIPER) into Army Combat vehicles (Abrams Main Battle Tank). - Develop and test the radiological components of and integrated Chemical, Biological, Radiological, Nuclear rapid reconnaissance capability for U.S. Air Force - Further develop situational awareness and decision support tools with applications that include deployed integrated CBRN sensors, effects calculator, contamination avoidance/monitoring, and other RN related sensors/tools for the Warfighter. ***FY 2022 Plans:*** - Develop Synthetic Aperture Radar (SAR) Sensor Characterization Device capability, data analysis and algorithm development, and other Combatant Command countering nuclear threat network (CNTN) capabilities.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Support the design and operation of at least four DoD nuclear wargames and exercises with subject matter expertise, existing tools, and integrated initial MINES software capabilities. - Test and evaluate the Integration of improved contamination identification and avoidance capabilities into Service sensor networks and command and control systems. - Provide prototype electromagnetic pulse (EMP) sensor(s) for use on the battlefield enabling warfighter situational awareness of EMP effects. - Conduct technical demonstration of integrated sensor network capable of detecting, identifying and providing early warning of radiological hazards. - Develop and test prototype test articles for the integration of the Vehicle Integrated Platform Enhanced Radiac (VIPER) into Army Combat vehicles (Army Multipurpose Vehicle Platform). - Develop prototype Vehicle Integrated Platform Enhanced Radiac for aviation platforms. - Demonstrate tools that predict nuclear weapons effects on petroleum and transportation networks, improving nuclear planning and targeting decisions. - Demonstrate improved tool to predict non-ideal nuclear weapons airblast effects on ground maneuver forces, improving operational planning for conventional and nuclear battlefield. - Enhance cloud platform for integrated toolsets for nuclear planning, Nuclear, Chemical, Biological, Radiological, and high Explosive (NCBRE) assessments, and advanced analytics in support of Service and Combatant Command planning and assessments and Conventional Nuclear Integration situational awareness. - Support the DoD Atomic Veteran program by determining radiation exposure levels and managing the Atomic Veterans Service Certificate recognition. - Perform nuclear survivability modeling for effects on humans. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to the net impact of 1) the realignment of resources from nuclear detection activities in this project to nuclear survivability activities in Project RD - in PE 0602718BR, and 2) the realignment of modeling and simulation and information sciences and applications activities from Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR.			
Accomplishments/Planned Programs Subtotals	62.407	50.816	50.417

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 22/0602718BR/RD: *Counter Weapons of Mass Destruction Applied Research*	81.198	92.492	101.229	-	101.229	-	-	-	-	-	-
• 131/0605000BR/RD: *Counter Weapons of Mass Destruction Systems Development*	9.870	15.650	14.063	-	14.063	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Assessment and selection of best performer for developmental requirements to meet specific military capability needs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	Project (Number/Name) RG / *Counter WMD Technologies and Capabilities Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RG: *Counter WMD Technologies and Capabilities Development*	197.930	201.756	259.006	259.762	-	259.762	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter WMD Technologies and Capabilities Development encompasses the following areas.

1. Defeat Technologies develops, integrates, demonstrates, and transitions innovative kinetic and non-kinetic weapon capabilities to expand traditional and asymmetric options available to Combatant Commanders to deny, disrupt, and defeat Weapons of Mass Destruction (WMD) while minimizing collateral effects.

2. Technology development focuses on the physical or functional defeat of (1) chemical, biological, nuclear, and radiological threat materials, (2) an adversary's ability to deliver the same, as well as (3) the physical and non-physical support networks enabling both. This program achieves these goals through the systematic identification and maturation of technologies capable of defeating WMD agents or agent-based processes, then integrating them into weapons, delivery systems, or rapid WMD elimination capabilities. This effort includes developing specific WMD agent/agent-based process simulants, test infrastructure, and sampling capability required for effective development, testing, and evaluation of next generation capabilities to ensure optimum weapon solutions are achieved. Requirements are delineated in Agency Priority Lists for lethal and non-lethal Countering WMD (CWMD) capability. Based on specified requirements, weapons and capabilities are transitioned to a Service program of record for system acquisition.

3. Counter-terrorism technologies research develops and transitions a full spectrum of new technologies to counter emergent WMD threats. This research supports the U.S. Special Operations Command (USSOCOM) in two areas: (1) counter proliferation research is a collaborative effort to develop advanced, warfighter-unique technologies to defeat terrorist WMD development and acquisition pathways, to include defeat of the devices themselves, while minimizing risks to U.S. forces; and (2) counterterrorism concepts and technologies to integrate and synchronize activities that prevent terrorists and rogue nation states from developing, acquiring, proliferating, or using WMD. This effort supports Commander, USSOCOM responsibilities under the Chairman, Joint Chiefs of Staff Unified Command Plan.

4. Counterforce technologies research develops, integrates, demonstrates, and transitions capabilities to find, characterize, assess, and plan for the defeat of WMD threats. This research is focused in three areas: (1) WMD battlespace awareness provides warfighters with tools to find, characterize, and assess WMD threats; (2) weapons effects research provides modernized, fast-running, validated CWMD planning tools and integrates modeling and simulation software to optimize the execution of WMD and associated hard target defeat operations; and (3) innovative engineering of select promising technologies discovered under fundamental and basic research to increase the effectiveness of weapons against blast doors and other underground structures for functional defeat of Underground Facilities (UGFs), WMD, and their delivery systems.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG / *Counter WMD Technologies and Capabilities Development*

5. DTRA provides a unique national test bed capability for simulated weapons of mass destruction (WMD) facility characterization, weapon-target interaction, and WMD facility defeat testing. This test bed is capable of responding to operational needs outside of DTRA's research portfolio and is used by the DoD, Military Services, Combatant Commanders, and other Federal Agencies to evaluate the implications of WMD, conventional weapons, and other special weapons used against U.S. military or civilian systems and targets.

6. Target assessment technologies research develops, integrates, tests, demonstrates, and transitions processes and technologies providing advanced capabilities in the areas of WMD target assessment, automated advanced targeting development (A2TD), facility defeat, and full dimensional defeat. This research develops analytical tools and processes required to: (1) find and characterize WMD targets and associated hard and deeply buried targets (HDBTs); and (2) assess the results of physical and functional defeat mechanisms (such as direct attack). The A2TD initiative seeks to apply emerging computer assisted technologies to automate target characterization for hard targets and WMD targets. The end result will be faster and more efficient characterization of important hard targets and WMD targets. The facility defeat project develops, validates and employs processes and software for characterization and defeat of command specified hard targets in conjunction with DIA analysis. The full dimensional defeat project aims to develop an enterprise capability for finding and identifying a facility, characterizing its function and physical layout, determining current or future vulnerabilities to available defeat mechanisms, planning and executing an attack, assessing damage, and denying reconstitution efforts. The dynamic capabilities encompassed in this effort provide Combatant Commands and the intelligence community tools and processes needed to hold at risk high value hard targets and WMD targets possessed by adversaries.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RG: Counter WMD Technologies and Capabilities Development	201.756	254.006	259.762
Description: Project RG develops advanced technologies and weapon concepts and validates their applicability to CWMD. ***FY 2021 Plans:*** - Deliver a streamlined Underground Facility (UGF) characterization tool incorporating Automated Advanced Targeting Development (A2TD) automation. - Deliver Full Dimensional Defeat Enterprise (FDDE) planning visualization tool for mobile deployment - Achieve Initial Operational Capability of System of Systems Facility Defeat Methods for Combatant Command Course of Action development. - Deliver Advanced Solid Mechanics computational tools in support of Combatant Command requirements. - Begin development of second-generation HPC software tools for DPOE, leveraging capabilities of high performance computing to improve automated analytics to more accurately and quickly identify events, actors and threats. - Integrate new models into DPOE to assess adversarial groups' intent to conduct chemical or biological weapon attacks. - Develop and integrate advanced capabilities and refine an operational framework to enhance warfighter capabilities to search for, detect, and identify WMD threats prior to release. - Extend WMD-pedia capabilities to support CWMD Mission Planning incorporating semi-supervised and active machine learning. - Maintain cooperative CWMD project technical exchange with the United Kingdom (UK) in support of US/UK Project Agreement			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG / *Counter WMD Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Conduct material science development and applications development to provide advanced materials for use in chemical and biological agent defeat. - Develop, demonstrate, and transition a ground sensor with multiple modalities for signature detection, classification, and localization for strategic systems defeat.. - Develop and transition four high explosive prototype fills to the Army. - Develop, integrate and demonstrate advanced CWMD sensing payloads for both unmanned and remote sensing missions. - Develop machine learning neural networks trained to optimize conventional weapon strikes against hardened and WMD facilities. - Develop new and enhanced capabilities for defensive vulnerability assessment and offensive WMD defeat modeling and simulation planning tools. - Investigate, develop, and integrate new technologies for enhancement and protection of autonomous capabilities to provide joint solutions in a multi-domain environment. - Develop CWMD weapon effects modeling algorithms and conduct scaled test series leveraging machine learning and optimization to investigate CWMD weapon effects for enhancing WMD defeat modeling and simulation planning tools and assessing new WMD defeat mechanisms . - Conduct full-scale prototype demonstration of novel access denial technology in an operational environment. - Complete Coalition Warfare Program Agreement with Republic of Korea for advancement of autonomous tunnel exploitation technologies. - Develop offensive counter-proliferation, counter-WMD technologies in support of Combatant Command requirements. - Develop WMD pathway defeat technologies, as well as threat-specific test articles and analyses. - Develop lighter, smaller, more effective breaching capabilities. - Develop and test structural, reactive materials and advanced agent defeat concepts to improve the capability to defeat and/or neutralize WMD-related targets.			
FY 2022 Plans: - Develop and transition next generation agent defeat capabilities utilizing enhanced energetics, advanced manufacturing techniques and tactics that improve performance and lethality and reduce production time and cost. - Program, plan, and manage EOD diagnostics and defeat projects and deliver technologies. - Program, plan, and manage low-visibility and breaching projects and deliver technologies. - Provide capability to rapidly support technical requirements through RDT&E of current and emerging WMD threats to operational forces.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG / *Counter WMD Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Conduct research and development of dual-use threat components for test and evaluation in support of COCOMs, network disruption capability, and RDT&E of current and emerging WMD threats to operational force. - Develop quick reaction capabilities (QRCs) in support of geographic Combatant Commands (CCMD) and in collaboration with Other Governmental Agencies (OGA) to detect, locate, track, characterize and counter threats in the areas of counter proliferation (CP) and counter weapons of mass destruction (CWMD). ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase from FY 2021 to FY 2022 is due to the net impact of 1) the realignment of resources from Projects JC - Enable Rapid Capability Delivery in PE 0603134BR this project to enable rapid capability delivery activities, 2) the realignment of CENTCOM counter threat technologies from this project to Project RA - CWMD Cross-Cutting Technical and Information Sciences as part of an organizational integration to focus more cost effectively on CWMD support to CCMDs and the military departments, and 3) the realignment of RDT&E resources to O&M for advisory services in support of cross-cutting research and development activities to operationalize forecasting methodologies, and O&M for operational activities of the Targeting and Weaponeering Analysis Cell and Hard Target Research and Analysis Center (HTRAC). In FY 2021, there was a congressional add for Strategic Systems Defeat in Project RG - Counter WMD Technologies and Capabilities Development.			
Accomplishments/Planned Programs Subtotals	201.756	254.006	259.762

	FY 2020	FY 2021
Congressional Add: Strategic Systems Defeat	0.000	5.000
FY 2020 Accomplishments: N/A		
FY 2021 Plans: - Design, develop, test, and deliver five (5) Hand Emplaced Form Factor (HEFF) sensors that can perform a classified Combatant Command mission identified in an approved and validated Joint Staff Joint Emergent Operational Needs Statement (JEON) for a Combatant Command as well as a new, emergent classified requirement from a second Combatant Command. - Design, develop, and assess "brassboard" prototyping efforts for next-gen SSD sensing capabilities leveraging DARPA developed technologies, and for participation in Missile Defense Agency's Left-to-Right-of-Launch (LTRI) wargame campaign.		
Congressional Adds Subtotals	0.000	5.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RG / *Counter WMD Technologies and Capabilities Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 22/0602718BR/RG: *Counter Weapons of Mass Destruction Applied Research*	20.958	22.958	29.359	-	29.359	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Assessment and selection of best performer for developmental requirements to meet specific military capability needs.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	Project (Number/Name) RR / *CWMD Test and Evaluation*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RR: *CWMD Test and Evaluation*	0.000	0.160	0.000	4.523	-	4.523	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Countering WMD Test and Evaluation project provides a unique national test capability for simulated WMD facilities and processes. This capability provides structured and systematic end-to-end test event planning, preparation, management, execution, and data analysis. It also offers test instrumentation (data acquisition systems and optics), scientific analysis and predictions, test article construction, test article/test bed remediation, tunnel mining, architectural and engineering design, systems engineering and integration, and test data management. The project leverages 50 years of expertise in investigating weapons effects and target response across the spectrum of hostile environments that could be created by proliferant nations or terrorist organizations with access to advanced conventional weapons or WMD. Subject matter experts design full and sub-scale testing strategies focusing on weapon-target interaction with fixed soft and hardened facilities to include above ground facilities, cut-and-cover facilities, and deep underground tunnels. This capability does not exist anywhere else within the DoD and supports the counterproliferation pillar of the National Strategy to Counter WMD.

Project RR CWMD Test and Evaluation, was added to this Program Element in FY 2022. Project RR is not a new start effort. These funds were realigned within Budget Activity (BA) 3, from PE 0603134BR, Project JC - Enable Rapid Capability Delivery to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts, and to facilitate transition of CWMD development capabilities into the next stage of development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RR: CWMD Test and Evaluation	0.160	0.000	4.523
Description: This project employs technology development, modeling-and-simulation, and analysis support tools to meet Combatant Command requirements and anticipated threats. DTRA provides timely acquisition and delivery of solutions that respond to asymmetric threat requirements and gaps.			
FY 2021 Plans: N/A			
FY 2022 Plans: -Conduct two test events that incorporate WMD threats on unmanned systems across multiple domains (land, air, sea) that further incorporate automated and autonomous capabilities. - Document unique signatures of threat unmanned systems operating at different levels of automation and autonomy and make available through DTRA's data architecture system to the broader USG community.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 3	**R-1 Program Element (Number/Name)** PE 0603160BR / *Counter Weapons of Mass Destruction Advanced Technology Development*	**Project (Number/Name)** RR / *CWMD Test and Evaluation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Integrate algorithms developed in FY2021 to develop a multi-phenomenology-based tool deliverable to a CCMD as a means for future development of early detection and countermeasures for specific threats in their AOR. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The increase from FY 2021 to FY 2022 is due to the realignment of resources from Project JC - Enable Rapid Capability Delivery in PE 0603134BR to more effectively align Agency support of COCOM and Military Department testing and evaluation (T&E) efforts, and to facilitate transition of CWMD development capabilities into the next stage of development.			
Accomplishments/Planned Programs Subtotals	0.160	0.000	4.523

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 21/0602718BR: *Counter Weapons of Mass Destruction Applied Research*	16.086	18.156	18.311	-	18.311	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	303.913	105.480	19.931	0.000	-	0.000	-	-	-	-	-	-
JC: *Enable Rapid Capability Delivery*	276.300	103.793	11.491	0.000	-	0.000	-	-	-	-	-	-
JS: *Assist Situational Understanding*	27.613	1.687	8.440	0.000	-	0.000	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program element supports the development, demonstration, and testing of technologies to advance the analytical infrastructure, methods, and tools to enhance asymmetric countermeasure solutions. Advancements in analytics include the production of tools that leverage machine learning and artificial intelligence, increasing our ability to expedite the understanding of emerging threats and accompanying activities. This investment also enables development and delivery of capabilities to understand, anticipate, illuminate, isolate, and/or mitigate asymmetric threats and their effects.

DTRA expedites technology transition from the laboratory to operational use to reduce risk within the acquisition process. This is done by evaluating integrated technologies or prototype systems in a high quality and realistic operating environment.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	113.590	19.931	39.432	-	39.432
Current President's Budget	105.480	19.931	0.000	-	0.000
Total Adjustments	-8.110	0.000	-39.432	-	-39.432
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Realignments	-8.110	0.000	-39.432	-	-39.432

Change Summary Explanation

The decrease in FY 2022 from the previous President's Budget is due to 1) the realignment of resources from Project JC - Enable Rapid Capability Delivery to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR and PE 0603160BR for technology-driven CWMD capability development and evaluation activities to develop organizationally cross-cutting innovative and agile new technologies that more effectively counter the full spectrum of weapons of mass destruction, by anticipating new threats while responding to current and constantly evolving threats, 2) the realignment of resources

from Project JS – Assist Situational Understanding to O&M funding for technology transformation sustainment and combatant command embedded analytical support and 3) the realignment of resources from Project JS – Assist Situational Understanding to the new PE 0604551BR to better reflect the nature of enduring activities in support of Catapult. Although not reflected in this PE, in FY 2020, $8.110 million was appropriately executed in PE 0604134BR for the Catapult Program of Record. Within the exhibit, execution is reflected in PE 0604551BR which was newly established for Catapult beginning in FY 2022.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	Project (Number/Name) JC / *Enable Rapid Capability Delivery*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
JC: *Enable Rapid Capability Delivery*	276.300	103.793	11.491	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

DTRA delivers counter asymmetric threats materiel solutions in support of joint and combined forces, effectively addressing changes to threat tactics, techniques, and procedures (TTPs). DTRA responds to asymmetric threats identified by the forward deployed warfighter as well as academia and industry.

This project builds prototypes and tests and evaluates existing industry systems to meet Combatant Command capability gaps and emerging asymmetric threats. DTRA also provides solutions to prevent or mitigate battlefield operational surprise.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: JC: Enable Rapid Capability Delivery	103.793	11.491	0.000
Description: This project delivers materiel solutions to counter asymmetric threats in support of joint and combined forces supporting contingency operations, effectively addressing changes to threat tactics, techniques, and procedures (TTPs). ***FY 2021 Plans:*** - Develop two user-friendly technologies to inform and evaluate the autonomous systems and energetics focus areas. - Develop an aviation sensor fabrication prototype to address detection and identification capability gaps (Split Aces and Hyper Spectral Imaging). - Provide two to three models and simulations in support of Counter Asymmetric Systems activities. - Conduct one theater support/ capabilities test in support of asymmetric threats. - Conduct one vendor demonstration and validate system performance capabilities for asymmetric threats. ***FY 2022 Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to the realignment of resources from Projects JC - Enable Rapid Capability Delivery to Project RA - CWMD Cross-Cutting Technical and Information Sciences in PE 0602718BR and PE 0603160BR for technology-driven CWMD capability development and evaluation activities to develop organizationally cross cutting innovative and			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
agile new technologies that more effectively counter the full spectrum of weapons of mass destruction, by anticipating new threats while responding to current and constantly evolving threats.			
Accomplishments/Planned Programs Subtotals	103.793	11.491	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 11/0602134BR/JC: *Counter Improvised-Threat Advanced Studies*	0.502	2.500	0.000	-	0.000	-	-	-	-	-	-
• 30/0603134BR/JC: *Counter Improvised-Threat Simulation*	49.528	3.861	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Assess and select best performer for developmental requirements to meet specific military capability needs. Performer base includes research developers across DoD and other Government agency laboratories, academia, and industry.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Anti-Armor IED (AAIED)	C/FFP	Battelle : Idaho Falls, ID	9.556	7.052	Nov 2019	-		-		-		-	0.000	16.608	16.608
Booby Trapped Structures (BTS)	C/FFP	Shield AI : San Diego, CA	10.486	4.251	May 2020	-		-		-		-	0.000	14.737	14.737
Buried IED	C/CPFF	Naval Research Lab : Washington, DC	7.553	2.299	Nov 2019	-		-		-		-	0.000	9.852	9.852
Home-Made Explosives (HME)	C/CPFF	Manufacturing Techniques, Inc. (MTEQ) HQ : Lorton, VA	26.781	5.002	Mar 2020	-		-		-		-	0.000	31.783	31.783
Network	C/FFP	John Hopkins : Baltimore, MD	32.084	12.875	Apr 2020	-		-		-		-	0.000	44.959	44.959
Person-Born IED (PBIED)	C/FFP	MIT Lincoln Laboratory (MIT-LL) : Lexington, MA	13.704	5.752	May 2020	-		-		-		-	0.000	19.456	19.456
Radio Controlled IED (RCIED)	C/CPFF	Rampart Technologies, Colorado Springs, CO : Sericore, Hanover, MD	3.015	0.500	Nov 2019	-		-		-		-	0.000	3.515	3.515
RDT&E Technology Enablers	C/CPFF	Various : Various	42.114	12.662	Jan 2020	-		-		-		-	0.000	54.776	54.776
Sensitive Integration Office (SIO) Programs	C/CPFF	Various : Various	33.771	10.000	Nov 2019	-		-		-		-	0.000	43.771	43.771
Tunnel	C/FFP	ERDC: Vicksburg, MS : MIT Lincoln Labs: Boston, MA	10.208	0.000		-		-		-		-	0.000	10.208	10.208
Unmanned Aerial Systems (UAS)	C/FFP	Technology Service Corporation (TSC) Fairfax, VA : BAE Systems, Fridley, MN	16.642	17.005	May 2020	-		-		-		-	0.000	33.647	33.647

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Vehicle-Attached IED (VAIED)	C/CPFF	Various : TBD	2.770	0.000		-		-		-		-	0.000	2.770	2.770
Vehicle-Borne IED (VBIED)	C/CPFF	Naval Surface Warfare Center (NSWC) Dahlgren : King George County, VA	19.315	5.249	May 2020	-		-		-		-	0.000	24.564	24.564
Water-Borne IED (WBIED)	C/FFP	Various : Various	5.027	0.000		-		-		-		-	0.000	5.027	5.027
Integrated Signatures Program (ISP)	MIPR	Indian Head Explosive Ordnance Technology Division : Indian Head, MD	-	-		4.000	Jul 2021	-		-		-	0.000	4.000	4.000
Split Aces 4.0	MIPR	Naval Air Systems Command PM263 : Patuxent River, MD	-	-		2.841	Jul 2021	-		-		-	0.000	2.841	2.841
Data Science for Emerging Threats	C/CPAF	Massachusetts Institute of Technology : Boston, MA	-	-		1.081	Jul 2021	-		-		-	0.000	1.081	1.081
Image Recognition Proof-of-Concept	SS/T&M	Carnegie Mellon University : Pittsburgh, PA	-	-		0.202	May 2021	-		-		-	0.000	0.202	0.202
		Subtotal	233.026	82.647		8.124		-		-		-	0.000	323.797	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advisory for Strategic and Emergent Technologies	C/CPAF	Mission Technology Reston : Reston, VA	-	-		0.367	Mar 2021	-		-		-	0.000	0.367	0.367
		Subtotal	-	-		0.367		-		-		-	0.000	0.367	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation (T&E) 6.4	MIPR	Naval Air Weapons Station : China Lake, CA	22.882	13.637	Nov 2019	-		-		-		-	0.000	36.519	36.519
T&E Threat Support 6.4	MIPR	Intelligence and Information Warfare Directorate (I2WD), Communications-Electronics Research, Development and Engineering Center (CERDEC) : Aberdeen Proving Ground, MD	14.430	7.509	Nov 2019	-		-		-		-	0.000	21.939	21.939
C-sUAS Test & Evaluation	MIPR	Naval Air Warfare Center Weapons Division : China Lake, CA	4.720	-		3.000	Jul 2021	-		-		-	0.000	7.720	7.720
SETA Capability Research Architecture Cell (CRAC)	C/CPAF	Zel Technologies : Reston, VA	1.242	-		-		-		-		-	0.000	1.242	1.242
		Subtotal	43.274	21.146		3.000		-		-		-	0.000	67.420	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	276.300	103.793		11.491		-		-		-	0.000	391.584	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

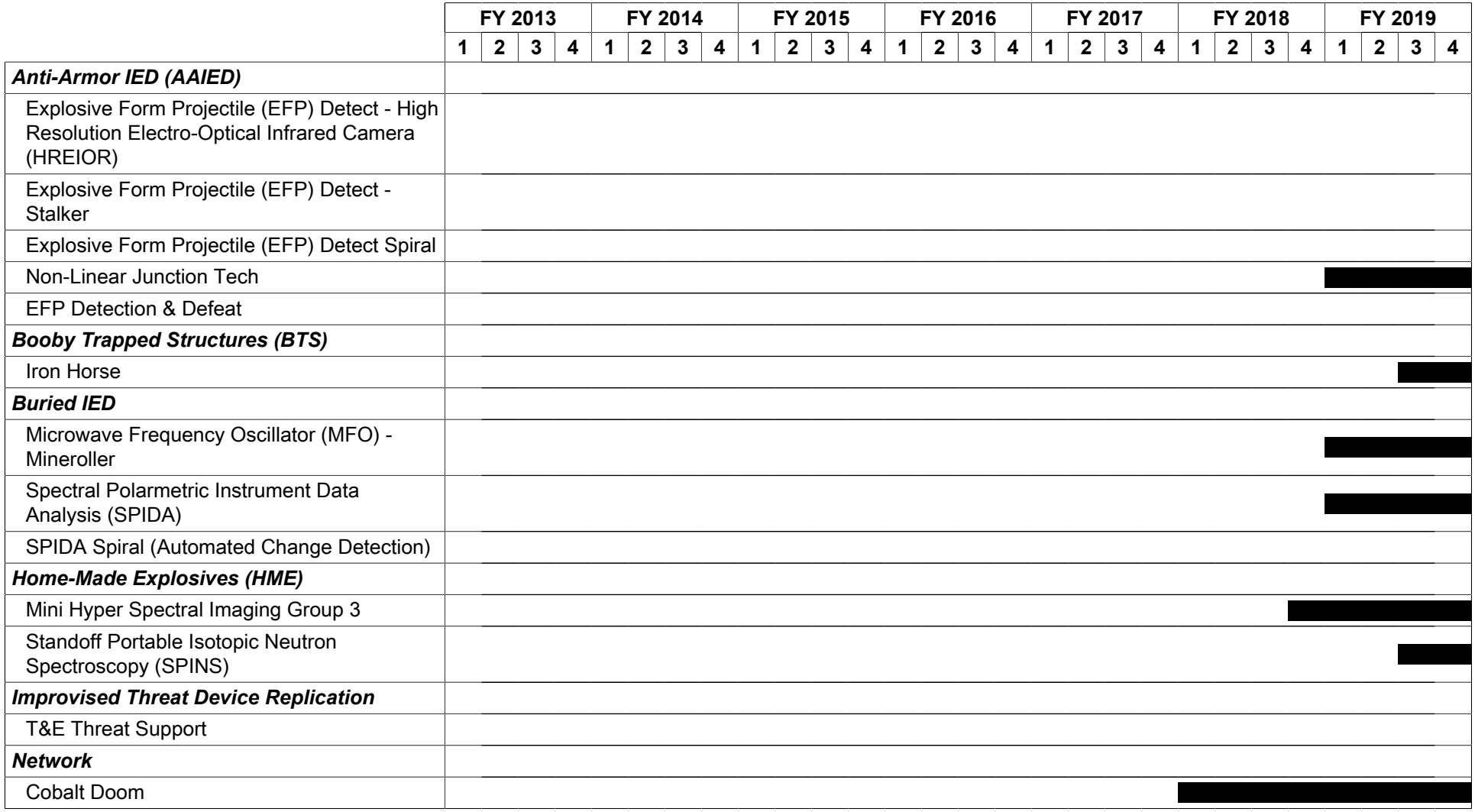


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

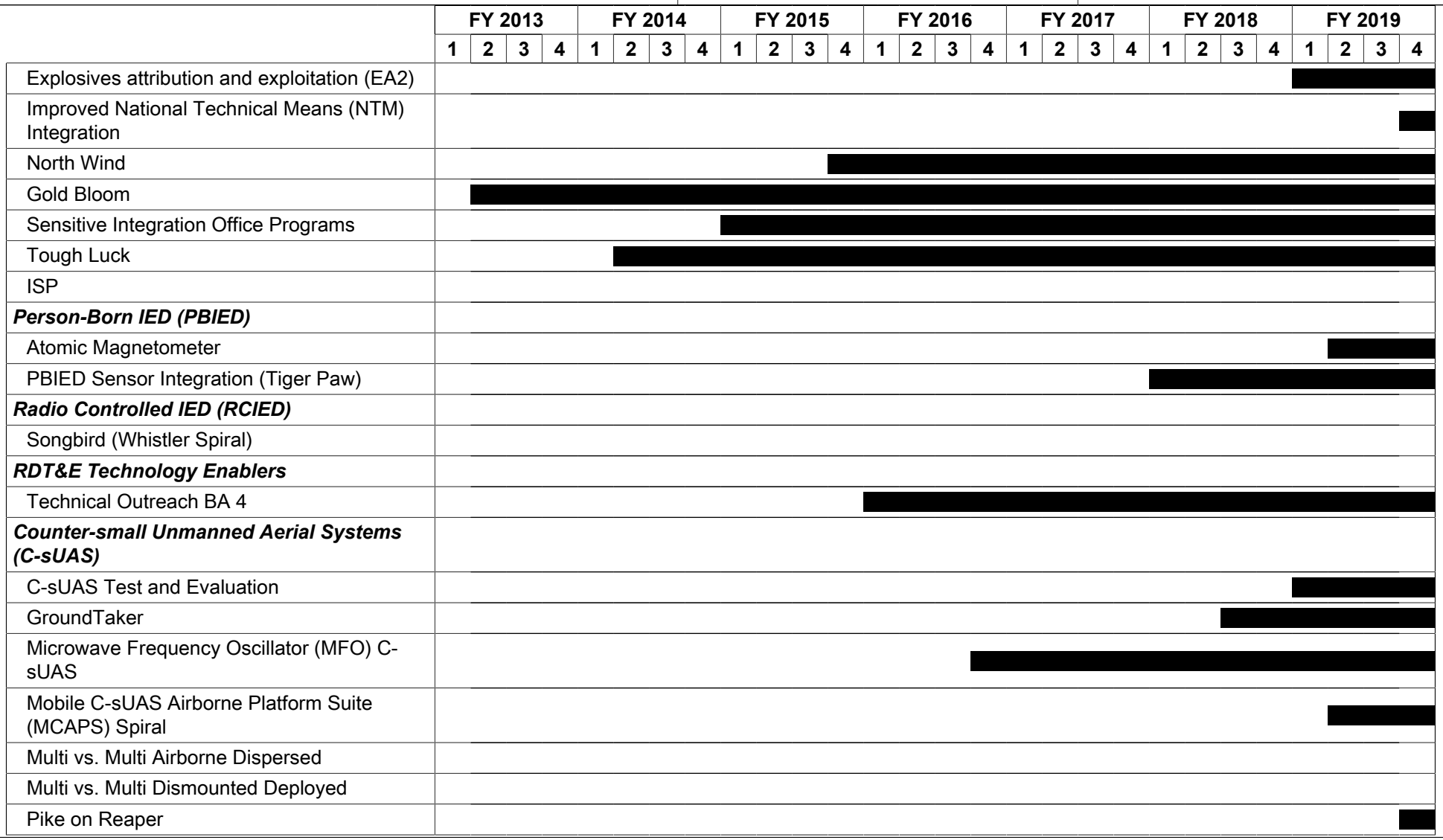
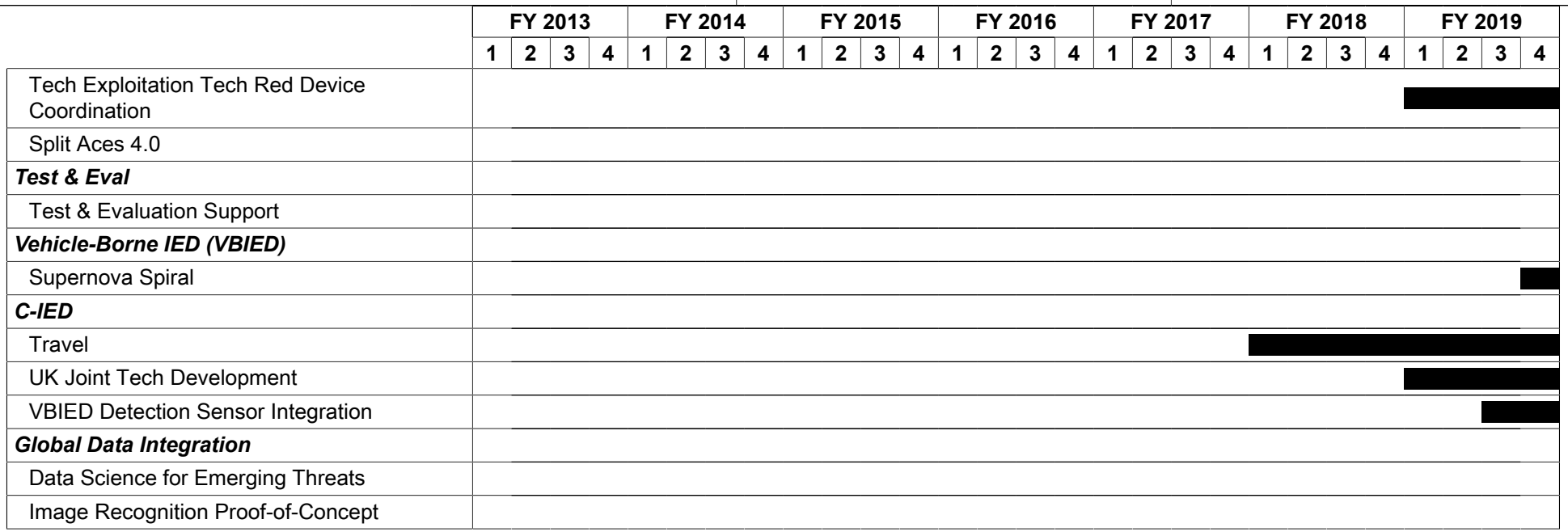


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*



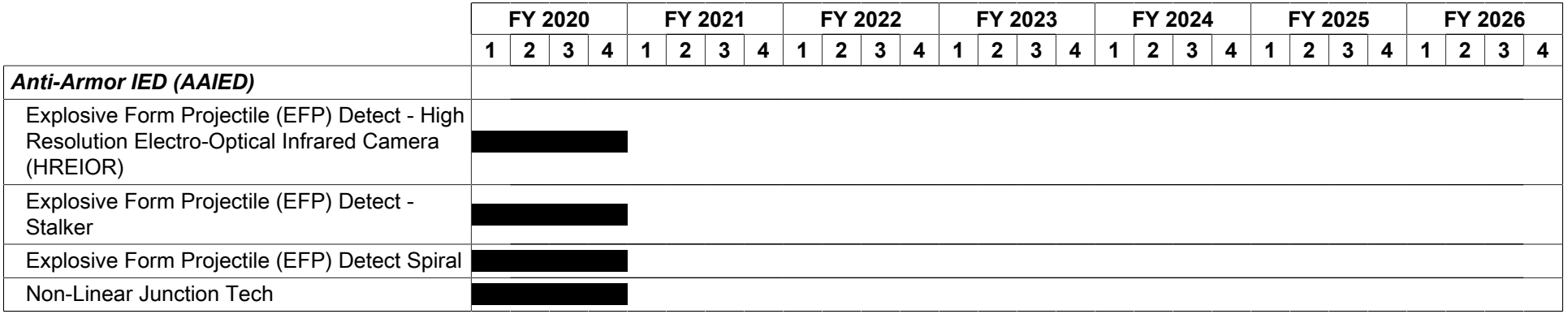


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

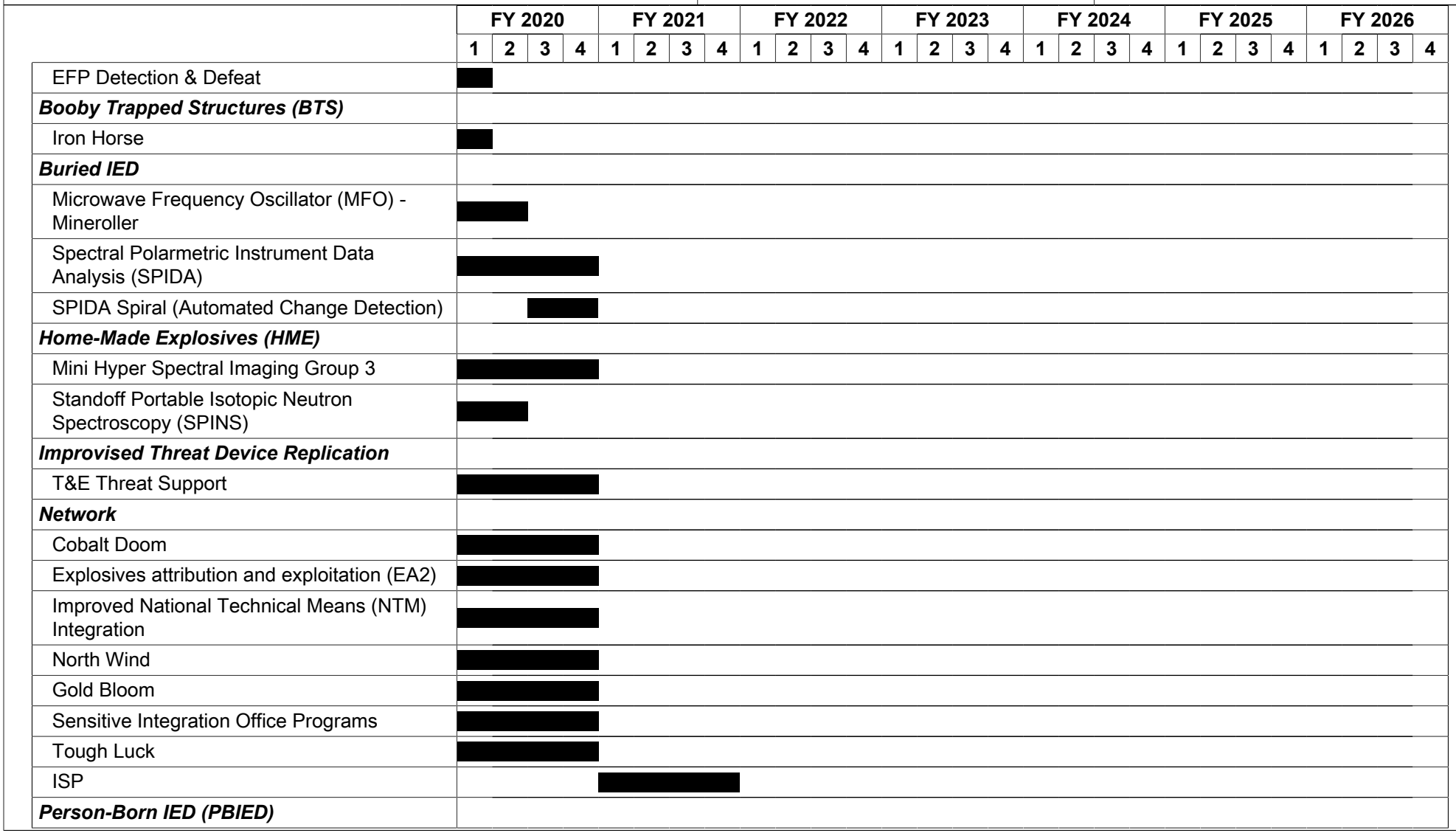


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

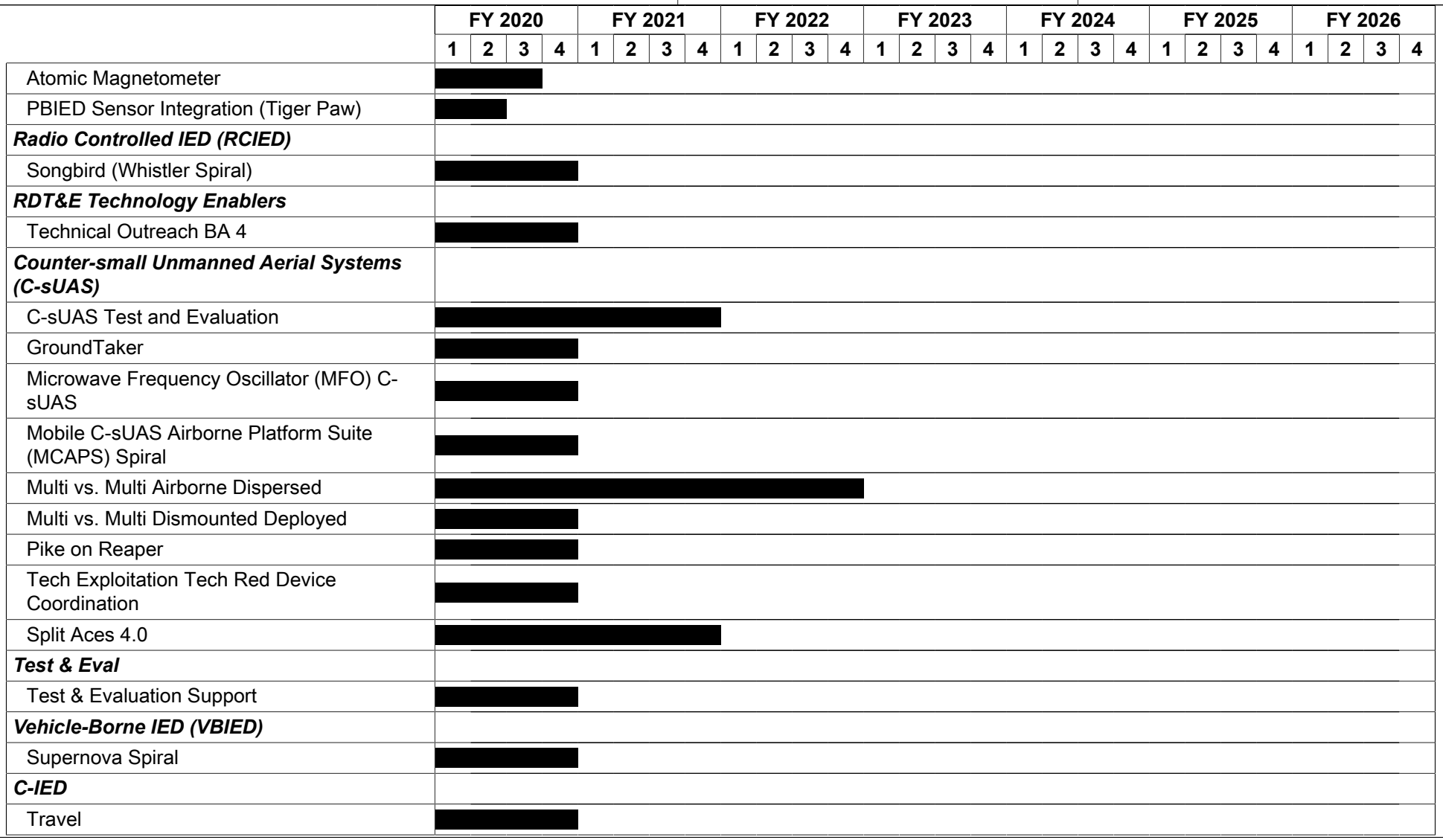


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

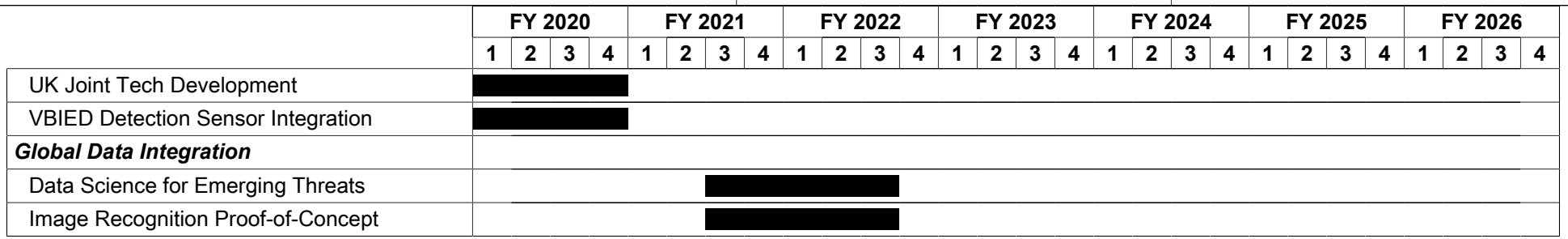


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Anti-Armor IED (AAIED)				
Explosive Form Projectile (EFP) Detect - High Resolution Electro-Optical Infrared Camera (HREIOR)	1	2020	4	2020
Explosive Form Projectile (EFP) Detect - Stalker	1	2020	4	2020
Explosive Form Projectile (EFP) Detect Spiral	1	2020	4	2020
Non-Linear Junction Tech	1	2019	4	2020
EFP Detection & Defeat	1	2020	1	2020
Booby Trapped Structures (BTS)				
Iron Horse	3	2019	1	2020
Buried IED				
Microwave Frequency Oscillator (MFO) - Mineroller	1	2019	2	2020
Spectral Polarmetric Instrument Data Analysis (SPIDA)	1	2019	4	2020
SPIDA Spiral (Automated Change Detection)	3	2020	4	2020
Home-Made Explosives (HME)				
Mini Hyper Spectral Imaging Group 3	4	2018	4	2020
Standoff Portable Isotopic Neutron Spectroscopy (SPINS)	3	2019	2	2020
Improvised Threat Device Replication				
T&E Threat Support	1	2020	4	2020
Network				
Cobalt Doom	1	2018	4	2020
Explosives attribution and exploitation (EA2)	1	2019	4	2020
Improved National Technical Means (NTM) Integration	4	2019	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
North Wind	4	2015	4	2020
Gold Bloom	2	2013	4	2020
Sensitive Integration Office Programs	1	2015	4	2020
Tough Luck	2	2014	4	2020
ISP	1	2021	4	2021
Person-Born IED (PBIED)				
Atomic Magnetometer	2	2019	3	2020
PBIED Sensor Integration (Tiger Paw)	1	2018	2	2020
Radio Controlled IED (RCIED)				
Songbird (Whistler Spiral)	1	2020	4	2020
RDT&E Technology Enablers				
Technical Outreach BA 4	1	2016	4	2020
Counter-small Unmanned Aerial Systems (C-sUAS)				
C-sUAS Test and Evaluation	1	2019	4	2021
GroundTaker	3	2018	4	2020
Microwave Frequency Oscillator (MFO) C-sUAS	4	2016	4	2020
Mobile C-sUAS Airborne Platform Suite (MCAPS) Spiral	2	2019	4	2020
Multi vs. Multi Airborne Dispersed	1	2020	4	2022
Multi vs. Multi Dismounted Deployed	1	2020	4	2020
Pike on Reaper	4	2019	4	2020
Tech Exploitation Tech Red Device Coordination	1	2019	4	2020
Split Aces 4.0	1	2020	4	2021
Test & Eval				
Test & Evaluation Support	1	2020	4	2020
Vehicle-Borne IED (VBIED)				

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JC / *Enable Rapid Capability Delivery*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Supernova Spiral	4	2019	4	2020
C-IED				
Travel	1	2018	4	2020
UK Joint Tech Development	1	2019	4	2020
VBIED Detection Sensor Integration	3	2019	4	2020
Global Data Integration				
Data Science for Emerging Threats	3	2021	3	2022
Image Recognition Proof-of-Concept	3	2021	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
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COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
JS: *Assist Situational Understanding*	27.613	1.687	8.440	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

A. Mission Description and Budget Item Justification

This project enables DTRA's Catapult Information System Program to design, develop, test, and deliver mission capabilities that support the ability to aggregate, and analyze data and information on global improvised threats and threat networks. Catapult and DTRA's Mission Information Technology (MIT) capability allows DTRA to rapidly develop, engineer, test and deploy analytical tools, threat models and simulations, data science methodologies, and software applications in support of the Warfighter. Catapult and its associated Attack the Network Tool Suite (ANTS) integrates data sources that support the detection and identification of improvised threats, threat networks and actors, command and control, operations, intelligence, and engagement for neutralizing, attacking, and defeating both current and emerging improvised threats and threat networks.

DTRA's MIT capability, with its embedded Combatant Command (CCMD) capability, data integrators, and reachback staff work continuously to create capabilities requested by users from the DoD, the Intelligence Community (IC), interagency partners, and the Whole of Government to ingest, fuse, analyze, and present mission relevant data and information. These capabilities reside in Catapult, a cloud technology-based data analytics platform developed and being delivered by DTRA that provides an extensible, continuously augmented, real-time repository of intelligence on improvised threats and worldwide threat actors and networks. Catapult is fully operational and accredited on the Secret Internet Protocol Router Network (SIPRNet) and Joint Worldwide Intelligence Communications System (JWICS). The Catapult architecture pulls from more than 850 data sources on SIPRNet and more than 170 data sources on JWICS. Catapult uses a set of more than 100 tools (ANTS) and services to provide national-level capabilities for data and information capture, discovery, access, aggregation, correlation, visualization, analysis, sharing, and distribution for users from the strategic level to the tactical edge.

In addition to Catapult, the DTRA MIT created and deployed a significant capability called Voltron. Voltron provides analysts access to signals intelligence (SIGINT) data within a secure and IC-accredited software developer environment. Voltron provides users a single interface to query more than 25 data sources and combines results into dynamic visualizations and exports. Voltron captures analytics techniques and provides a constantly growing toolbox providing analysts with continuously new models in support of analysis and operations. Voltron provides analysts access to methodologies involving multi-INT fusion in an easy to use interface. These methods are based on years of experience supporting the tactical targeting environment and built in collaboration with other teams across the IC. There are currently more than 75 models in Voltron available to the user community.

DTRA's authorities and mission have enabled a unique, Secure Development Operations (DevSecOps) "Path-to-Production" to rapidly develop and deploy mission-driven IT solutions. This unique development environment includes an integrated Cyber Security Assessment and Authorization process, an in-house collateral

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JS / *Assist Situational Understanding*

Authorizing Official for SIPRNet and DIA-approved Authorization to Operate on JWICS, creating a strong partnership between technologists and intelligence analysts working real-world problems, and a collaborative and innovative culture that launches practical software solutions rapidly.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: JS: Assist Situational Understanding	1.687	8.440	0.000

Description: This project enables DTRA to design, develop, test, and deliver mission capabilities that support the ability to collect, aggregate, and analyze intelligence data on global improvised threats and threat networks. The project allows DTRA to rapidly develop, engineer, test, and deploy analytical tools, threat models and simulations, data science methodologies, and software applications in support of the Warfighter. Catapult and its associated Attack the Network Tool Suite (ANTS) integrates data sources that support the detection and identification of improvised threats, threat networks and actors, command and control, operations, intelligence, and engagement for neutralizing, attacking, and defeating both current and emerging improvised threats and threat networks.

Provides testing and engineering support for COTS and GOTS intelligence analysis application and software and systems that operate on the mission enclave. Supports cybersecurity testing and security engineering of new or upgraded software and systems prior to authorization to operate on production enclaves.

Sandia / SETA Capability Research Architecture Cell (CRAC) identifies, investigates, explores, evaluates, and tests prototypes of emerging and cutting edge information technology that provides superior advantage to analysts and warfighters. Sandia / CRAC builds partnerships with mission partners in DoD, IC, IA, Academia, National Labs and Industry to support, develop and integrate plans, programs, requirements, resources, technology and innovations across the mission spectrum for DTRA. Facilitates innovation, acceleration of programs, rapid response to emerging events, and rapid development and operationalization of new technologies.

FY 2021 Plans:
- Develop predictive Data Science models through supervised and unsupervised Machine Learning against current and emerging threats; including fusion of multi-INT data across unclassified and classified data sets to identify networks and locations of interest to DTRA and its mission partners.
- Create a new development environment to enable “technology at the edge” to support real-time development of new Data Science models/algorithms at mission partner sites to enhance existing or future Catapult Machine Learning models.
Implement role-based access control and dynamic query analytics across Catapult data through Elastic Search to enable users to quickly retrieve known affiliates, family members, contacts, aliases, email addresses and other information about entities and enemy threat networks without running additional queries.
- Create “Functions as a Service” by commoditizing common used functions and analytics across the ANTS to

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
enable scalability and elasticity across the tool suite allowing ANTS capabilities to execute analytics against larger and more diverse data sets. - Extend Catapult architecture to allow for shared services across Whole of Government to enable MIT developed analytics to be re-used in other platforms and tools across various IC and DoD organizations. - Develop Active Learning interface and pipeline to enable crowdsourced input for training and tagging data to feed new Data Science machine learning models. - Modularize Catapult's Data Processing Framework to enable targeted data transformation based on data source, artifact mime type, artifact size, or any number of other source specific properties; Add better processing support for structured data, imagery, financial, SIGINT, Measurement and Signature Intelligence (MASINT), Internet of Things (IoT), and cyber data to broaden the scope of the Catapult Analytics stack. - Enable collaborative VR capabilities to assist mission planning and force protection by extending existing VR capabilities to enable multi-user support and shared walkthroughs of 3D models. - Determine the best techniques to shrink neural network algorithms to work on low power and small computer platforms such as cameras or SUASs (Real-time Processing at the Edge wrapping up in early FY 2021). - Determine the capabilities that go beyond simple content identification and labeling, and move toward understanding the story and context of the video or image (Computer Vision for Improvised Threats). - Determine unsupervised and supervised techniques to cluster relevant information and enable accurate insight for analysts to improve the understanding of (1) themes, (2) intent of extracted text, (3) topics, (4) authenticity, etc. within the given data set(s) (Natural Language Processing – Understanding and Context). - Improve processing with alternative hardware (neuromorphic processors, Field Programmable Gate Arrays, etc.) by determining the best next generation hardware designed to maximize the runtime efficiency, accuracy, and limited space/power consumption of select AI/ML solutions. ***FY 2022 Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to the realignment of resources from Project JS - Assist Situational Understanding to O&M funding for technology transformation sustainment and combatant command embedded analytical support teams, and 2) the realignment of resources to the new PE 0604551BR to better reflect the nature of these ongoing and enduring activities in support of Catapult.			
Accomplishments/Planned Programs Subtotals	1.687	8.440	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 11/0602134BR/JS: *Counter Improvised-Threat Advanced Studies*	1.175	1.199	0.000	-	0.000	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Assessment and selection of best performer to provide contractual services to develop and operationalize requirements through the new Enterprise Acquisition Strategy Initiative (EASI) at the least risk, optimal cost and proven technically. Performer base selection includes research developers across DoD and other Government agency laboratories, academia, and industry.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	C/CPAF	Booz Allen Hamilton : Reston, VA	2.435	0.000		-		-		-		-	-	-	-
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	C/CPAF	Booz Allen Hamilton : Reston, VA	3.653	0.000		-		-		-		-	-	-	-
Sandia	MIPR	Sandia National Laboratories : Reston, VA	0.063	0.040	Oct 2019	-		-		-		-	-	-	-
IRTM	MIPR	Office of Naval Research : Arlington, VA	0.257	-		-		-		-		-	-	-	-
Network	C/FFP	John Hopkins : Baltimore, MD	1.815	-		-		-		-		-	-	-	-
Vehicle-Borne IED (VBIED)	C/CPFF	Naval Surface Warfare Command : Dahlgren, VA	8.500	-		-		-		-		-	-	-	-
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	-	-		5.374	Aug 2021	-		-		-	-	-	-
		Subtotal	16.723	0.040		5.374		-		-		-	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	Project (Number/Name) JS / *Assist Situational Understanding*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	C/CPAF	Booz Allen Hamilton : Reston, VA	0.812	-		-		-		-		-	-	-	-
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.217	0.000		-		-		-		-	-	-	-
QRC IT Network (OIR)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.366	0.090	Mar 2020	-		-		-		-	-	-	-
QRC IT Network (RS)	C/CPAF	Booz Allen Hamilton : Reston, VA	0.258	0.090	Mar 2020	-		-		-		-	-	-	-
Sandia	MIPR	Sandia National Laboratories : Reston, VA	0.226	0.120	Oct 2019	-		-		-		-	-	-	-
Carnegie Mellon University-Software Engineering Institute (CMU-SEI)	MIPR	Carnegie Mellon University/SEI : Hanscomb AFB, MA	0.215	0.000		-		-		-		-	-	-	-
Catapult Information System Support	C/CPAF	Booz Allen Hamilton : Reston, VA	-	-		0.515	Aug 2021	-		-		-	-	-	-
		Subtotal	4.094	0.300		0.515		-		-		-	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	Project (Number/Name) JS / *Assist Situational Understanding*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	C/CPAF	Booz Allen Hamilton : Reston, VA	0.812	0.000		-		-		-		-	-	-	-
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.217	0.639		-		-		-		-	-	-	-
QRC IT Network (OIR)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.078	0.234	Mar 2020	-		-		-		-	-	-	-
QRC IT Network (RS)	C/CPAF	Booz Allen Hamilton : Reston, VA	1.030	0.234	Mar 2020	-		-		-		-	-	-	-
Sandia	MIPR	Sandia National Laboratories : Reston, VA	0.378	0.240	Oct 2019	-		-		-		-	-	-	-
SETA Capability Research Architecture Cell (CRAC)	C/CPAF	Zel Technologies : Reston, VA	2.281	0.000		-		-		-		-	-	-	-
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	-	-		0.944	Aug 2021	-		-		-	-	-	-
SETA Capability Research Architecture Cell (CRAC)	C/CPAF	Zell Technologies : Reston, VA	-	-		1.607	Sep 2021	-		-		-	-	-	-
		Subtotal	6.796	1.347		2.551		-		-		-	-	-	N/A

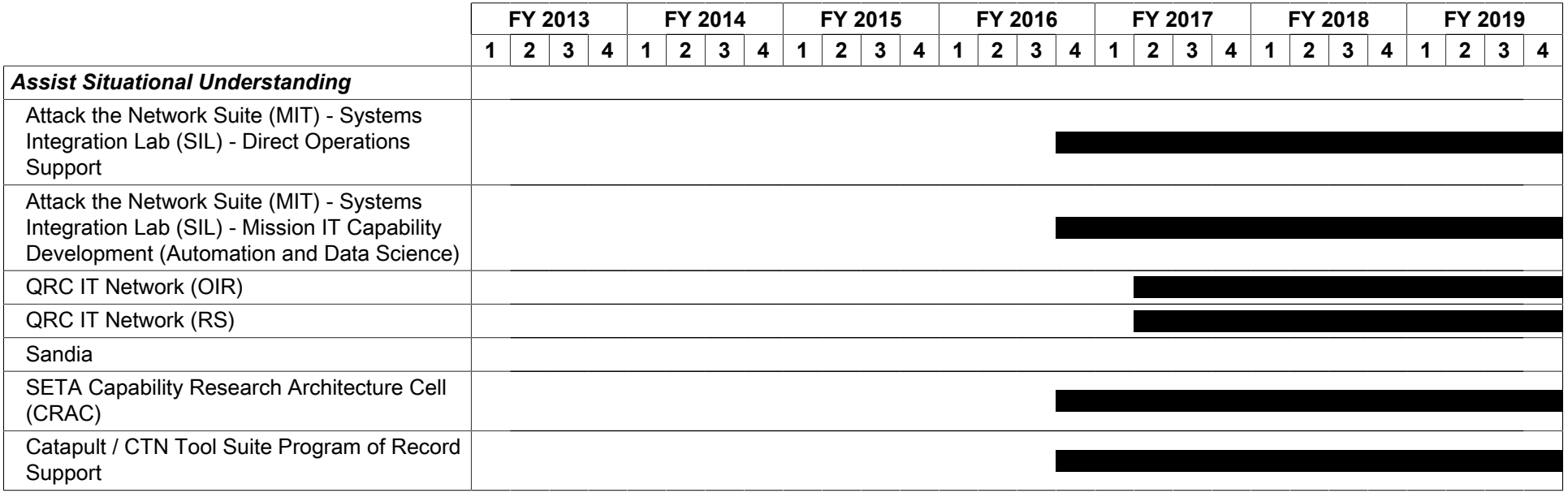
	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	27.613	1.687		8.440		-		-		-	-	-	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	Project (Number/Name) JS / *Assist Situational Understanding*	

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JS / *Assist Situational Understanding*



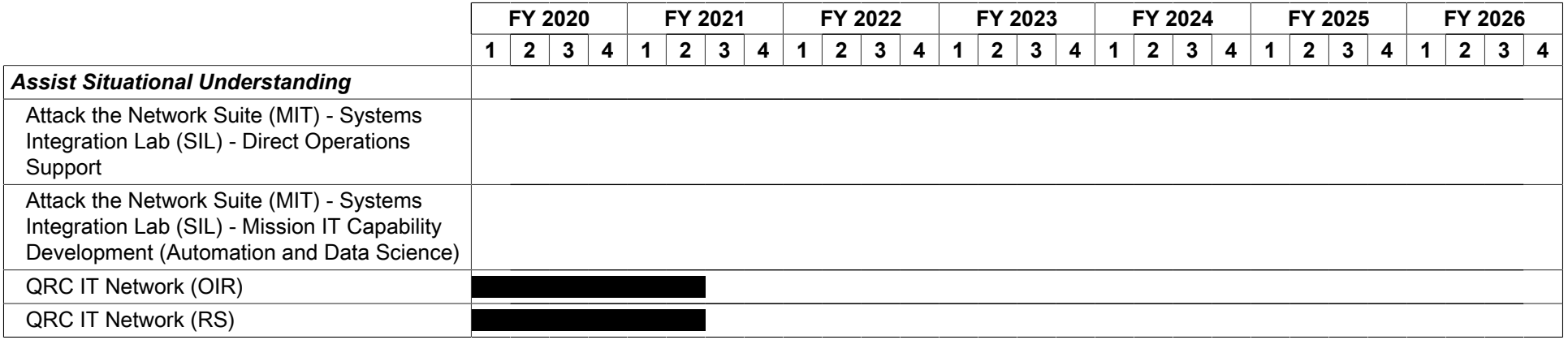


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JS / *Assist Situational Understanding*

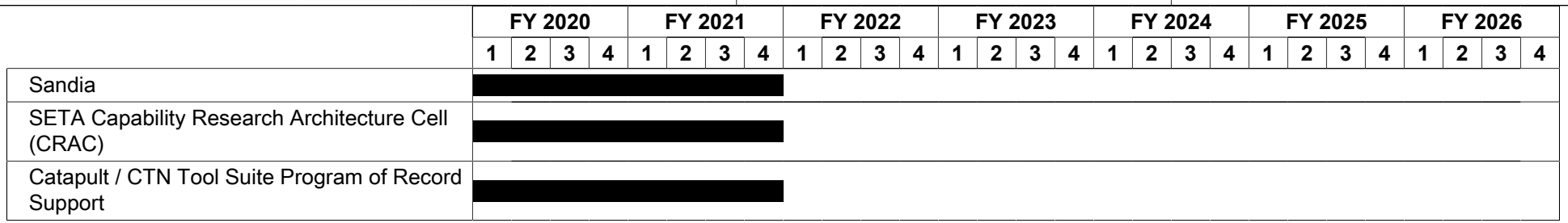


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604134BR / *Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing*	**Project (Number/Name)** JS / *Assist Situational Understanding*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Assist Situational Understanding				
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Direct Operations Support	4	2016	4	2019
Attack the Network Suite (MIT) - Systems Integration Lab (SIL) - Mission IT Capability Development (Automation and Data Science)	4	2016	4	2019
QRC IT Network (OIR)	2	2017	2	2021
QRC IT Network (RS)	2	2017	2	2021
Sandia	1	2020	4	2021
SETA Capability Research Architecture Cell (CRAC)	4	2016	4	2021
Catapult / CTN Tool Suite Program of Record Support	4	2016	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0604551BR / *Catapult*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-
RA: *CWMD Cross-Cutting Technical and Information Sciences*	-	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-

Note

Catapult activities were previously justified under program element 0604134BR, Counter Improvised-Threat Technology Demonstration, Prototype Development, and Testing were realigned to this program element to better reflect the nature of these ongoing and enduring activities.

A. Mission Description and Budget Item Justification

This program element designs, develops, tests, and delivers mission capabilities that support the ability to aggregate, and analyze data on global emerging threats and expedites DTRA's technology transition from the laboratory to operational use to reduce risk within the acquisition process. This is done by evaluating integrated technologies or prototype systems in a high quality and realistic operating environment.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	8.110	0.000	7.166	-	7.166
Total Adjustments	8.110	0.000	7.166	-	7.166
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Realignments	8.110	-	7.166	-	7.166

Change Summary Explanation

The increase in FY 2022 from the previous President's Budget is due to the realignment of Catapult and TACEON RDT&E resources from PE 0604134BR to this new PE 0604551BR to better reflect the nature of these ongoing and enduring activities. In FY 2020, $8.110 million was appropriately executed in PE 0604134BR for the Catapult Program of Record. Within the exhibit, execution is reflected in PE 0604551BR which was newly established for Catapult beginning in FY 2022.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604551BR / *Catapult*	Project (Number/Name) RA / *CWMD Cross-Cutting Technical and Information Sciences*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RA: *CWMD Cross-Cutting Technical and Information Sciences*	-	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project enables DTRA's Catapult Information System Program to design, develop, test, and deliver mission capabilities that support the ability to aggregate, and analyze data on global emerging threats. Catapult allows DTRA to rapidly develop, engineer, test and deploy analytical tools, data science methodologies, and software applications in support of the Warfighter. Catapult and its associated Attack the Network Tool Suite (ANTS) integrates data sources that support the detection and identification of improvised threats, threat networks and actors, command and control, operations, intelligence, and engagement for neutralizing, attacking, and defeating both current and emerging improvised threats and threat networks.

DTRA's Mission Information Technology (MIT) capability, with its embedded Combatant Command (CCMD), Capability Data Integrators (CDIs), and reachback staff work continuously to create capabilities requested by users from the DoD, the Intelligence Community (IC), interagency partners, and the Whole of Government to ingest, fuse, analyze, and present mission-relevant data and information to users of their customized, mission-oriented tools and services. These capabilities reside in Catapult, a cloud technology-based data analytics platform developed and being delivered by DTRA that provides an extensible, continuously augmented, real-time repository of data on improvised threats and worldwide threat actors. Catapult is fully operational and accredited on the Secret Internet Protocol Router Network (SIPRNet) and Joint Worldwide Intelligence Communications System (JWICS). The Catapult architecture pulls from more than 850 data sources on SIPRNet and more than 170 data sources on JWICS. Catapult uses a set of more than 100 tools (ANTS) and services to provide national-level capabilities for data and information capture, discovery, access, aggregation, correlation, visualization, analysis, sharing, and distribution for users from the strategic level to the tactical edge.

This project also funds the Team for Analysis of Cyber Enterprise Operations and Networks (TACEON), which conducts market research as well as evaluates and coordinates commercially available or government-owned data technologies that can provide DTRA and its mission partners with an information advantage. TACEON will be used as an enterprise resource and not only provide services to the IT Directorate but also to other Agency IT stakeholders as well as mission partners in DTRA's quest to hone our data, information and knowledge technologies for worldwide mission support. TACEON will help with our evolution from a data to information and eventually to a knowledge centric organization.

The project achieves transformational mission capabilities and postures the Agency to meet emerging mission requirements through innovative technology solutions and service upgrades, Knowledge Management (KM) and Business Intelligence (BI) solutions.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RA: CWMD Cross-Cutting Technical and Information Sciences	8.110	0.000	7.166

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / *Catapult*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Description: This Project enables DTRA's Catapult Information System Program to design, develop, test, and deliver mission capabilities that support the ability to aggregate, and analyze data on global emerging threats. Catapult allows DTRA to rapidly develop, engineer, test and deploy analytical tools, data science methodologies, and software applications in support of the Warfighter. This project also funds the SETA Capability Research Architecture Cell (CRAC) which identifies, investigates, explores, evaluates, and tests prototypes of emerging and cutting edge information technology that provides superior advantage to analysts and warfighters. CRAC builds partnerships with mission partners in DoD, IC, IA, Academia, National Labs and Industry to support, develop and integrate plans, programs, requirements, resources, technology and innovations across the mission spectrum for DTRA. The project achieves transformational mission capabilities and postures the Agency to meet emerging mission requirements through innovative technology solutions and service upgrades, Knowledge Management (KM) and Business Intelligence (BI) solutions. ***FY 2021 Plans:*** N/A ***FY 2022 Plans:*** - Develop predictive Data Science models through supervised and unsupervised Machine Learning against current and emerging threats; including fusion of multi-INT data across unclassified and classified data sets to identify networks and locations of interest to DTRA and its mission partners. - Create a new development environment to enable "technology at the edge" to support real-time development of new Data Science models/algorithms at mission partner sites to enhance existing or future Catapult Machine Learning models. Implement role-based access control and dynamic query analytics across Catapult data through Elastic Search to enable users to quickly retrieve known affiliates, family members, contacts, aliases, email addresses and other information about entities and enemy threat networks without running additional queries. - Create "Functions as a Service" by commoditizing common used functions and analytics across the ANTS to enable scalability and elasticity across the tool suite allowing ANTS capabilities to execute analytics against larger and more diverse data sets. - Extend Catapult architecture to allow for shared services across Whole of Government to enable analytics to be re-used in other platforms and tools across various IC and DoD organizations. - Develop Active Learning interface and pipeline to enable crowdsourced input for training and tagging data to feed new Data Science machine learning models.			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / *Catapult*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Modularize Catapult's Data Processing Framework to enable targeted data transformation based on data source, artifact mime type, artifact size, or any number of other source specific properties; Add better processing support for structured data, imagery, financial, SIGINT, Measurement and Signature Intelligence (MASINT), Internet of Things (IoT), and cyber data to broaden the scope of the Catapult Analytics stack. - Determine the capabilities that go beyond simple content identification and labeling, and move toward understanding the story and context of the video or image (Computer Vision for Improvised Threats). - Determine unsupervised and supervised techniques to cluster relevant information and enable accurate insight for analysts to improve the understanding of (1) themes, (2) intent of extracted text, (3) topics, (4) authenticity, etc. within the given data set(s) (Natural Language Processing – Understanding and Context). - Improve processing with alternative hardware (neuromorphic processors, Field Programmable Gate Arrays, etc.) by determining the best next generation hardware designed to maximize the runtime efficiency, accuracy, and limited space/power consumption of select AI/ML solutions.			
FY 2021 to FY 2022 Increase/Decrease Statement: The increase from FY 2021 to FY 2022 is due to the realignment of Catapult and TACEON resources from Project PE 0604134BR to this new PE 0604551BR to better reflect the nature of these ongoing and enduring activities.			
Accomplishments/Planned Programs Subtotals	8.110	0.000	7.166

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 22/0602178BR: *CWMD Applied Research*	45.359	40.615	48.112	-	48.112	-	-	-	-	-	-
• 31/0603160BR: *CWMD Advanced Technology Development*	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
• 143/0605502BR: *Small Business Innovative Research*	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-

Remarks

N/A

D. Acquisition Strategy

Assessment and selection of best performers to provide contractual services to develop and operationalize requirements through the new future contract vehicle (IMAX) at the least risk, optimal cost and proven technically. Performer base selection includes research developers across DoD and other Government agency laboratories, academia, and industry.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / *Catapult*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Catapult Information System	C/CPAF	TBD : TBD	-	5.218	Aug 2020	-		5.969	Aug 2022	-		5.969	Continuing	Continuing	-
		Subtotal	-	5.218		-		5.969		-		5.969	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Catapult Information System	C/CPAF	Booz Allen Hamilton : Reston, VA	-	0.917	Aug 2020	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	0.917		-		-		-		-	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Catapult Information System	C/CPAF	TBD : TBD	-	0.500	Mar 2020	-		0.963	Aug 2022	-		0.963	Continuing	Continuing	-
Team for Analysis of Cyber Enterprise Operations and Networks (TACEON)	C/CPAF	TBD : TBD	-	-		-		0.234	Sep 2022	-		0.234	Continuing	Continuing	-
SETA - Capability Research Architecture Cell (CRAC)	C/CPAF	Zel Technologies : Reston, VA	-	1.475	Jan 2020	-		-		-		-	Continuing	Continuing	-
		Subtotal	-	1.975		-		1.197		-		1.197	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	8.110		0.000		7.166		-		7.166	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604551BR / *Catapult*	Project (Number/Name) RA / *CWMD Cross-Cutting Technical and Information Sciences*	

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / *Catapult*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

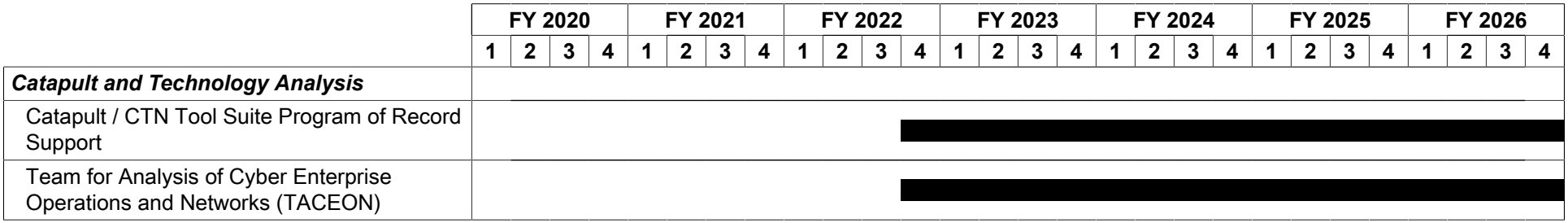


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0604551BR / *Catapult*	**Project (Number/Name)** RA / *CWMD Cross-Cutting Technical and Information Sciences*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Catapult and Technology Analysis				
Catapult / CTN Tool Suite Program of Record Support	4	2022	4	2026
Team for Analysis of Cyber Enterprise Operations and Networks (TACEON)	4	2022	4	2026

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	15.332	15.650	14.063	-	14.063	-	-	-	-	-	-
MA: *CWMD Cross-Cutting Technical and Information Sciences*	0.000	5.462	0.000	0.000	-	0.000	-	-	-	-	-	-
RD: *Nuclear Technologies and Capabilities Development*	0.000	9.870	15.650	14.063	-	14.063	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Counter Weapons of Mass Destruction (CWMD) Systems Development program element supports the development and demonstration of technologies and systems for the CWMD mission, including modeling and simulation (M&S) capabilities, verification and monitoring technologies, and decision support systems.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	13.100	15.650	14.803	-	14.803
Current President's Budget	15.332	15.650	14.063	-	14.063
Total Adjustments	2.232	0.000	-0.740	-	-0.740
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.232	-			
• SBIR/STTR Transfer	-	-			
• Realignments	-	-	-0.740	-	-0.740

Change Summary Explanation

The decrease in FY 2022 from the previous President's Budget is due to re-phasing of funding from FY 2022 to FY 2023 and FY 2024 to better align funding to mission requirements.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) MA / *CWMD Cross-Cutting Technical and Information Sciences*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MA: *CWMD Cross-Cutting Technical and Information Sciences*	0.000	5.462	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In an October 29, 2018 memorandum, the Deputy Secretary of Defense directed the transfer of Mission Assurance Risk Management System (MARMS) program management responsibilities from the Department of Defense Chief Information Officer (DoD CIO) to the Defense Threat Reduction Agency (DTRA), in light of DTRA's role in conducting Joint Mission Assurance Assessments. Prior to FY 2020, funding for MARMS is captured in program element 0605170D8Z; beginning in FY 2021 funding for MARMS is captured in a newly established program element, 0605141BR.

A. Mission Description and Budget Item Justification

The Mission Assurance Risk Management System (MARMS) is a Department of Defense (DoD) risk management system that directly supports the Secretary of Defense's Mission Assurance (MA) responsibilities as defined in the DoD Directive (DoDD) 3020.40, Mission Assurance, with the objectives of creating resilience and supporting critical processes to enable the protection of assets and ensuring defense critical missions. MARMS will function as an integration framework spanning multiple security domains that will support risk-informed decision-making, resource investment, and improved synchronization at different levels within DoD. MARMS supports multiple Joint Capability Areas (JCA): Command and Control, Logistics, and Protection. MARMS is an acquisition category (ACAT) III software program and has a "high" impact value for each of the three security objectives (confidentiality, integrity, and availability) in accordance with DoD Instruction (DoDI) 8510.01 and the Committee on National Security Systems Instruction (CNSSI) 1253.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: MA - Mission Assurance Risk Management System	5.462	0.000	0.000
Description: MARMS Requirements Definition Package (RDP)-1 defines multiple spirals of major technological improvements. Each spiral is comprised of multiple Capability Drops (CD) that defined specific capabilities. RDP-1 defines seven (7) capability drops focusing on the collection, analysis, warehousing, sharing, protection, and accessing of Defense Critical Infrastructure (DCI) and AntiTerrorism (AT) data supporting multiple types and levels of trusted users. ***FY 2021 Plans:*** N/A ***FY 2022 Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *CWMD Cross-Cutting Technical and Information Sciences*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
No change from the previous President's Budget.			
Accomplishments/Planned Programs Subtotals	5.462	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 140/0605141BR: *Mission Assurance Risk Management System*	0.000	5.500	5.500	-	5.500	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *CWMD Cross-Cutting Technical and Information Sciences*	

Product Development ($ in Millions)

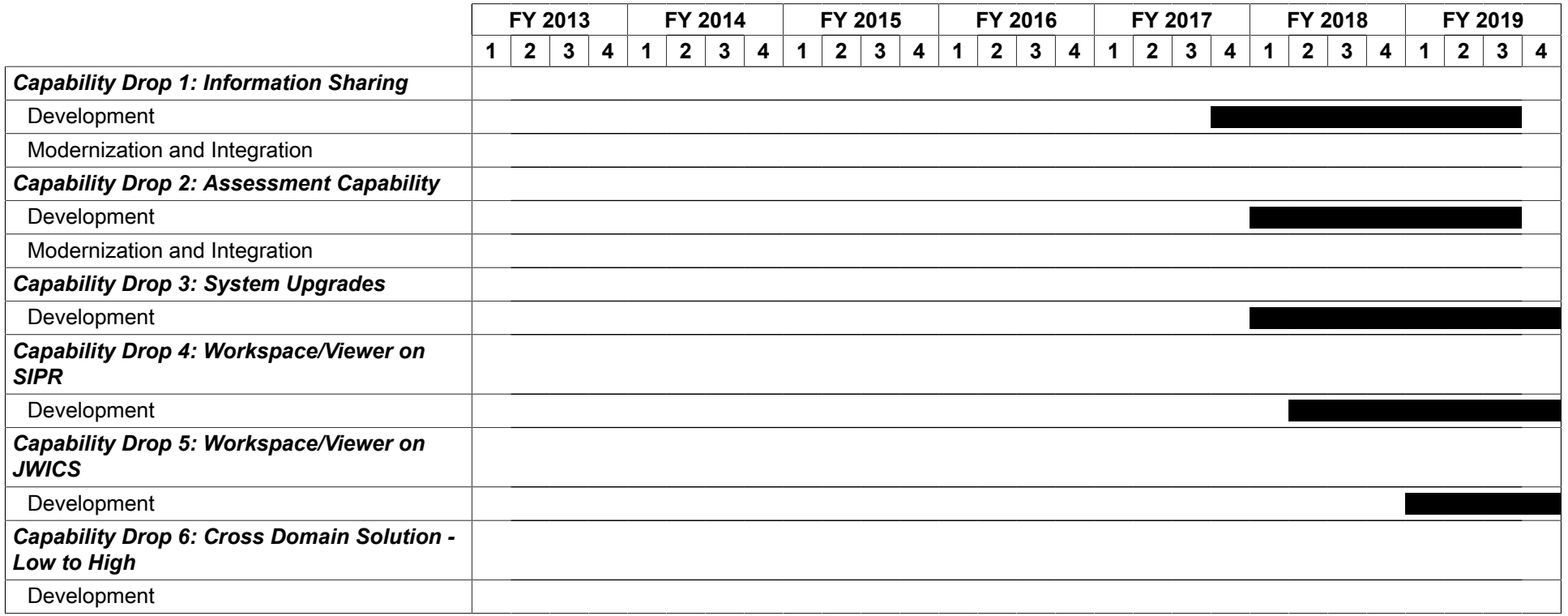
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CD1 - Information Sharing and Lead Integration	MIPR	U.S. Army Futures Command : Picatinny Arsenal, NJ	-	2.629	Feb 2020	-		-		-		-	0.000	2.629	-
CD2 - Assessment Capability	C/CPFF	Alion Science & Technology : McLean, VA	-	0.690	Feb 2020	-		-		-		-	0.000	0.690	-
CD3 - Existing System Upgrades	MIPR	Naval Surface Warfare Center : Dahlgren, VA	-	0.700	Feb 2020	-		-		-		-	0.000	0.700	-
CD3 - Existing System Upgrades	MIPR	U.S Strategic Command (STRATCOM) : Offutt, NE	-	0.400	Feb 2020	-		-		-		-	0.000	0.400	-
CD4 - Workspace/Viewer on Secret Internet Protocol Router Network (SIPR) and CD5 - Workspace/ Viewer on Joint Worldwide Intelligence Communications System (JWICS)	C/CPFF	TBD : TBD	-	0.560	Feb 2020	-		-		-		-	0.000	0.560	-
CD5 - Workspace/ Viewer on Joint Worldwide Intelligence Communications System (JWICS)	C/CPFF	Institute for Defense Analysis : Washington, DC	-	0.390	Feb 2020	-		-		-		-	0.000	0.390	-
MARMS Hosting	MIPR	Acquisition, Logistics, and Technology Enterprise Systems and Services (ALTESS) : Radford, VA	-	0.093	Jan 2020	-		-		-		-	0.000	0.093	-
		Subtotal	-	5.462		-		-		-		-	0.000	5.462	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) MA / *CWMD Cross-Cutting Technical and Information Sciences*	

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	5.462	0.000	-	-	-	0.000	5.462	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *CWMD Cross-Cutting Technical and Information Sciences*



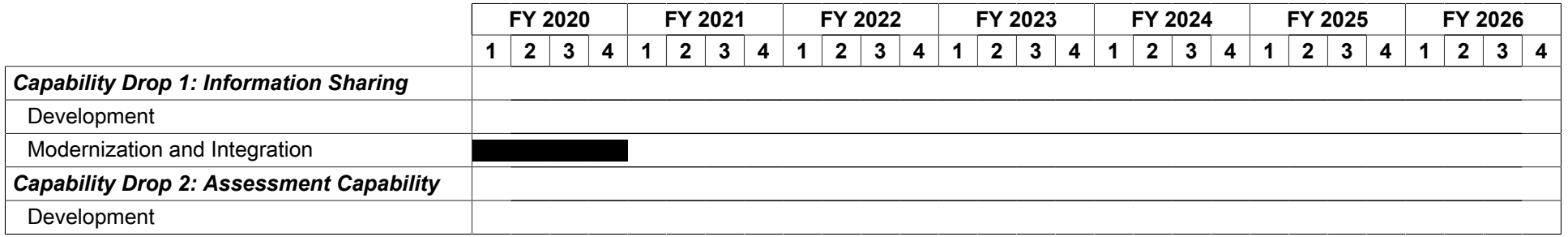


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *CWMD Cross-Cutting Technical and Information Sciences*	

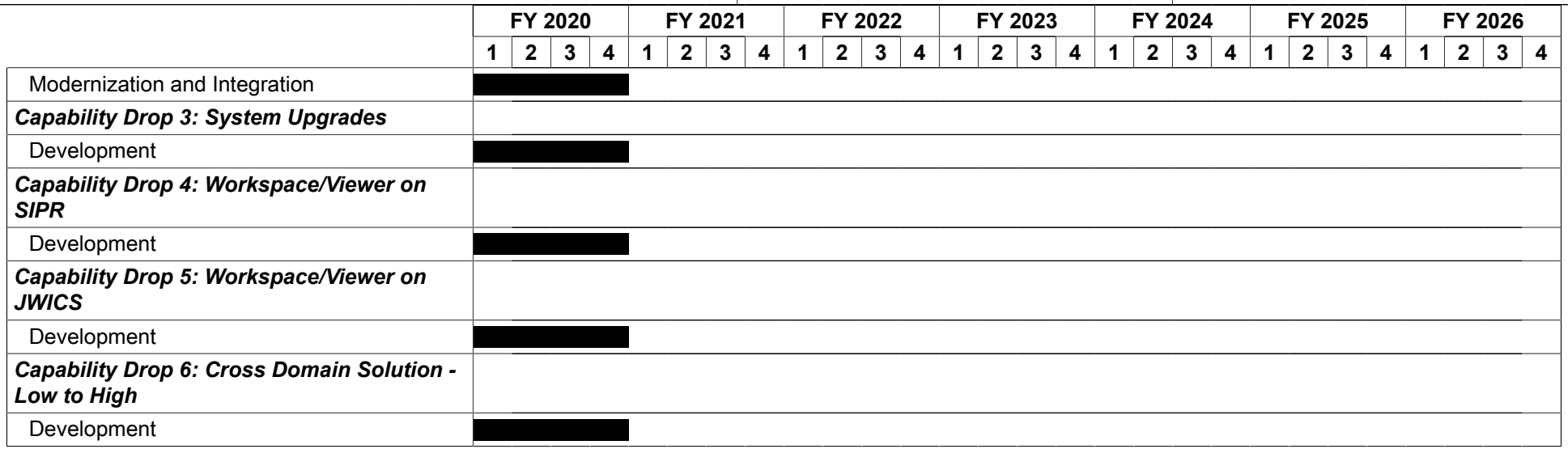


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** MA / *CWMD Cross-Cutting Technical and Information Sciences*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Capability Drop 1: Information Sharing				
Development	4	2017	3	2019
Modernization and Integration	1	2020	4	2020
Capability Drop 2: Assessment Capability				
Development	1	2018	3	2019
Modernization and Integration	1	2020	4	2020
Capability Drop 3: System Upgrades				
Development	1	2018	4	2020
Capability Drop 4: Workspace/Viewer on SIPR				
Development	2	2018	4	2020
Capability Drop 5: Workspace/Viewer on JWICS				
Development	1	2019	4	2020
Capability Drop 6: Cross Domain Solution - Low to High				
Development	1	2020	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RD / *Nuclear Technologies and Capabilities Development*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RD: *Nuclear Technologies and Capabilities Development*	0.000	9.870	15.650	14.063	-	14.063	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the development of capabilities for the Defense Threat Reduction Agency (DTRA) to counter proliferation and weapons of mass destruction (WMD) and to model the consequences of the use of nuclear weapons and integrate these capabilities for Combatant Command use.

DTRA's Enhanced Consequence Analysis (ECA) program performs Research, Development, Test, and Evaluation (RDT&E) to improve the reliability and effectiveness of capabilities related to the consequence of execution of a nuclear weapon. This program delivers nuclear weapon effects (NWE) decision support tools for use during strategic and operational planning. The ECA program directly supports U.S. and allied warfighter planning requirements, including the Integrated Strategic Planning and Analysis Network Increment 5 (ISPAN Inc 5), an acquisition category (ACAT) 1A Major Automated Information System (MAIS) that supports developing nuclear and conventional force application plans.

DTRA's Nuclear Arms Control Technologies (NACT) program performs Research, Development, Test, and Evaluation (RDT&E) to improve the sustainability, reliability, and effectiveness of capabilities related to its operational mission to install, operate, maintain, and sustain the waveform and radionuclide nuclear detonation detection stations and a radionuclide analysis laboratory comprising the majority of the U.S. portion of the International Monitoring System (IMS). This system delivers data continuously to the U.S. monitoring and verification community supporting warfighter and interagency nuclear-event response in support of U.S. and Department of Defense (DoD). The NACT program directly supports U.S. and allied warfighter and national technical monitoring requirements and provides vital data used by the treaty monitoring community, warfighter planners, DoD, other U.S. Government agencies, and international agencies.

The Nuclear Capabilities Services (NuCS) project performs RDT&E to improve capabilities to model nuclear weapon effects (NWE) environments and simulate the response of systems and networks to these effects. Starting with NWE modeling & simulation (M&S) capabilities rooted in the DoD nuclear testing program, NuCS augments these legacy codes through integration of higher-fidelity reduced-order models built by DTRA applied research efforts that combine first-principle science & technology M&S and experimental research, Through technology updates to legacy codes and integration of new models, NuCS provide a standard source of NWE M&S capabilities for all DoD users. The Enhanced Consequence Analysis (ECA) project integrates NuCS capabilities and integrates these modeling and simulation (M&S) capabilities with operational databases and systems and works with end-users to provide a user experience specifically designed for nuclear planning. Together, these programs support of United States and allied planning and decision making in the event of nuclear weapon use.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RD - Nuclear Technologies and Capabilities Development	9.870	15.650	14.063

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Description: Project RD supports the NuCS, NACT, and ECA projects conducting RDT&E to support U.S. and allied nuclear planning and decision- making requirements. ***FY 2021 Plans:*** - Leverage and conduct conventional high explosive test events to evaluate U.S. IMS performance and validate geophysical models. - Continue to integrate data from IMS infrastructure and upgrade IMS technologies in support of DoD and Interagency nuclear-event response missions and treaty compliance. - Integrate IMS into appropriate DoD and interagency exercises to ensure stakeholder involvement in system optimization and to leverage, to the fullest extent possible, all IMS data streams in informing partner exercise activities. - Develop new and upgraded treaty-monitoring capabilities that will support nuclear-event response and strategic DoD missions. - Participate in international and interagency-sponsored technology development exchanges to ensure IMS research and engineering activities remain current and relevant. - Establish baseline of integrated nuclear weapon effects modeling and simulation capabilities that have completed V&V (document verification and validation activities and develop training materials for operators and subject-matter experts who develop and use planning and decision-making systems). - Deliver initial solution for calculating nuclear weapon effects to be integrated into existing planning and decision-support systems at U.S. and allied commands. ***FY 2022 Plans:*** - Improve and expand the NWE M&S capabilities available to be integrated in the NuCS and ECA programs for delivery to end-user programs. - Demonstrate newly-integrated NWE M&S capabilities and establish priorities for improving and delivering these capabilities through early user assessment engagements with end-users. - Continue to integrate improved NWE M&S capabilities into U.S. and allied planning and decision support systems in support of DoD nuclear planning requirements. - Conduct Research and Development in support of U.S. IMS sites globally. - Provide upgrades to U.S. IMS sites globally, as required. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** The decrease from FY 2021 to FY 2022 is due to reduced investment in nuclear and radiological effects enhanced consequence management in this program element.			
Accomplishments/Planned Programs Subtotals	9.870	15.650	14.063

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 22/0602718BR/RD: *Counter Weapons of Mass Destruction Applied Research*	81.198	92.492	101.229	-	101.229	-	-	-	-	-	-
• 31/0603160BR/RD: *Counter Weapons of Mass Destruction Advanced Technology Development*	62.407	50.816	50.417	-	50.417	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Assess government, academic, and industrial performers and make selections based upon a "best fit for task" criteria. Common government awardees include DoD Service Laboratories and the Department of Energy National Laboratories.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Enhanced Consequence Analysis (ECA) capability development	C/CPFF	Booz Allen Hamilton : McLean, VA	-	-		-		2.100	Nov 2021	-		2.100	Continuing	Continuing	-
Nuclear Capabilities Service (NuCS) nuclear weapon effects models and integration development	C/CPFF	Applied Research Associates : Raleigh, NC	-	-		-		0.300	Nov 2021	-		0.300	Continuing	Continuing	-
Nuclear Capabilities Service (NuCS) nuclear weapon effects models and integration development	TBD	TBD : TBD	-	-		-		1.100	Mar 2022	-		1.100	Continuing	Continuing	-
TBD	C/CPAF	TBD : TBD	-	2.555		-		-		-		-	Continuing	Continuing	-
		Subtotal	-	2.555		-		3.500		-		3.500	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Radionuclide sensor, station, laboratory and network improvements	FFRDC	Pacific Northwest National Laboratory : Richland, WA	-	1.550	Jan 2020	1.212	Jan 2021	1.236	Jan 2022	-		1.236	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	FFRDC	Sandia National Laboratory : Albuquerque, NM	-	1.850	Jan 2020	1.350	Jan 2021	1.377	Jan 2022	-		1.377	Continuing	Continuing	-
Radionuclide sensor, station, and network Improvements	MIPR	Air Force Technical Application Center : Patrick AFB, FL	-	0.500	Dec 2019	0.390	Feb 2021	0.398	Feb 2022	-		0.398	Continuing	Continuing	-
Radionuclide sensor, station, laboratory and network improvements	C/CPFF	General Dynamics Mission Systems, Inc. : Fairfax, VA	-	0.435	Nov 2019	0.446	Nov 2020	0.455	Nov 2021	-		0.455	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	Project (Number/Name) RD / *Nuclear Technologies and Capabilities Development*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Station, and network Improvements	C/CPFF	Leidos Innovations Corp : Alexandria, VA	-	0.200	Apr 2020	0.240	Nov 2020	0.245	Nov 2021	-		0.245	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	Pennsylvania State University : State College, PA	-	0.400	Feb 2020	0.450	Jan 2021	0.459	Jan 2022	-		0.459	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/CPFF	University of Alaska Fairbanks : Fairbanks, AK	-	0.143	Mar 2020	0.000		0.000		-		0.000	Continuing	Continuing	-
IMEA Software Development	C/CPFF	Applied Research Associates, Inc : Alexandria, VA	-	0.200	Jan 2020	0.200	Feb 2021	0.204	Feb 2022	-		0.204	Continuing	Continuing	-
IMS Gas Background Analysis	FFRDC	Argonne National Laboratory : Argonne, IL	-	0.200	Dec 2019	0.000		0.000		-		0.000	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	C/TBD	TBD : TBD	-	0.160	Mar 2020	0.500	Mar 2021	0.510	Mar 2022	-		0.510	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	MIPR	US Army Corps of Engineers : Vicksburg, MS	-	0.100	Dec 2019	0.300	Jan 2021	0.306	Jan 2022	-		0.306	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	MIPR	Missile Defense Agency : Fort Belvoir, VA	-	0.650	Mar 2020	0.000		0.000		-		0.000	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements	C/TBD	University of Alaska : Fairbanks, AK	-	0.500	Feb 2020	0.500	Feb 2021	0.510	Feb 2022	-		0.510	Continuing	Continuing	-
Radionuclide sensor, station, and network Improvements	FFRDC	Savanah River National Laboratory : Savannah River Site Aiken, SC	-	0.404	Apr 2020	0.750	Mar 2021	0.765	Mar 2022	-		0.765	Continuing	Continuing	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Seismic and Infrasound sensor, station, and network Improvements	MIPR	DIA/MSIC : TBD	-	-		0.250	Mar 2021	0.255	Mar 2022	-		0.255	Continuing	Continuing	-
Seismic and Infrasound sensor, station, and network Improvements; validation and verification testing	FFRDC	Lawrence Livermore National Laboratory : Livermore, CA	-	-		0.950	Jan 2021	0.969	Jan 2022	-		0.969	Continuing	Continuing	-
Nuclear weapon effects models and integrated NuCS core architecture development	C/CPFF	Applied Research Associates : Raleigh, NC	-	-		3.000	Jul 2021	0.000		-		0.000	Continuing	Continuing	-
Enhanced consequence analysis initial capability	C/CPFF	TBD : TBD	-	-		5.000	Jul 2021	0.000		-		0.000	Continuing	Continuing	-
		Subtotal	-	7.292		15.538		7.689		-		7.689	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ECA T&E	C/CPFF	Booz Allen Hamilton : McLean, VA	-	-		-		1.200	Nov 2021	-		1.200	Continuing	Continuing	-
NuCS T&E	C/CPFF	Applied Research Associates : Raleigh, NC	-	-		-		0.500	Nov 2021	-		0.500	Continuing	Continuing	-
NuCS T&E	TBD	TBD : TBD	-	-		-		1.060	Mar 2022	-		1.060	Continuing	Continuing	-
		Subtotal	-	-		-		2.760		-		2.760	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Reqn	Various : Various	-	0.023	Nov 2019	0.112	Nov 2020	0.114	Nov 2021	-		0.114	Continuing	Continuing	-
		Subtotal	-	0.023		0.112		0.114		-		0.114	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	9.870		15.650		14.063		-		14.063	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

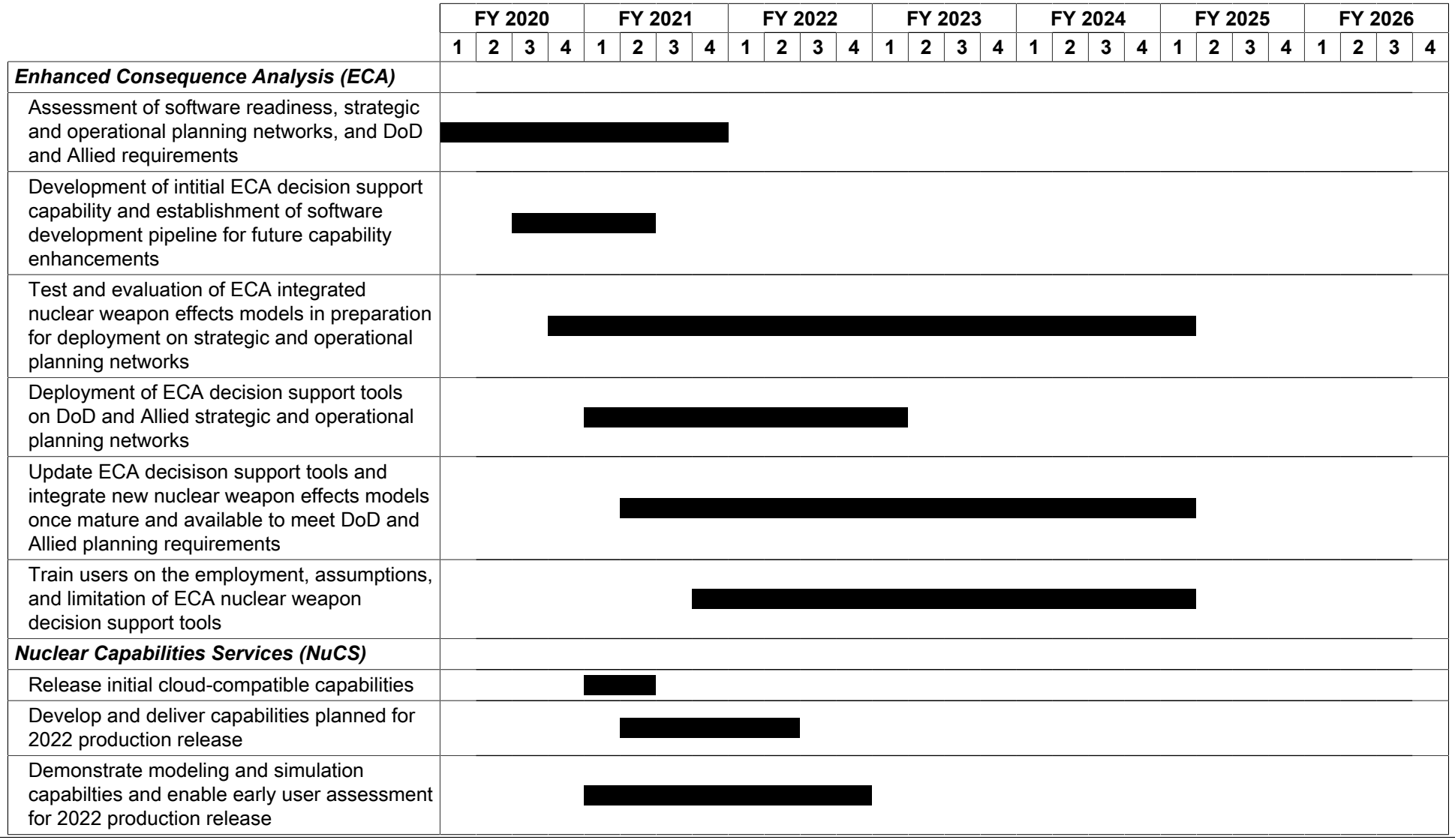


Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

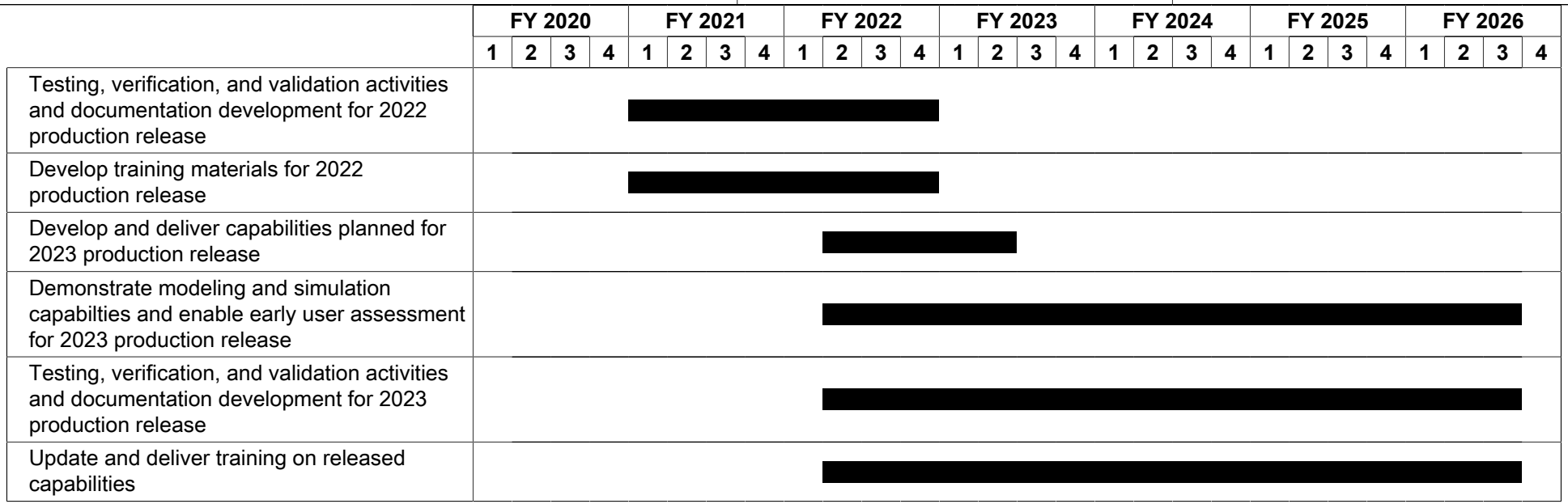


Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Enhanced Consequence Analysis (ECA)				
Assessment of software readiness, strategic and operational planning networks, and DoD and Allied requirements	1	2020	4	2021
Development of intitial ECA decision support capability and establishment of software development pipeline for future capability enhancements	3	2020	2	2021
Test and evaluation of ECA integrated nuclear weapon effects models in preparation for deployment on strategic and operational planning networks	4	2020	1	2025
Deployment of ECA decision support tools on DoD and Allied strategic and operational planning networks	1	2021	1	2023
Update ECA decisison support tools and integrate new nuclear weapon effects models once mature and available to meet DoD and Allied planning requirements	2	2021	1	2025
Train users on the employment, assumptions, and limitation of ECA nuclear weapon decision support tools	4	2021	1	2025
Nuclear Capabilities Services (NuCS)				
Release initial cloud-compatible capabilities	1	2021	2	2021
Develop and deliver capabilities planned for 2022 production release	2	2021	2	2022
Demonstrate modeling and simulation capabilties and enable early user assessment for 2022 production release	1	2021	4	2022
Testing, verification, and validation activities and documentation development for 2022 production release	1	2021	4	2022
Develop training materials for 2022 production release	1	2021	4	2022
Develop and deliver capabilities planned for 2023 production release	2	2022	2	2023
Demonstrate modeling and simulation capabilties and enable early user assessment for 2023 production release	2	2022	3	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605000BR / *Counter Weapons of Mass Destruction Systems Development*	**Project (Number/Name)** RD / *Nuclear Technologies and Capabilities Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Testing, verification, and validation activities and documentation development for 2023 production release	2	2022	3	2026
Update and deliver training on released capabilities	2	2022	3	2026

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605141BR / *Mission Assurance Risk Management System (MARMS)*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	5.500	5.500	-	5.500	-	-	-	-	-	-
MA: *Mission Assurance Risk Management System*	0.000	0.000	5.500	5.500	-	5.500	-	-	-	-	-	-

Note

In an October 29, 2018 memorandum, the Deputy Secretary of Defense directed the transfer of Mission Assurance Risk Management System (MARMS) program management responsibilities from the Department of Defense Chief Information Officer (DoD CIO) to the Defense Threat Reduction Agency (DTRA), in light of DTRA's role in conducting Joint Mission Assurance Assessments. Prior to FY 2020, funding for MARMS is captured in program element 0605170D8Z; beginning in FY 2021 funding for MARMS is captured in this program element.

A. Mission Description and Budget Item Justification

MARMS is a Department of Defense (DoD) risk management system that directly supports the Secretary of Defense's Mission Assurance (MA) responsibilities as defined in the DoD Directive (DoDD) 3020.40, Mission Assurance, with the objectives of creating resilience and supporting critical processes to enable the protection of assets and ensuring defense critical missions. MARMS will function as an integration framework spanning multiple security domains that will support risk-informed decision-making, resource investment, and improved synchronization at different levels within DoD. MARMS supports multiple Joint Capability Areas (JCA): Command and Control, Logistics, and Protection. MARMS is an acquisition category (ACAT) III software program and has a "high" impact value for confidentiality and integrity, and "medium" for the availability security objectives in accordance with DoD Instruction (DoDI) 8510.01 and the Committee on National Security Systems Instruction (CNSSI) 1253.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	5.500	5.500	-	5.500
Current President's Budget	0.000	5.500	5.500	-	5.500
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Change Summary Explanation

No change since the previous President's Budget.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605141BR / *Mission Assurance Risk Management System (MARMS)*	Project (Number/Name) MA / *Mission Assurance Risk Management System*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
MA: *Mission Assurance Risk Management System*	0.000	0.000	5.500	5.500	-	5.500	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MARMS is a Department of Defense (DoD) risk management system that directly supports the Secretary of Defense's Mission Assurance (MA) responsibilities as defined in the DoD Directive (DoDD) 3020.40, Mission Assurance, with the objectives of creating resilience and supporting critical processes to enable the protection of assets and ensuring defense critical missions. MARMS will function as an integration framework spanning multiple security domains that will support risk-informed decision-making, resource investment, and improved synchronization at different levels within DoD. MARMS supports multiple Joint Capability Areas (JCA): Command and Control, Logistics, and Protection. MARMS is an acquisition category (ACAT) III software program and has a "high" impact value for confidentiality and integrity, and “medium” for the availability security objective in accordance with DoD Instruction (DoDI) 8510.01 and the Committee on National Security Systems Instruction (CNSSI) 1253.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: MA - Mission Assurance Risk Management System	0.000	5.500	5.500
Description: MARMS is a multi-year program that encompasses a family of systems that will be integrated as part of the MARMS Requirements Definition Package (RDP)-1. The RDP-1 defines multiple spirals of major technological improvements. Each spiral is comprised of multiple Capability Drops (CD) that define specific capabilities. RDP-1 defines seven (7) capability drops focusing on the collection, analysis, warehousing, sharing, protection, and accessing of Defense Critical Infrastructure (DCI) and Anti-Terrorism (AT) data to support risk-informed decision making, resource investment and improve synchronization across Mission Assurance-related programs.			
FY 2021 Plans: - Continue to improve capability of the Information Sharing Data Registry (CD1) and Mission Assurance Assessments (CD2) - Modernize and Integrate with additional assessment capabilities (CD2 and CD3) -Continue to improve capability of the existing systems and the Mission Assurance Viewer and Analysis Portal on SIPR (CD3 & CD4) -Start development of the Mission Assurance Viewer and Analysis Portal on JWICS and enterprise cross domain solution (CD5 and CD6) toward initial capability fielding in 4th Quarter FY 2022. - Plan for the development effort of the Cross Domain Solutions (CDS) –JWICS to SIPR (CD7) to start in 1st Quarter FY 2022.			
FY 2022 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605141BR / *Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
- Continue to improve the capability of the Information Sharing Registry (CD1) toward overall program initial capability fielding of antiterrorism and DCI risk data at the end of FY2022. - Modernize and integrate assessment capabilities, existing systems, and the Mission Assurance Viewer and Analysis Portal on SIPR (CD2, CD3, and CD4). - Begin modernization and integration of the Mission Assurance Viewer and Analysis Portal on JWICS (CD5) toward initial capability fielding in 4th Quarter FY 2022. - Begin modernization and integration of Cross Domain Solution – SIPR to JWICS (CD6) in 1st Quarter FY 2022 and JWICS to SIPR (CD7) in 1st Quarter FY2023. ***FY 2021 to FY 2022 Increase/Decrease Statement:*** No change since the previous President's Budget.			
Accomplishments/Planned Programs Subtotals	0.000	5.500	5.500

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 131/0605000BR: *Counter Weapons of Mass Destruction Systems Development*	5.462	-	-	-	-	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605141BR / *Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CD1 - Information Sharing	MIPR	U.S. Army Future Command (AFC) : Picatinny Arsenal, NJ	-	-		2.795	Nov 2020	2.795	Nov 2021	-		2.795	Continuing	Continuing	-
CD2 - Assessment Capability	MIPR	USAF : Washington, DC	-	-		0.500	Feb 2021	0.500	Feb 2022	-		0.500	Continuing	Continuing	-
CD3 - Existing System Upgrades	MIPR	Naval Surface Warfare Center (NSWC) : Dahlgren	-	-		0.640	Feb 2021	0.640	Feb 2022	-		0.640	Continuing	Continuing	-
CD3 - Existing System Upgrades	MIPR	USSTRATCOM : Omaha, NE	-	-		0.250	Nov 2020	0.250	Nov 2021	-		0.250	Continuing	Continuing	-
CD4 - Workspace/Viewer on Secret Internet Protocol Router Network (SIPR)	C/CPFF	TBD : TBD	-	-		0.420	Feb 2021	0.420	Feb 2022	-		0.420	Continuing	Continuing	-
CD5 - Workspace/ Viewer on Joint Worldwide Intelligence Communications System (JWICS)	C/CPFF	TBD : TBD	-	-		0.420	Feb 2021	0.420	Feb 2022	-		0.420	Continuing	Continuing	-
CD6 - Cross Domain Solution SIPR to JWICS	C/CPFF	TBD : TBD	-	-		0.350	Feb 2021	0.475	Feb 2022	-		0.475	Continuing	Continuing	-
CD7 - CD6 - Cross Domain Solution JWICS to SIPR	C/CPFF	TBD : TBD	-	-		0.125	Feb 2021	-		-		-	Continuing	Continuing	-
		Subtotal	-	-		5.500		5.500		-		5.500	Continuing	Continuing	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-		5.500		5.500		-		5.500	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605141BR / *Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605141BR / *Mission Assurance Risk Management System (MARMS)*	**Project (Number/Name)** MA / *Mission Assurance Risk Management System*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Capability Drop 1: Information Sharing				
Development	1	2020	4	2021
Modernization and Integration	1	2022	4	2026
Capability Drop 2: Assessment Capability				
Development	1	2020	3	2021
Modernization and Integration	4	2021	4	2026
Capability Drop 3: System Upgrades				
Development	1	2020	3	2021
Modernization and Integration	4	2021	4	2026
Capability Drop 4: Workspace/Viewer on SIPR				
Development	1	2020	4	2021
Modernization and Integration	1	2022	4	2026
Capability Drop 5: Workspace/Viewer on JWICS				
Development	1	2021	3	2022
Modernization and Integration	4	2022	4	2026
Capability Drop 6: Cross Domain Solution - Low to High				
Development	1	2021	4	2021
Modernization and Integration	1	2022	4	2026
Capability Drop 7: Cross Domain Solution - High to Low				
Development	1	2021	4	2022
Modernization and Integration	1	2023	4	2026

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Defense Threat Reduction Agency	Date: May 2021
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605502BR / *Small Business Innovation Research*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	82.167	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-
RA: *Information Sciences and Applications*	82.167	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-

Note

Funding for the SBIR Program is consolidated in this program element during the year of execution. SBIR/STTR program funding was executed in Budget Activity 6 and, therefore, does not require an R-3 or an R-4.

A. Mission Description and Budget Item Justification

The Small Business Innovative Research (SBIR) and the Small Business Technology Transfer (STTR) programs provide the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting the Department of Defense (DoD) research and development needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of the DoD supported research and development results. These efforts are responsive to Public Law 106-554.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	13.329	0.000	0.000	-	0.000
Total Adjustments	13.329	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	13.329	-			

Change Summary Explanation

Funding for the SBIR Program is consolidated in this program element during the year of execution.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency			Date: May 2021
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0605502BR / *Small Business Innovation Research*	Project (Number/Name) RA / *Information Sciences and Applications*	

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
RA: *Information Sciences and Applications*	82.167	13.329	0.000	0.000	-	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

*Funding is not allocated until the year of execution. Program Element 0605502BR “Small Business Innovative Research (SBIR)” is used to report year-end obligations.

A. Mission Description and Budget Item Justification

The Small Business Innovative Research (SBIR) and the Small Business Technology Transfer (STTR) programs provide the means for stimulating technological innovation in the private sector and strengthens the role of small business in meeting the Department of Defense (DoD) research and development needs. These programs foster and encourage participation of minority and disadvantaged businesses in technological innovation and increase the commercial application of DoD supported research and development results. These efforts are responsive to Public Law 106-554 Small Business Act (15 U.S.C. 638).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2020	FY 2021	FY 2022
Title: RA: Information Sciences and Applications	13.329	-	-
Description: This project provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting the DoD research and development needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of the DoD supported research and development results. These efforts are responsive to Public Law 106-554.			
Accomplishments/Planned Programs Subtotals	13.329	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• 22/0602718BR/RA: *Counter Weapons of Mass Destruction Applied Research*	45.359	40.615	48.112	-	48.112	-	-	-	-	-	-
• 31/0603160BR/RA: *Counter Weapons of Mass Destruction Advanced Technology Development*	61.317	46.837	84.660	-	84.660	-	-	-	-	-	-
• 107/0604551BR: *Catapult*	8.110	0.000	7.166	-	7.166	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605502BR / *Small Business Innovation Research*	**Project (Number/Name)** RA / *Information Sciences and Applications*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605502BR / *Small Business Innovation Research*	**Project (Number/Name)** RA / *Information Sciences and Applications*

Remarks

N/A - SBIR/STTR program funding was executed in Budget Activity 6 and, therefore, does not require an R-3.

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605502BR / *Small Business Innovation Research*	**Project (Number/Name)** RA / *Information Sciences and Applications*

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
N/A																												

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Defense Threat Reduction Agency		Date: May 2021
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0605502BR / *Small Business Innovation Research*	**Project (Number/Name)** RA / *Information Sciences and Applications*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
N/A	1	2020	1	2020

Note

N/A - SBIR/STTR program funding was executed in Budget Activity 6 and, therefore, does not require an R-4 or an R-4a.