

DTRA Research and Development

Defense Threat Reduction Agency
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Research & Development: Mission and Vision



Mission

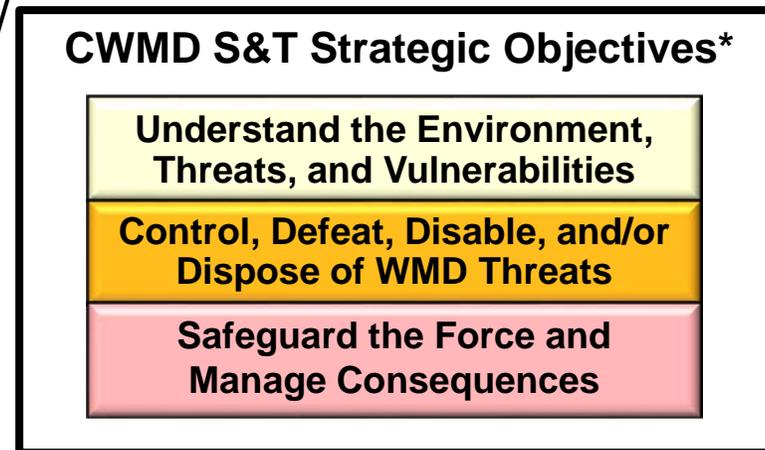
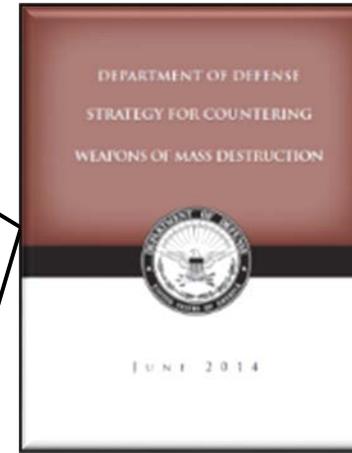
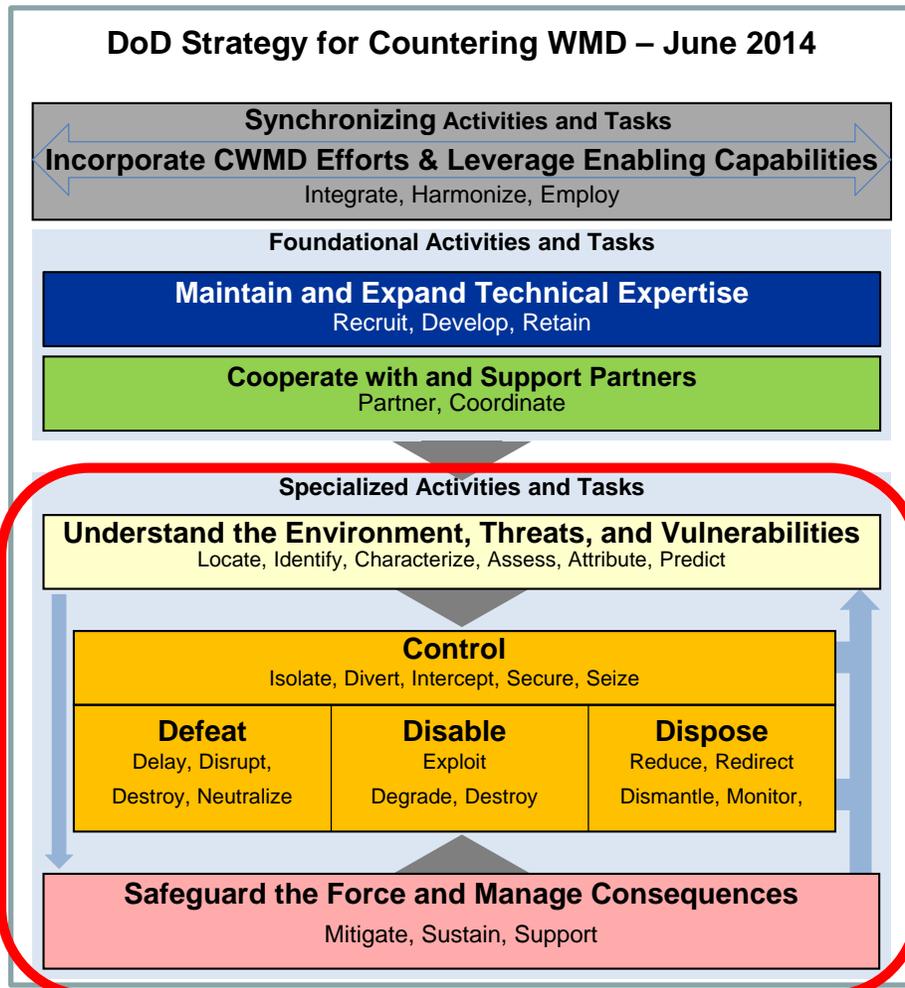
Provide science, technology and capability development investments that maintain the U.S. military's technological superiority in countering weapons of mass destruction & asymmetric threats, mitigate the risks of technical surprise and respond to the warfighter's urgent technical requirements.

Vision

Be the recognized leader for technical innovation to counter weapon of mass destruction & asymmetric threats – responding to urgent warfighter needs while investing in R&D to shape the Nation's counter-threat capabilities.



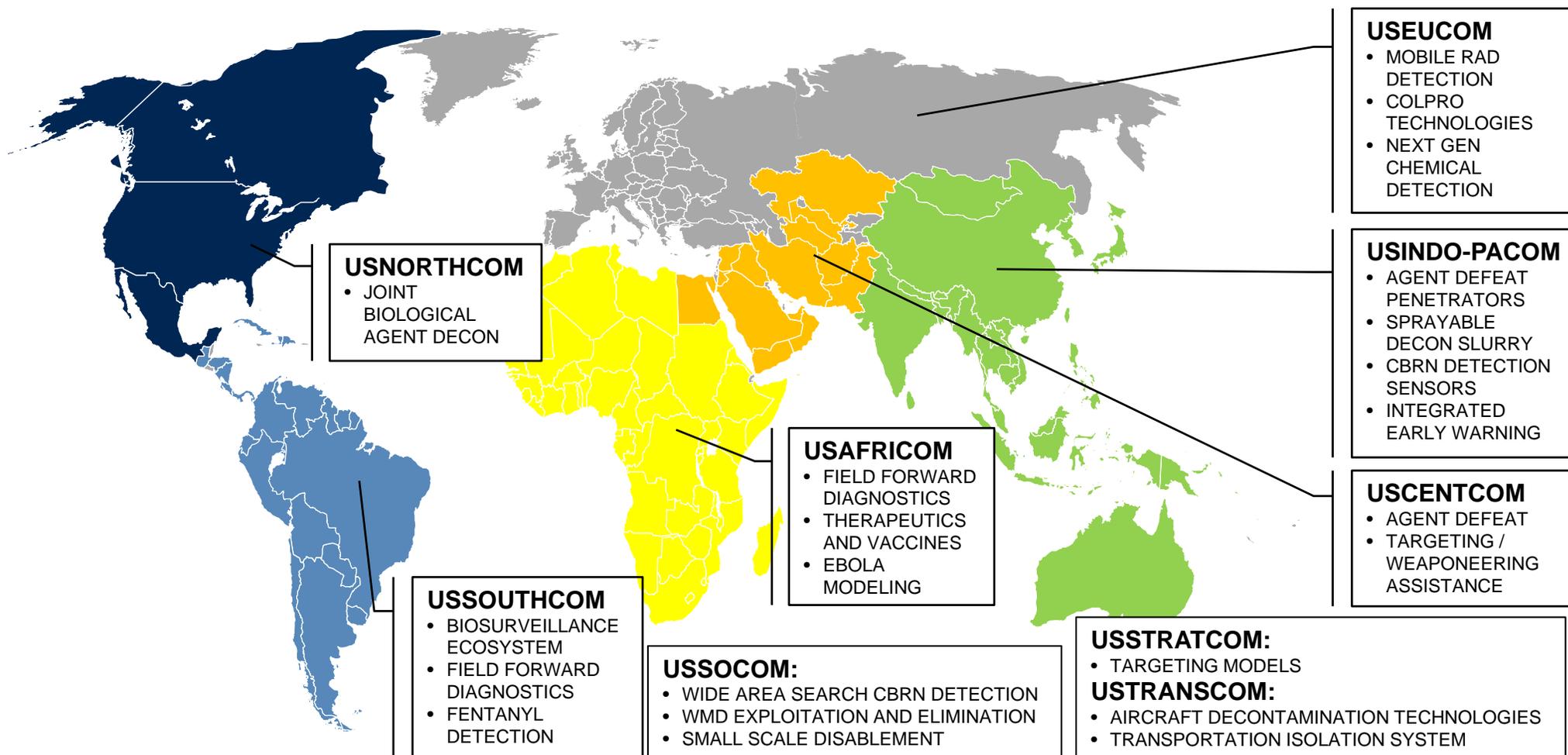
DTRA R&D Portfolio Aligns with DoD Strategy for CWMD



* S&T for Strategic Deterrent is included in these objectives

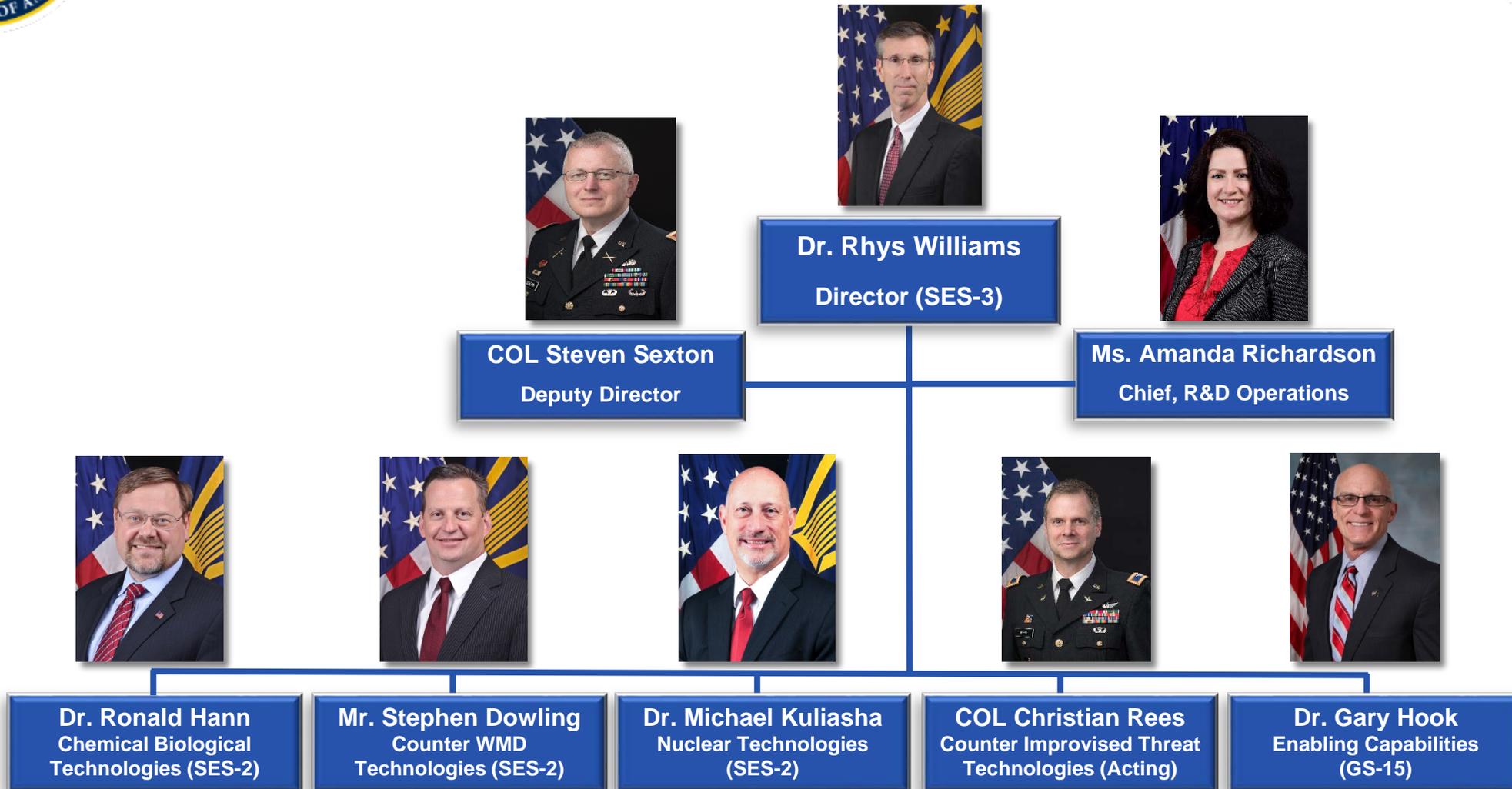


Representative RD Support to CCMDs





Research & Development Directorate





RD-CB: Chemical Biological Technologies



Mission – Lead DoD science and technology to anticipate, defend and safeguard against chemical and biological threats for the warfighter and the nation.

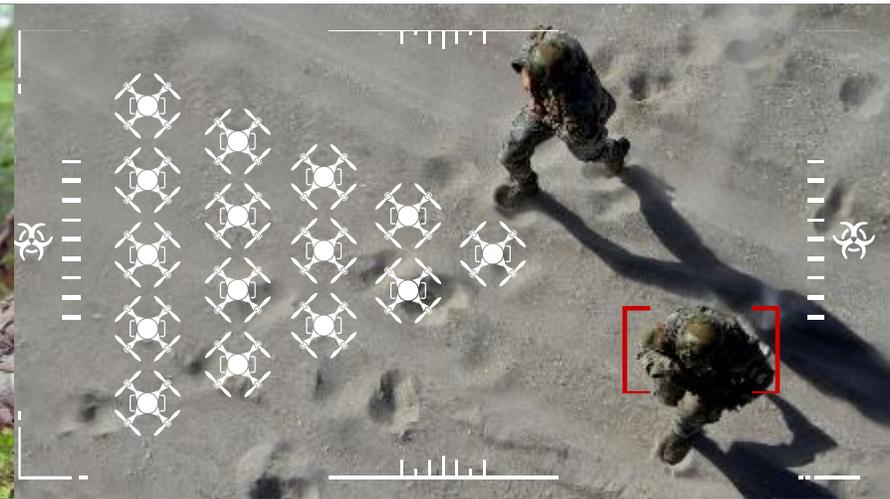


Integrated Early Warning

CB has a broad mission to lead the DoD science and technology to anticipate, defend and safeguard against chemical and biological threats for the warfighter and nation. We do this by focusing on our three strategic priorities: layered defense, integrated early warning, and prepare for surprise.



Integrated Layered Defense



Prepare for Surprise

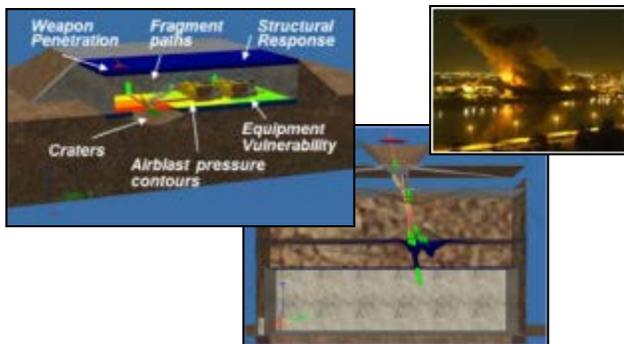
As a department, our near-term priorities focus on protecting the warfighter through medical countermeasure development and integrated early warning, which we accomplish through CB detection, diagnostics and wearable technologies.



RD-CX: Counter WMD Technologies

Mission – Develop, demonstrate and transition innovation technologies and capabilities to actively counter the full spectrum of CBRNE threats

Weapons Effects & Planning



Test Campaigns



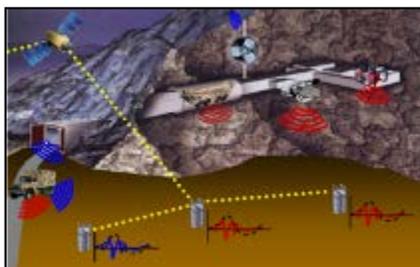
WMD Aerial Collection System (WACS)



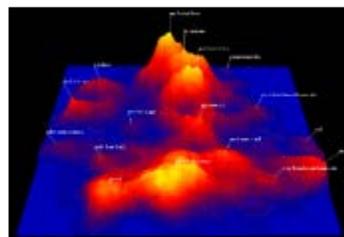
MOP



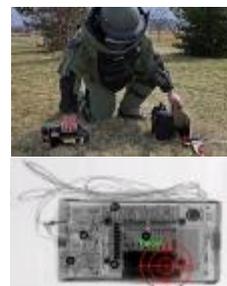
WMD Target Sensing Technologies



Visual Analytics



EOD Defeat



Agent Defeat



Autonomous Systems



Advanced Technologies

Integration, Demonstration, Transition

Combat Support

Find

Characterize

Plan

Attack

Assess

Strong Customer/Partner Relationships Across the Kill Chain



RD-NT: Nuclear Technologies Department

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- *Develop capabilities that enable an effective nuclear deterrent, integrate conventional forces to operate effectively in a nuclear environment, and counter nuclear threat networks.*

Nuclear Weapon Effects

- Modeling & simulation tools for nuclear targeting and consequence of execution assessment
- Use existing test data to certify new nuclear capabilities without nuclear testing



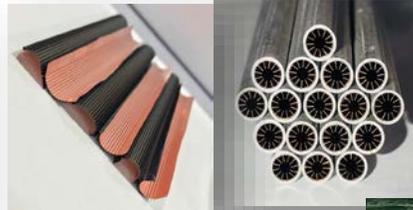
Cratering



Fallout / Fireball / Blast / Thermal

Nuclear Threat Detection

- Sensors for characterization of the nuclear battlefield
- Technologies to collect, analyze, exploit, and attribute nuclear detonation data and signals



Boron-coated straws increase neutron sensitivity

Standoff Radiation Detection enables nuclear battlefield situational awareness



Nuclear Survivability

- Develop nuclear environments, protection standards, and handbooks
- Operate large pulsed-power machines to produce intense bursts of radiation simulating a nuclear weapon
- Mission-critical systems analysis to characterize nuclear survivability shortfalls



Large Blast Thermal Simulator at WSMR



Navy Electromagnetic Pulse Simulator at Pax River

Nuclear Assessments

- Test concepts, capabilities, and plans through rigorous assessment and wargaming
- Integrate wargaming tools into exercises
- Enable DoD forces to render safe nuclear threats under battlefield conditions



M&S to enable planning, training, and requirements definition

Nuclear Technologies Integration

- Provide cloud-ready nuclear modeling interfaces and applications
- Deliver timely electronic access to nuclear testing archives
- Enable warfighter to visualize nuclear battlefield through integrated Common Operating Picture



Situational Awareness Tools



RD-TT: Counter Improvised-Threat Technologies

Mission – Rapidly deliver counter-improvised threat technology solutions to the warfighter through the integration of science, prototype development and testing

**Defeat the Device:
Detect**



UAS



Persistent surveillance



Person Borne IED



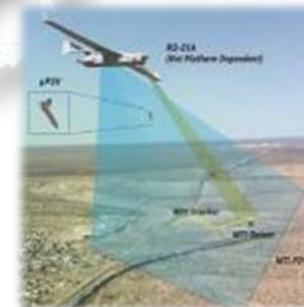
Buried IED



cEFP



cREW



cUAS

Discover innovative technology through partner enterprise and outreach



RD-EC: Enabling Capabilities



Mission – Create, provide and maintain relevant enabling capabilities to support the RD portfolio of work. Enabling capabilities include credible test beds, responsive test design, robust basic research, essential data capture, small business investment programs, high-performance computing, the DTRA Experimentation Laboratory, and data analysis of results, for countering weapons of mass destruction, improvised threats, and nuclear deterrence for DoD, the U.S. Government, and partners.

Test Operations: Robust processes exercised over decades to ensure safe & successful CWMD test events



Test Bed Infrastructure: Test beds/structures to support full-spectrum CBRNE testing and technology evaluation



Subject Matter Expertise: Nationally-recognized experts addressing contemporary issues in CWMD RDT&E



RD-OP: RD Operations

Mission – Operations is a strategic enabler to improve HOW we do our work in RD – working smarter, not harder. We leverage Technical Reachback, CWMD Information Integration, Strategic Engagements, Requirements and Acquisition support across the Directorate. Operations works to best leverage resources to drive Directorate success by providing technical and operational expertise across RD to help Departments do their work...better.

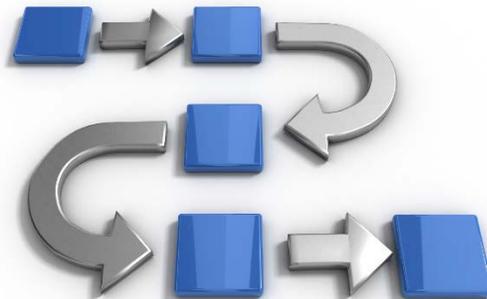
Technical Reachback



Advanced Data Science Tools for RD's Mission



End-to-End Support: Requirements, to Acquisition, to Transition and Fielding



Stakeholder Engagement – CCMD and International



RD Directorate Future Requirements



- Four Annual R&D Broad Agency Announcements (BAAs)*
 - Chemical/Biological Technologies (*End Feb 2021*)
 - Science and Technologies New Initiative – TRL 2-7 (*End Oct 2021*)
 - New Initiatives for Nuclear Detection Technologies (*End Apr 2023*)
 - Fundamental Research to Counter WMD – Basic Research in Chem/Bio (*End Sept 2024*)
- Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs*
- CWMD R&D IDIQ*
 - 10 year effort with 6 Prime Contractors and over 150 Sub-Contractors
 - Current total awards \$1.1 Billion encompassing all aspects of DTRA CWMD R&D
 - This effort will be re-competed for award in 2023
- Advisory and Assistance Services (A&AS)* – 2 active solicitations (*closing in August*)

* Further information on R&D Solicitations can be found at <https://beta.sam.gov/>



DTRA RDT&E Summary



- DoD's R&D organization focused on CWMD and Asymmetric Threats
- Responds to national and DoD CWMD priorities
- RDT&E base provides support directly to our warfighters
- Integrated/coordinated with DoD, Interagency, and international partners
- Develops and operates unique and essential CWMD and Asymmetric Threat test capabilities
- Comprehensive R&D investment increases agility to respond to new/changing Combatant Command requirements

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QUESTIONS?

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