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DEFENSE THREAT REDUCTION AGENCY

DTRA Research and Development 101

Executive Deck

Deter. Prevent. Prevail.

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Approved For Public Release- 6176



Agenda

- Leadership and Organization
- Mission and Functions
- RD Departments
 - Chemical and Biological Technologies
 - Counter WMD Technologies
 - Nuclear Technologies
 - Test and Assessment
 - Operations
- Wrap Up



RD Leadership

Ms. Amanda Richardson
RD Director
(Acting)



COL Alex Wehmeyer
RD Deputy
Director



Mr. Carl Brown
RD Chief of
Staff

DEPARTMENT LEADERSHIP



CHEM-BIO TECHNOLOGIES (RD-CB)
Dr. Robert Kristovich
RD-CB, Director



CWMD TECHNOLOGIES (RD-CX)
COL Jeffrey Kendellen
RD-CX, Director (Acting)



NUCLEAR TECHNOLOGIES (RD-NT)
Mr. Marc Franciszkowicz
RD-NT, Director



R&D OPERATIONS (RD-OP)
Mr. Dustin Eward
RD-OP, Chief

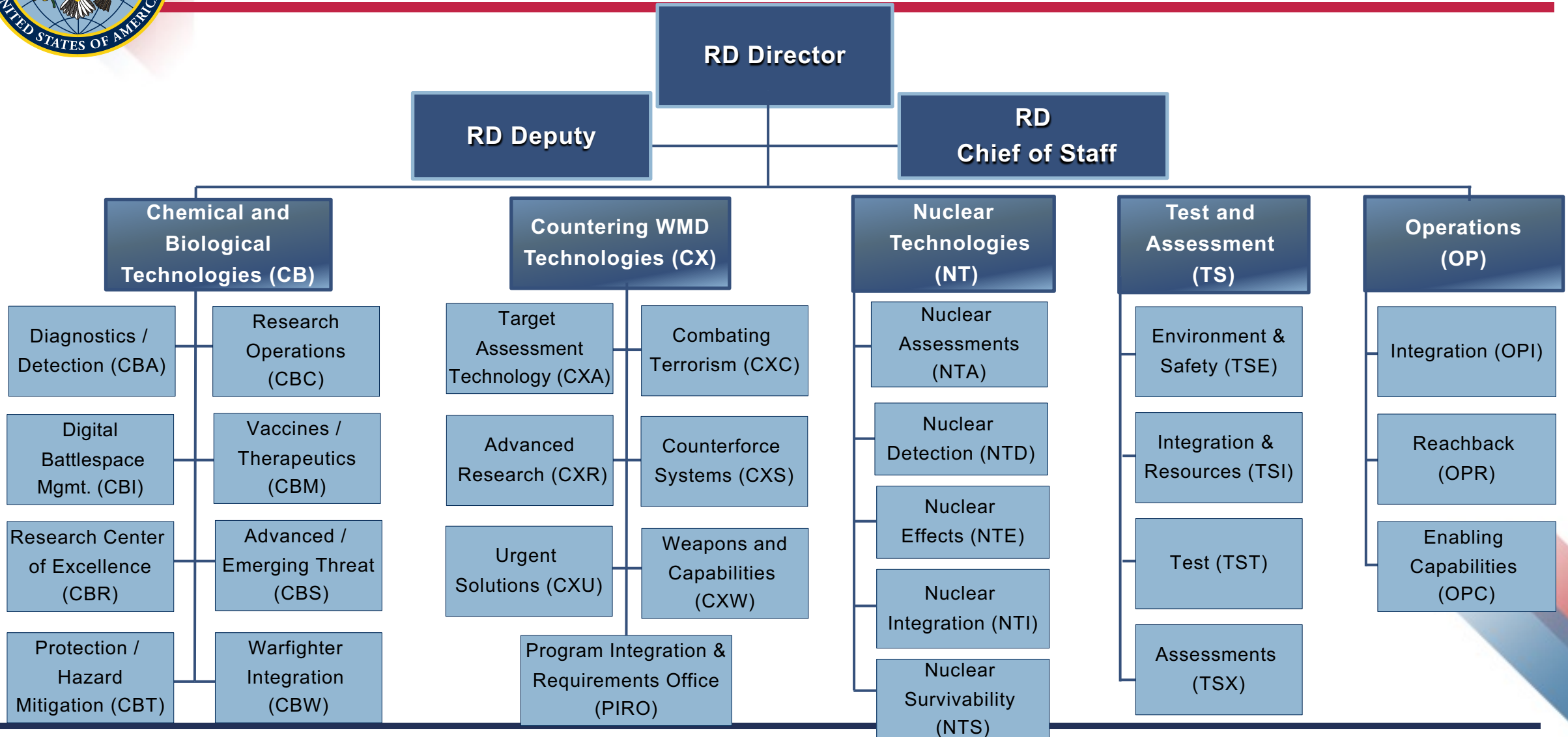


TEST AND ASSESSMENT (RD-TS)
Dr. Gary Hook
RD-TS, Chief



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Research and Development Directorate



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RD Workforce Locations



Some Additional Workforce Locations

West Point, NY; Las Vegas, NV; Fort Liberty, NC; and Edgewood/Aberdeen Proving Ground, MD



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RD Mission and Functions

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



RD-CB: Chemical and Biological Technologies



RD-CX: Counter WMD Technologies



RD-NT: Nuclear Technologies



RD-TS: Test and Assessment



RD-OP: Operations

RD executes its mission by DELIVERING INNOVATIVE SOLUTIONS that meet current mission requirements in a timely manner and by ANTICIPATING AND PREPARING FOR EMERGING AND FUTURE THREATS with a balance of fundamental and applied research across the portfolio.



RD Strategic Partnership

RD partners with other U.S. Government agencies (such as National and Service Laboratories), and international S&T organizations to develop CWMD capabilities that address prioritized CCMD / Joint Force gaps.





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RD-CB: Chemical and Biological Technologies Department

RD-CB anticipates future threats & delivers capabilities that enable the Joint Force to survive, fight & win in chemical, and biological contested environments through a coordinated effort designed to neutralize adversarial CB threats

Detection and Diagnostics

- Develops minimally invasive sampling methods to predict the severity of disease, and advanced sequencing technology

Digital Battlespace Management

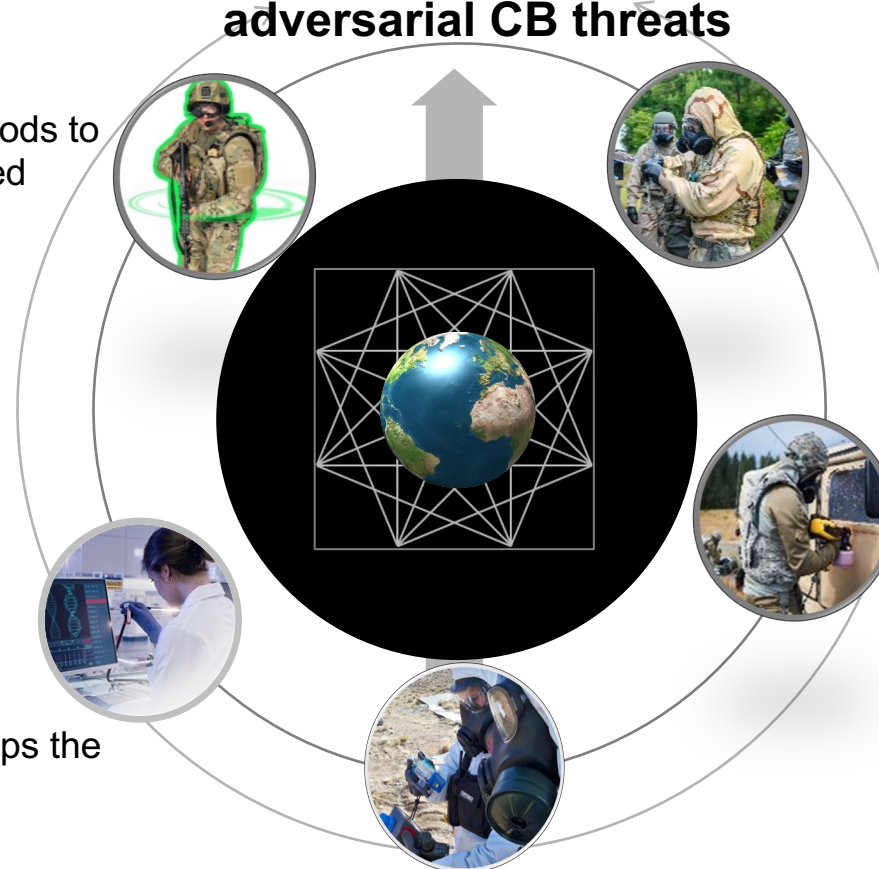
- Data fusion and analytics supporting situation awareness, decision-making, and threat management

Protection and Hazard Mitigation

- Develops full-spectrum physical protection and hazard mitigation technologies

Warfighter Integration

- Provides technology, education, and develops the CB workforce



Vaccines and Therapeutics

- Investments to support medical countermeasure products, and enable recovery from current and emerging biological threats

Advanced and Emerging Threats

- Develops and transitions products and information to address current and emerging CB threats

Research Center of Excellence

- Develops the next generation of Department of Defense (DoD) scientists
- Conducts research in areas of interest to the Chem-Bio Defense Program and enhances Joint Force protection, and mission capabilities.

Research Operations

- Manages daily operations of CB



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RD-CX: Counter WMD Technologies Department

RD-CX develops, demonstrates, and transitions innovative technologies and capabilities to actively counter the full spectrum of adversary activities across the WMD continuum

Target Assessment Technology

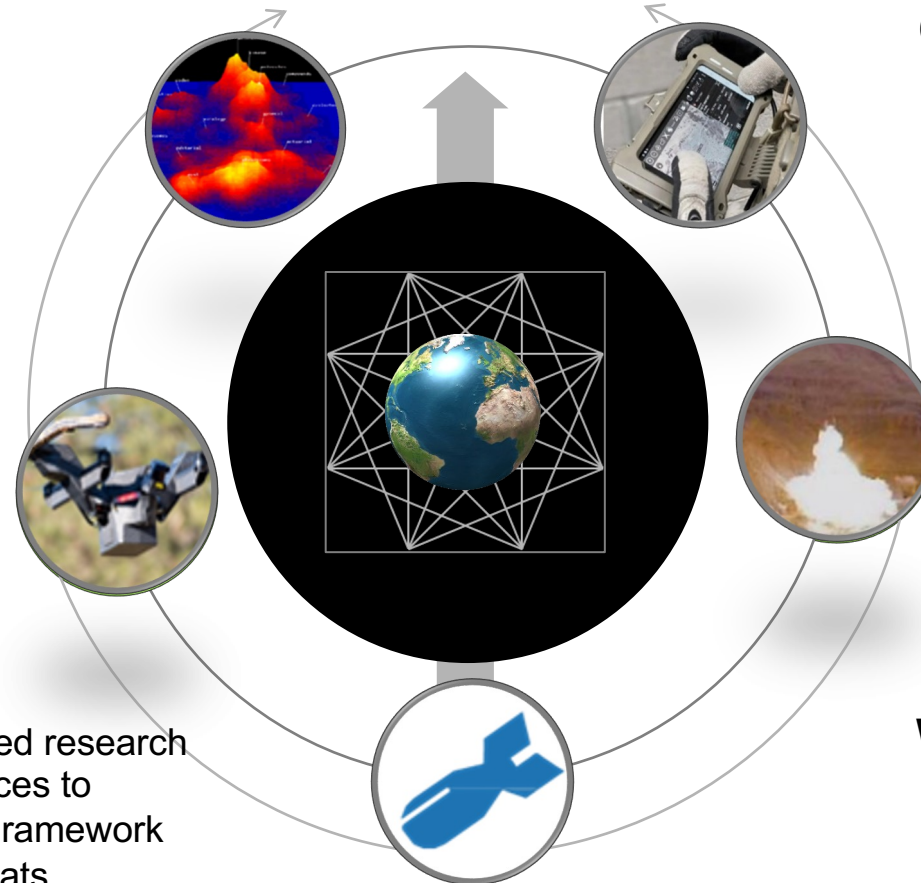
- Develop, apply, and transition innovative technologies to characterize and assess WMD threats and Hard & Deeply Buried Targets (HDBTs) in partnership with the Intelligence Community in support of Combatant Commands

Combating Terrorism

- Provide Combatant Commanders improved offensive capabilities in support of counter-terrorism and counter-proliferation missions to combat WMDs

Advanced Research

- Couples long-range fundamental and applied research with physical, life, and computational sciences to enhance the Offensive CWMD Capability Framework activities in combating emerging WMD threats



Counterforce Systems

- Develop, integrate, demonstrate and transition CWMD advanced sensors, surveillance
- Defeat target planning technologies in support of Joint Force operations

Urgent Solutions

- Execute collaborative research and timely capability development to illuminate threat WMD posture and capabilities
- Develop options to deter, disrupt, prevent WMD development / use
- Exploit adversary weaknesses
- Ensure the Joint Force prevails in conflict

Weapons and Capabilities

- Offensive weapons and other capabilities to combat WMD while mitigating collateral contamination

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RD-NT: Nuclear Technologies Department

RD-NT researches, develops, and transitions nuclear weapons effects, survivability, detection, and monitoring capabilities to support and enable an effective nuclear deterrent

Nuclear Weapon Effects

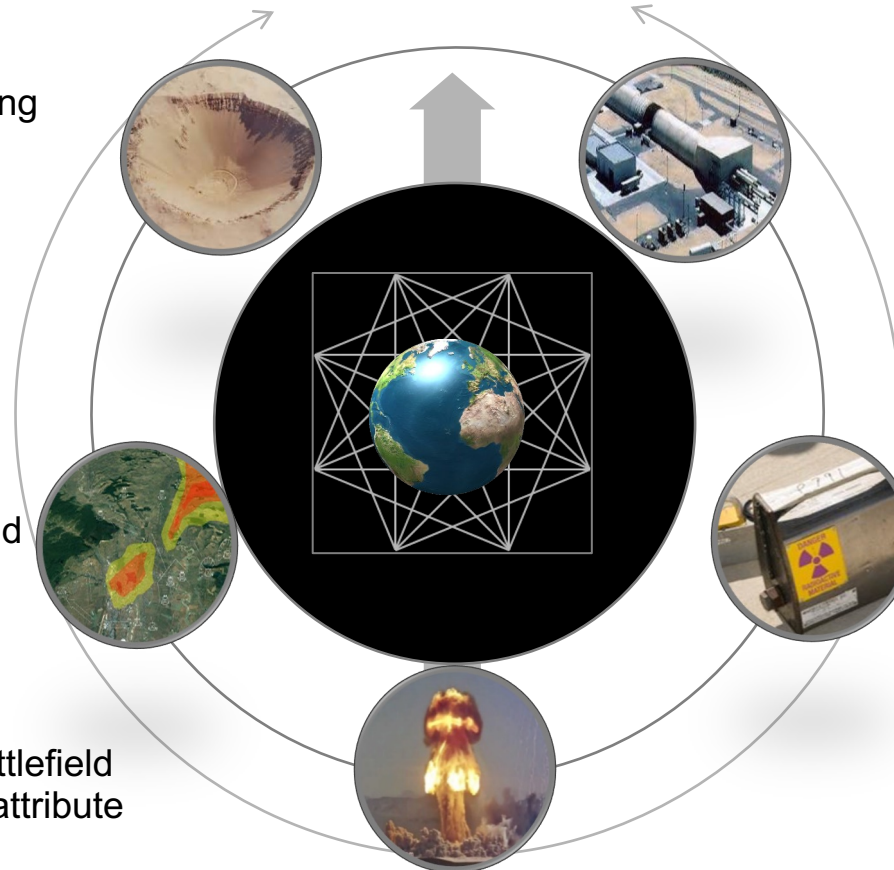
- Modeling & simulation tools for nuclear targeting and consequence of execution assessment
- Use existing test data to certify new nuclear capabilities without nuclear testing

Nuclear Assessments

- Test concepts, capabilities, and plans through rigorous assessment and war gaming
- Integrate war gaming tools into exercises
- Nuclear Arms Control Technology Program and the U.S. International Monitoring System

Nuclear Threat Detection

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



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

Nuclear Technologies Integration

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



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RD-TS: Test and Assessment Department

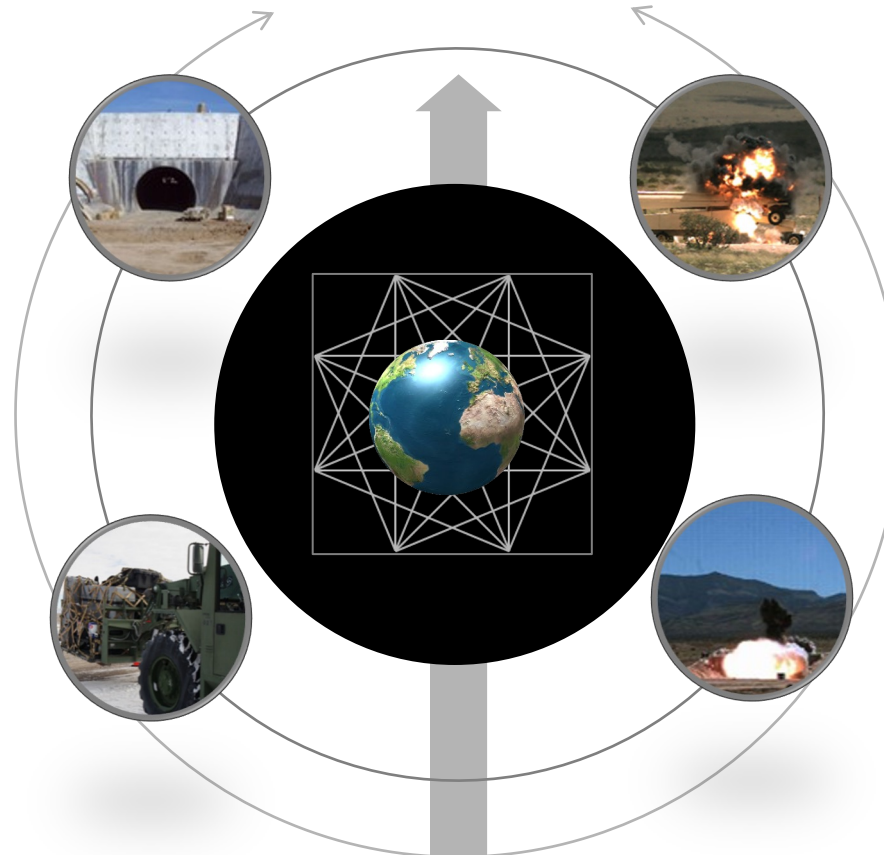
RD-TS provides objective evaluations of new capabilities to support the DTRA mission and national priorities through tests and assessments

Environmental & Safety

- Eliminate or mitigate hazards in the workplace to reduce or eliminate the exposure of our employees to hazards associated with testing and the construction environment

Integration & Resource

- Ensure effective and efficient use of resources



Test Division

- Conduct Test & Evaluation to maintain U.S. superiority in countering WMD and emerging threats
- Mitigate the risks of technology surprise
- Respond to Joint Force's urgent requirements

Sensitive Assessments

- Conduct rapid assessments to enable the DoD to deter, prevent, and prevail against WMD-armed adversaries and emerging threats



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RD-OP: Operations Department

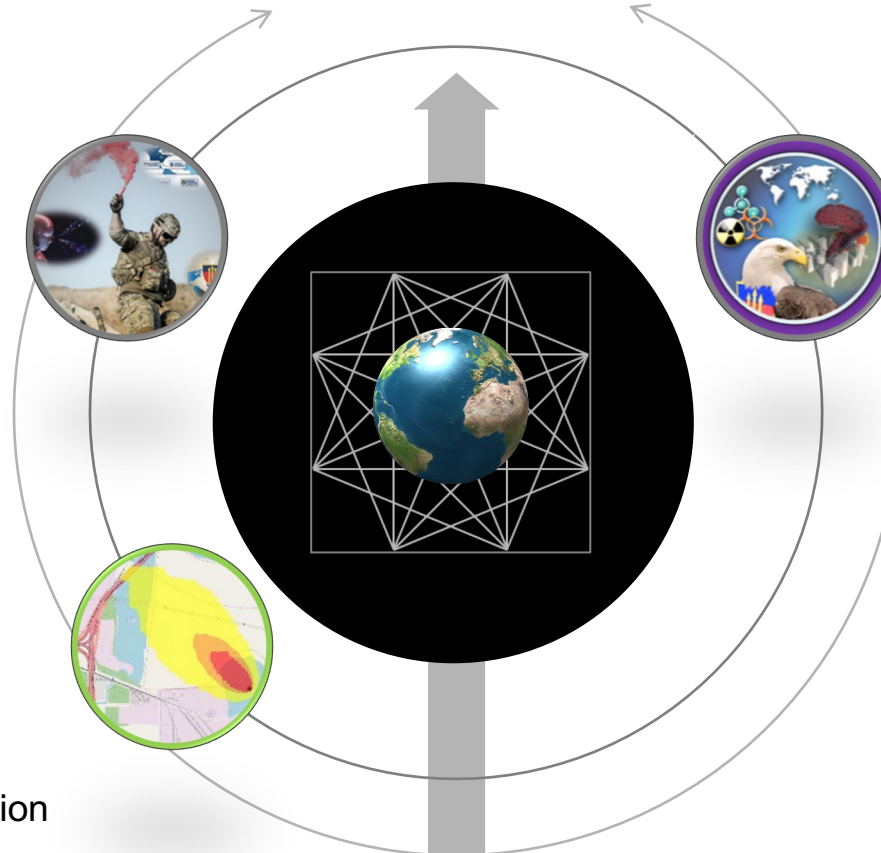
RD-OP integrates RDT&E operations, activities and investments (OAI) across the RD Departments and the Agency, as well as with external customers

Integration

- Works across all RD departments and investments to ensure effective integration in areas including:
 - Directorate-wide acquisitions
 - Data visualization
 - Customer request management
 - International S&T Cooperation
 - Small business (SBIR/STTR)

Technical Reachback

- Provides 24/7 manned CBRNE decision support capability for planning, operations, and post-event analysis
- Serves as the technical focal point for National CWMD Technical Reachback Enterprise analysis, modeling, and simulation



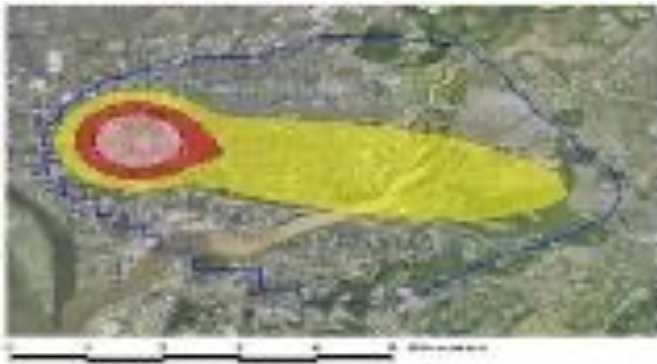
Enabling Capabilities

- Manages DTRA's basic research program and provides computational services, support, and coordination for the Directorate
- Includes supporting software development, through the DTRA Experimentation Laboratory (DEL), brokering access to High Performance Computing (HPC), and coordinating across programs harnessing Artificial Intelligence (AI).



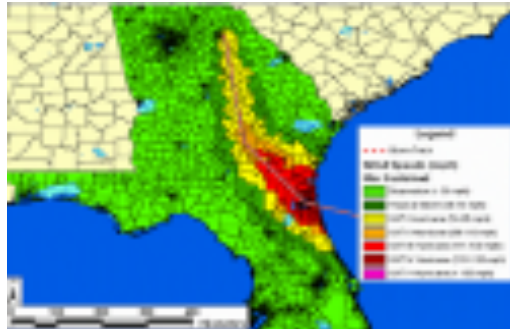
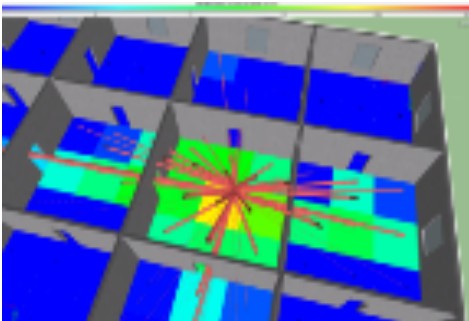
RD-OP: Technical Reachback

Technical Reachback provides 24/7 CBRNE subject matter expertise, decision support capability for planning, operations, and post event analysis to OSD, the Combatant Commands, and other U.S. Government partners.



Modeling Tools used by Reachback:

- Atmospheric Plume Modeling
- Waterborne & Natural Hazard Modeling



Reachback Priorities:

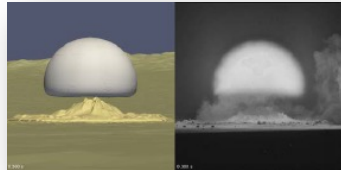
- Operational support
- Enabling activities
- Epidemiological modeling
- Nuclear modeling
- Post event analysis



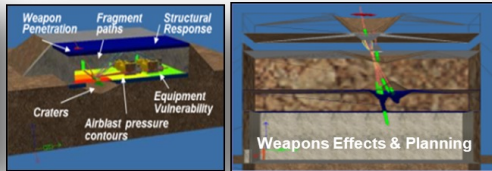
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Developing Capabilities to Fight and Win on the CBRN Battlefield

Deliver tools that enable effective targeting of U.S. weapons and inform the consequences of attacks



Nuclear Effects



Conventional Effects

Equip forces to operate effectively on the nuclear battlefield



Mobile Field Kit-CBRN automates collection, sharing, and display of data

MERLIN / VIPER Standoff Radiation Detection



Provide technologies, standards, historical data, and testing to ensure forces can survive and fight



Test bed structure to support full-spectrum testing

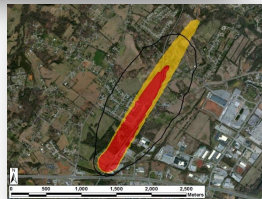
Test concepts and plans through rigorous wargaming

M&S to enable planning and training

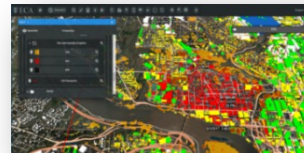


24/7 technical analysis of CBRNE questions

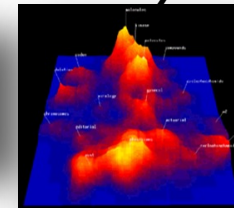
24/7 Access to DTRA M&S tools & experts to interpret results



Deliver integrated, cloud-ready, AI-enhanced applications and data analysis



Situational Awareness Tools



Protect the U.S. Joint Force with advanced medical countermeasures and



Prophylactic and medical countermeasure treatment options unburden and protect the U.S. Joint Force

Rapid Analysis of Threat Exposures technology allows data from wearable devices to warn of COVID-19 infections prior to the onset of symptoms



DTRA R&D Summary

DTRA Provides:

- Science, technology, and capability development investments that maintain the U.S. military's technological superiority
- An integrated and coordinated portfolio that leverages the DoD, Interagency, and international partners providing support to our U.S. Joint Forces.
- Comprehensive R&D investment to increase agility, respond to new or changing Combatant Command requirements, as well as national, and DoD CWMD priorities



**For more information, please visit us at
www.dtra.mil**

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