# Developing Capabilities to Combat Weapons of Mass Destruction

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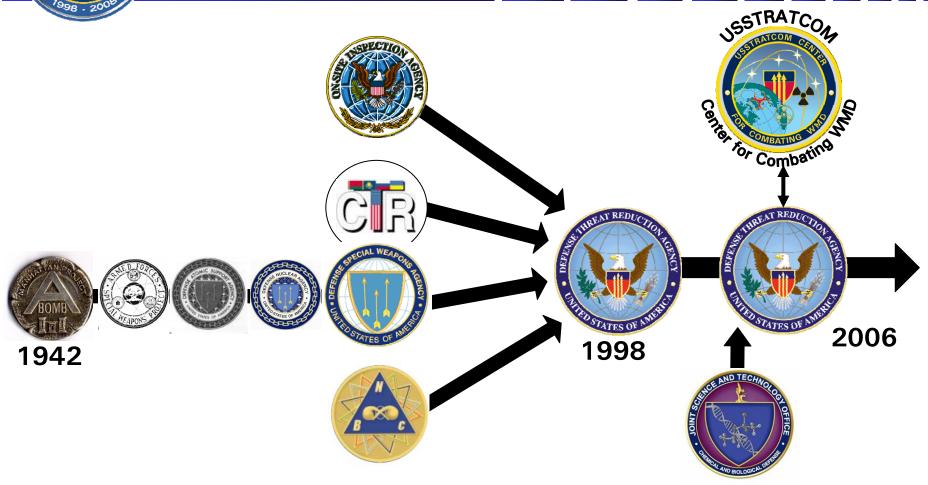




- DTRA Past & Present
- DTRA's Mission and Organization
- DTRA's Campaigns
- Support to the Combatant Commands
  - USSTRATCOM Combating WMD Center
  - Joint Elimination Coordination Element
- Grand Challenges for the Future



## Defense Threat Reduction Agency Transforming for 21<sup>st</sup> Century Threats





## Responding to 21<sup>st</sup> Century Threats

"The growing spread of weapons of mass destruction provides small groups of individuals with the ability to deliver devastating harm to the United States." - Defense Science Board, May 2007 (2005 Summer Study on Reducing Vulnerabilities to Weapons of Mass Destruction)

"That's the thing that keeps me up at night....that there are terrorist organizations like al-Qaida actively seeking weapons of mass destruction, and there is no doubt in my mind that if they get one, they will use it against a developed society." - General George Casey, US Army Chief of Staff, December 18, 2007, Addressing State of the Army, Stars and Stripes Magazine





National Guard Exercise

– CBRN attack



Multiple Nuclear Explosions



Aging and Dangerous WMD Stockpiles



### **DTRA** has a Critical Mission

•To safeguard the United States and its allies from weapons of mass destruction (chemical, biological, radiological, nuclear and high-yield explosives) by providing capabilities to reduce, eliminate and counter the threat and mitigate its effects



Chemical Weapon Elimination Site, Albania



International
Counterproliferation Program
Integrated Exercise,
Armenia, October 06



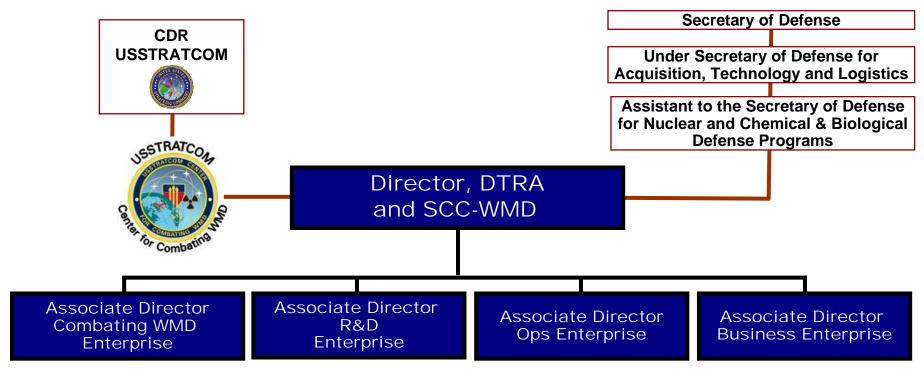
Arms Control Inspections



Hard and Deeply Buried Target Defeat



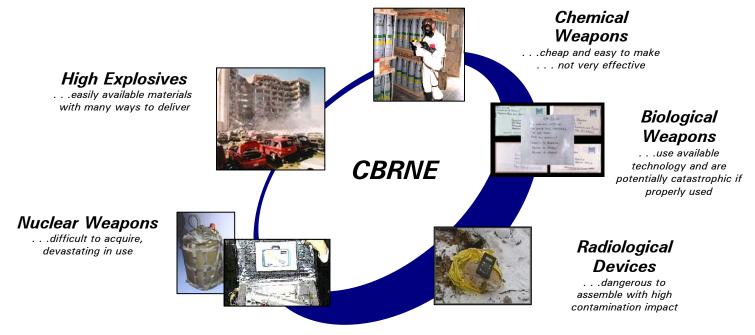
## **Organization and Relationships**





## **RD Enterprise Mission**

 Identify, conduct, and deliver innovative science and technology, through systematic, risk-balanced processes, that enable America to combat Weapons of Mass Destruction. Our system engineering activities provide for research, development, and acquisition to support the needs of Combatant Commanders, Services and DTRA





## **RD Enterprise Portfolios**

## Nuclear Technologies RD-NT

 Mission: Research, develop and demonstrate technologies and capabilities to mitigate the threat and/or effects of nuclear and radiological events; and to enhance the safety, security, survivability, and performance of U.S. nuclear assets and facilities

Nuclear Forensics
Ground Sample Collection ATD



## Counter WMD Technologies RD-CX

 Mission: Research, develop and demonstrate innovative technologies and capabilities to actively counter the full spectrum of CBRNE threats

Combating Terrorism Prevention of Structural Collapse



## Chem/Bio Technologies RD-CB

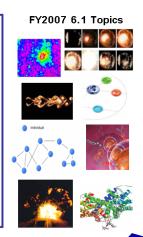
 Mission: Manage and integrate the development, demonstration, and transition of timely and effective chemical and biological defense solutions for the Department of Defense, while serving as the focal point for science and technology expertise



Diagnostics

## Basic and Applied Sciences RD-BA

- Mission: To foster and enable farsighted, high payoff research to reduce, eliminate, counter and mitigate the effects of weapons of mass destruction (WMD) by:
  - Advancing fundamental knowledge and understanding in the sciences
  - 2. Utilizing best practices in systems engineering





## **Technology Innovation**

RD Innovation Office - Advance a work environment that creates new ideas, concepts and capabilities to solve hard problems for the **Combating WMD mission** 

International Collaboration



**Small Business Innovation Program** 



**Broad Agency** 







**Discovery of Innovative Technologies and Capabilities** 











**Novel Counter IED Tools** 

State-of-the-art Technology

**Pixel Interrogation** Hunter / Gatherer of Ideas

**Chemical Detection** Badge

Market Research



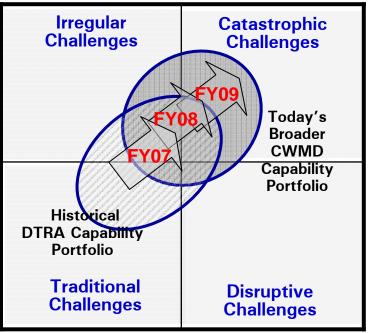
## **Top Challenges and Program Areas**

The complexity and evolution of the threat demands that we change our investment to meet the most pressing challenges









Evolution of R&D Efforts

Transformational Goal - Reduce
the time to close capability gaps

#### **Top Program Areas**

- Technology Innovation
- Deployable Technical Intelligence Laboratory
- Nuclear Forensics
- Nuclear Survivability
- Hard & Deeply Buried Targets
- Advanced Energetics for Weapons
- WMD Threat Research and Analysis Collaboration (WTRAC)
- Chem/Bio Applied Technology Dev
- Transformational Medical Technologies Initiative
- Basic Research Engagement





## Concept

## Deployable Technical Intelligence Laboratory

#### Modular

Adaptable to meet requirements

#### Mobile

- Rapid deployment
- At-the-ready set up

#### Self Contained

- Generator power
- Climate control
- Outfitted with ruggedized state of the art equipment

#### Multifunctional

- Administration
- Electronics
- Analysis
- Satellite communications







## State and Local Forensic Challenges

- National Emergency Response (9/11)
- Catastrophic events, WMD or natural disasters (Katrina)
  - Resources burdened beyond capabilities
  - Supplementing functional laboratories to reduce backlog













## DOD-DOJ Partnership

### **NIJ Mobile Forensic Laboratory**

- Developing a readily deployable forensic laboratory
- Examining, identifying, comparing and storing evidence
- Linking suspect, victim, and crime scene through analysis of physical evidence
- Supporting existing forensic operations in the aftermath of a catastrophic event







### **Communications**

Interoperable secure communications capability with a national support infrastructure, including national databases, virtual experts and others within the criminal justice community





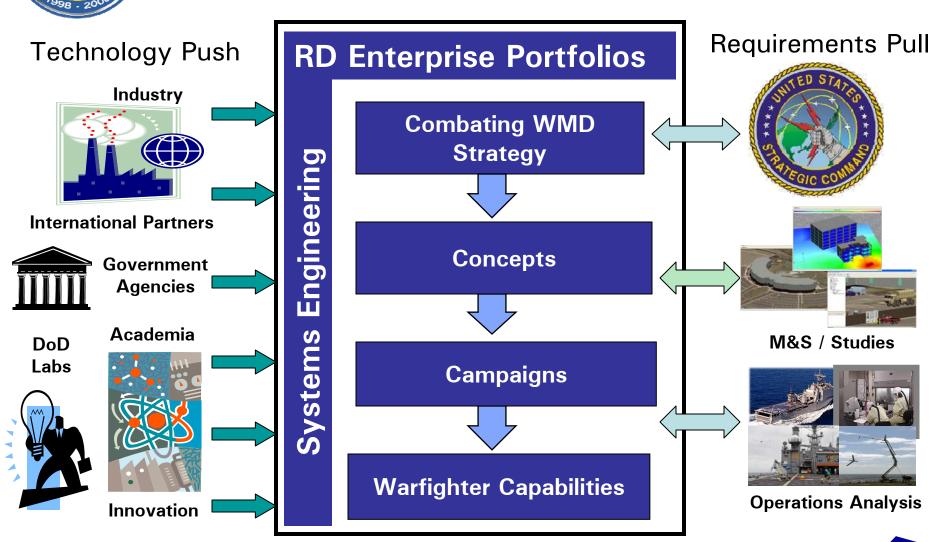








## **R&D** Coordination and Integration





## DTRA Campaigns: Agency-wide projects to provide enhanced capabilities

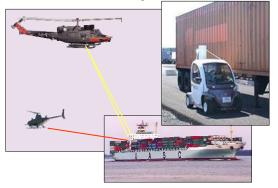
#### Situational Awareness



Control WMD Materials and Systems Worldwide



Defeating the Threat of Lost or Stolen (Loose) Nuclear Weapons





Eliminate WMD as a Threat to the Warfighter



Protect the Homeland from WMD



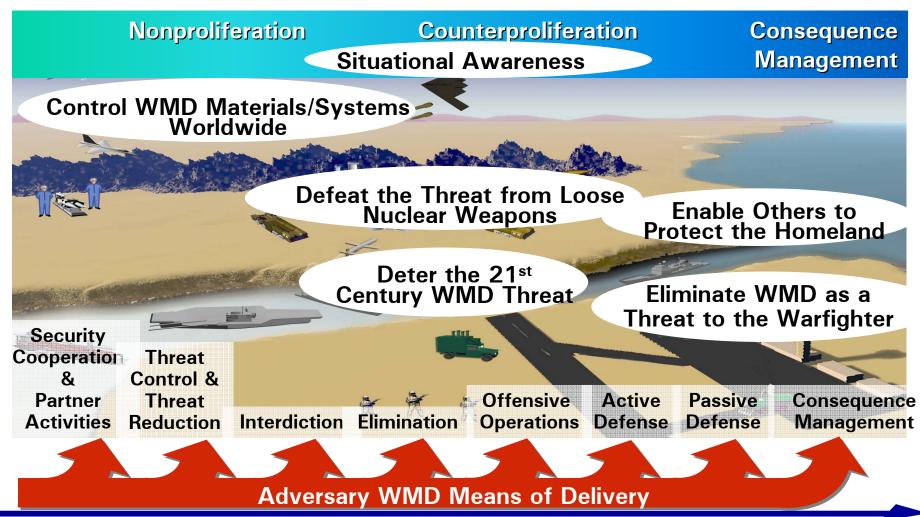
Transforming the Deterrent

**Business Excellence** 





## Campaigns Provide an Integrated Approach to Combating WMD





## **SCC-WMD: Plans for Mission Success**

- Deter and prevent the acquisition, development or use of WMD, associated technology and related material
- Leverage around-the-clock situational awareness of worldwide WMD and related activities
- Plan, advocate and advise combatant commands on WMD related matters
- Provide critical reachback and resources to USSTRATCOM and combatant commands





- A net-centric tool designed to support the WMD warfighter
- Built on a service-oriented architecture using web services to share data, available via standard SIPR terminal without client footprint
- Incorporates a geo-spatial viewer providing common operating picture-like views
- Operational Reachback



## Joint Elimination Coordination Element (JECE)

- JECE responds to 2006 QDR task to establish a deployable JTF headquarters for WMD elimination
  - Expands capabilities to enable it to serve as a JTF-E HQ
  - Provides immediate command and control for forces executing WMD elimination missions
- JECE also brings joint planning capability and training & exercise capability for WMD elimination mission



- Joint Staff manpower validation
- Ongoing combating WMD mission support to CENTCOM
- Future plans
  - Co-locate JECE with CBRNE support element
  - USJFCOM is establishing authority for Joint Task Force -Elimination





## **Grand Challenges for the Future**

- Today's challenge how does DoD support the search for and neutralization of a loose nuclear weapon in a U.S. city?
  - Investments in nuclear forensics and detection technologies
  - Creation of a National Weapons Effects Federation
- Tomorrow's challenge given advances in biological sciences and the global economy, how does DoD support the deterrence and defeat of biological terrorism?
  - Investments in continuing biological science excellence
  - Expanding arms control efforts into biological threat reduction



## Making the World Safer...

















...by combating weapons of mass destruction