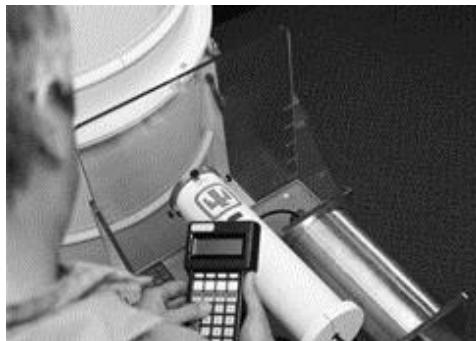


Exceptional service in the national interest



Mitigating Chemical, Biological, and Radiological Threats

AAAS 2014 Annual Meeting, Chicago, IL, 16 February 2014

Jill Hruby,
Vice President International, Homeland, and Nuclear Security,
Sandia National Laboratories



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2013-0161C Modified 07/13

2001 events changed the way the US views terrorism



Image courtesy of Creative Commons

Use of S&T to counter WMD and terrorism became a key element of US government strategy

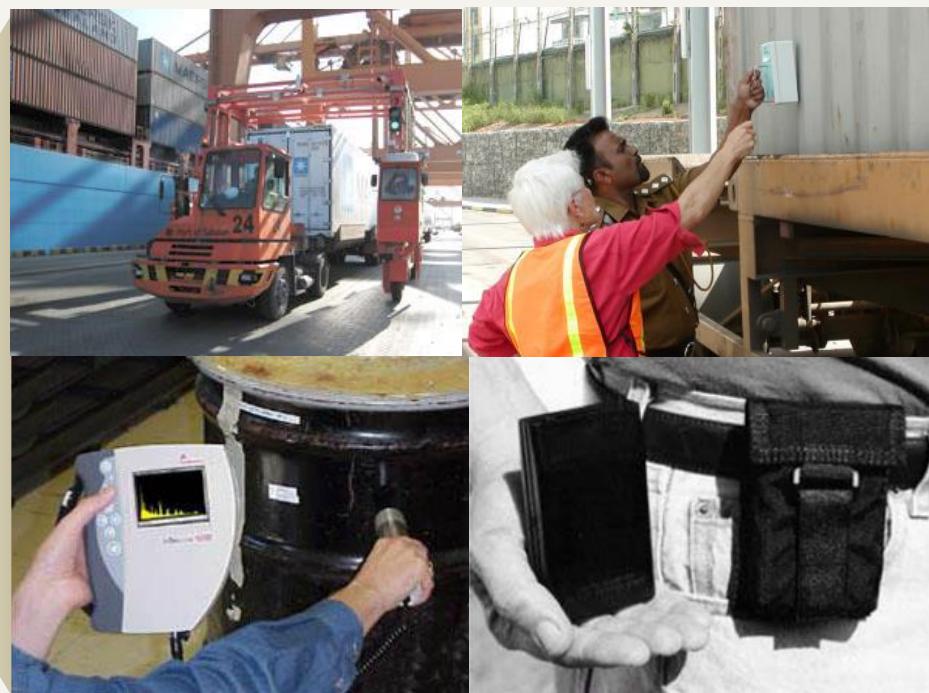


Implementing those strategies drove an intensive national effort

- Initial efforts focused on getting help to where we thought there was immediate need— urban area first responders, border and immigration agents, airport security agents.
- A new department—DHS—was created and many other agencies and states created “homeland security” or “homeland defense” offices.
- Many existing technology solutions were deployed, and some new ones were developed.
- The public encouraged increased government funding, and the private sector saw opportunity.
- But very few complete systems were deployed, and none had lifecycle improvement or sustainment plans.



Rad detection moved from the lab to operations in ports and airports and on the belts of first responders



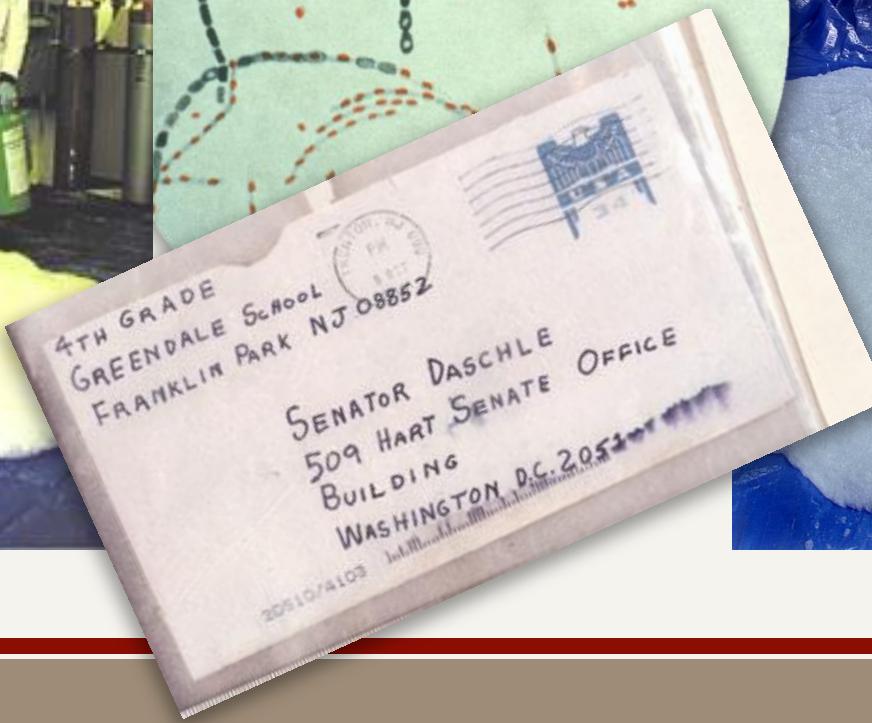
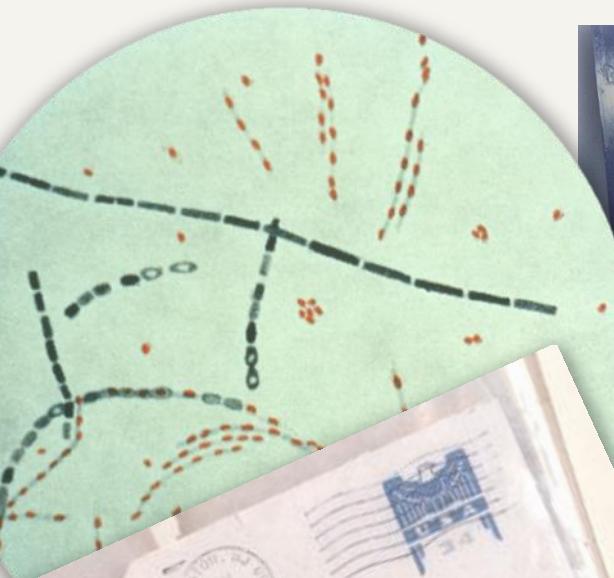
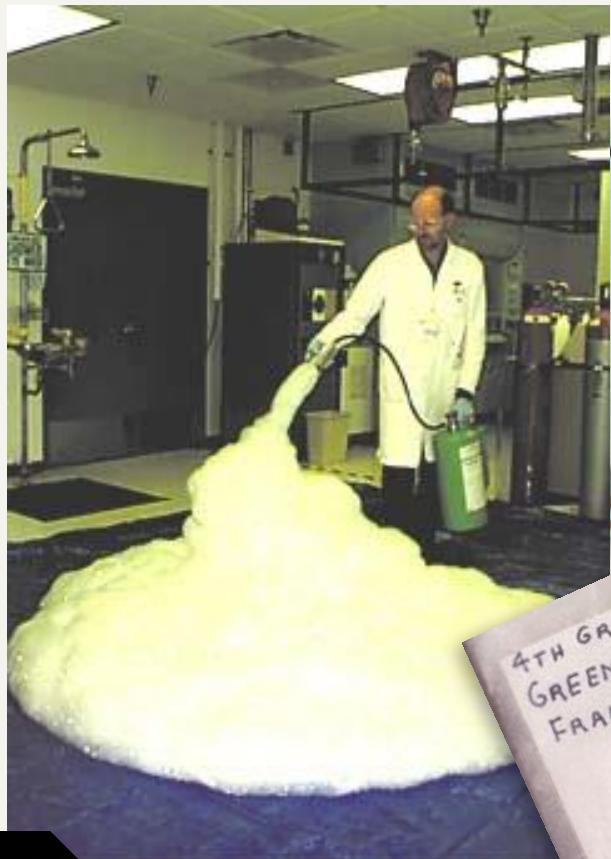
Biosurveillance was deployed to many cities around the country



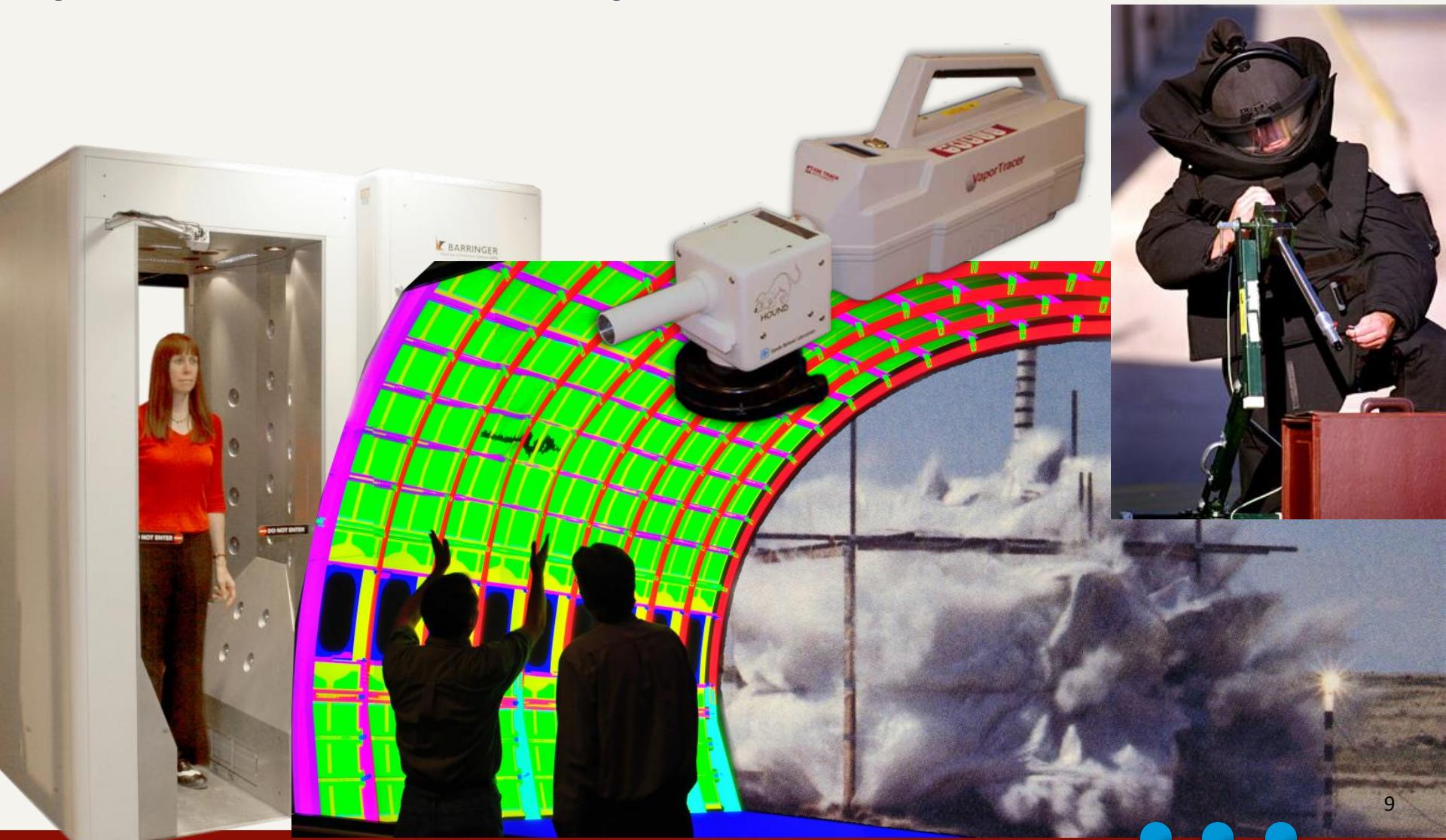
Protecting critical infrastructure was a priority



Ability to decontaminate large areas after a biological attack was recognized as an urgent need



Need for explosives detection and protection rose in importance



Managing the chemical threat continued, at lower priority



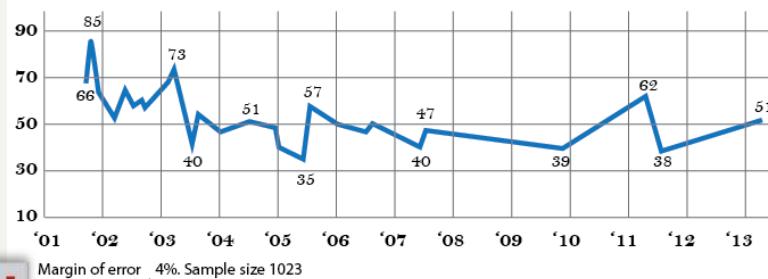
After initial technology deployments, effort was directed toward life-cycle costs and advanced threats.

National security environment has changed

- After a period of high energy and focus, national level of interest and urgency dropped.
 - Sense of the threat diminished because of no successful domestic terrorist attacks.
 - Meanwhile, issues like the housing crisis, foreign wars, and health care drove the headlines.
 - AND public perception is that costs were not managed well.
- Therefore, resources to work these complex problems are increasingly scarce.

Perceived likelihood of Acts of Terrorism Occuring in Next Few Weeks
How likely is it that there will be acts of terrorism in the U.S. over the next several weeks -- very likely, somewhat likely, not too likely, or not at all likely?

■ % very/somewhat likely



Statistics courtesy of Gallup, Inc.



HOWEVER...WMD and terrorism risks continue to increase and evolve

U.S. Chides Syria on Missed Chemical Arms Deadlines

GLADSTONE and THOM SHANKER JAN. 30, 2014



Angered over a missed deadline in Syria's pledge to export its chemical weapons, the United States sharply criticized the government of President Bashar al-Assad on Thursday, accusing him of stalling their removal and — in a new complaint — weakening the country's promise to destroy the 12 facilities that produced them.

The criticisms, expressed by Defense Secretary Chuck Hagel and the United States

Luton terrorist plot: Terror cell inspired by al Qaeda planned to blow up army base with bomb on remote-controlled car

The four terrorists spent hours reading extremist magazines and manuals on bomb-making and explosives and trained in Snowdonia

Hackers hit

"What's been taken is bits of data that the [intelligence agencies] put together into an identity."

Sochi Alert Urges 'Vigilance' Against Terrorism During Olympics

Jan 10, 2014 2:41pm

REUTERS WASHINGTON, APRIL 18, 2013 | UPDATED 07:45 IST

Letter sent to Obama tested positive for deadly poison ricin, confirms FBI

Secret Service | FBI

US President

TUESDAY, DEC



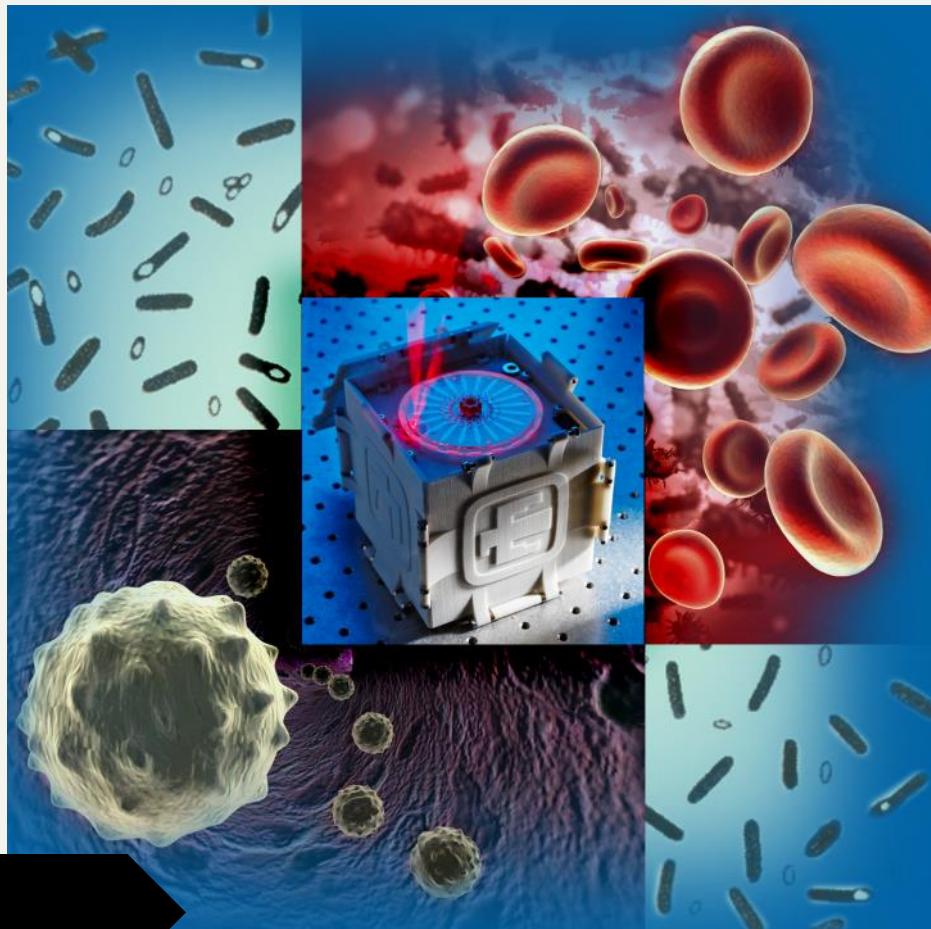
Work continues— but moving forward is challenging

- Federal funding for technology development tends to be directed along stovepipes and at point solutions; but to be effective, systems-level efforts must balance lifecycle sustainment against optimizing installed systems and the potential for tech surprise.
- Successful technology deployment often requires differentiating terrorism from other hazardous and/or illicit activities—while making everyday activities more efficient...
 - Locating smuggling of drugs AND rad sources
 - Distinguishing natural outbreaks from biological attacks
 - Detecting illegal immigration as well as terrorist networks

The community that provides technology solutions needs to think broadly about how to succeed in this environment.

Some major successes have been leveraged across many types of solutions

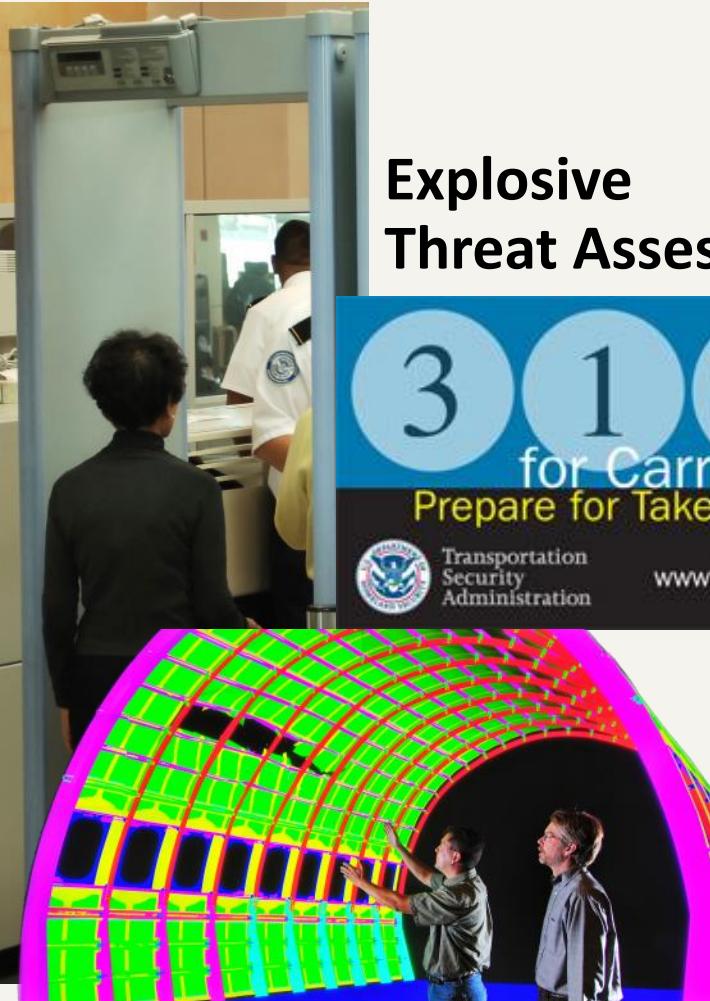
SpinDX



Decontamination Foam



Some have worked to combine major elements to design a systems solution and increase resilience



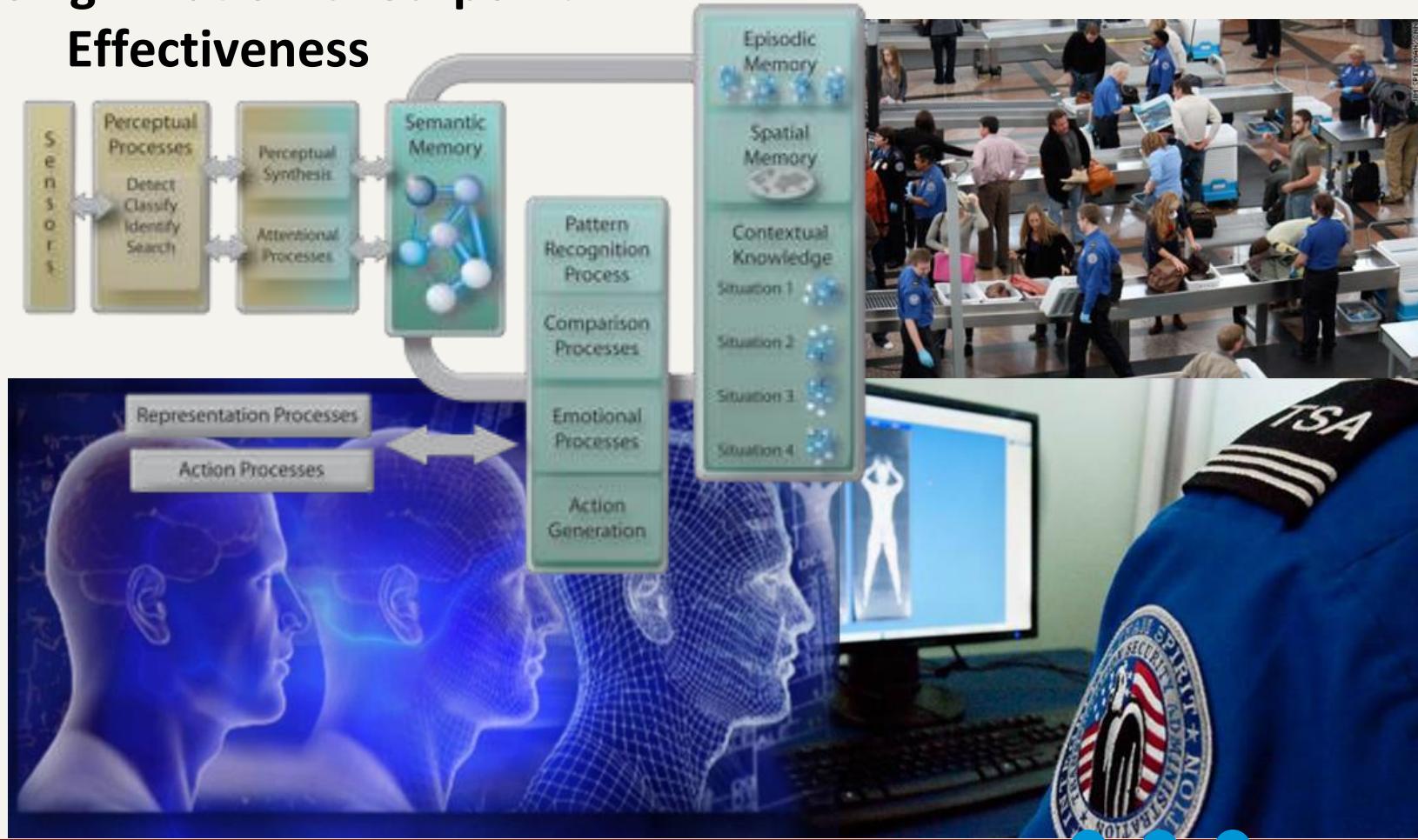
Explosive Threat Assessment

Prioritizing Urban Area Decontamination



Some have highlighted the importance of the human element of the system

Increasing Aviation Checkpoint Effectiveness

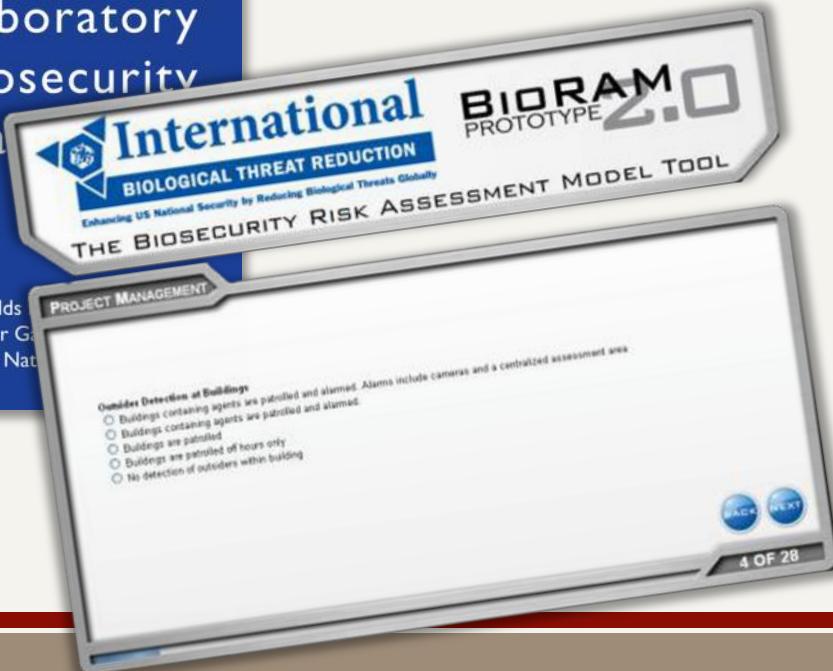


Some have helped guide the global community of practice to more effective security

Training Next Generation Security Experts



Laboratory
Biosecurity
Handbook



International
BIOLOGICAL THREAT REDUCTION
Enhancing US National Security by Reducing Biological Threats Globally

BIORAM PROTOTYPE 2.0

THE BIOSECURITY RISK ASSESSMENT MODEL TOOL

PROJECT MANAGEMENT

Outsiders Detection at Buildings

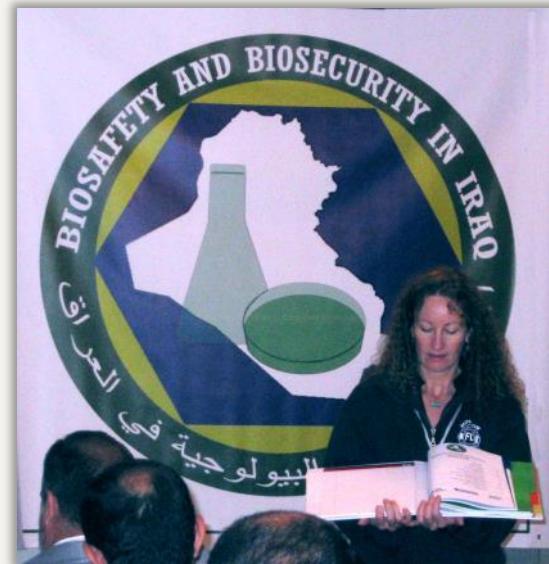
- Buildings containing agents are patrolled and alarmed. Alarms include cameras and a centralized assessment area
- Buildings containing agents are patrolled and alarmed
- Buildings are patrolled
- Buildings are patrolled off hours only
- No detection of outsiders within building

BACK NEXT

4 OF 28

Reynolds
Jennifer G.
Sandia Nat.

Universal
Standards



Preparing for future threats...

- The risks will continue to increase and change, testing our ability to respond. We need to help the nation **think ahead**.
- Because of the nature of current threat agents - anticipating, understanding, and characterizing the major risks to national security requires **technical experts and expertise**.
- Similarly, creating effective solutions requires **multidisciplinary technical skills along with an understanding of the system** to identify and shore up the most critical vulnerabilities.
- Successful engagement of solution providers often requires innovations that work in **multiple applications** – including those outside of national security.

...this is the moment to ask ourselves hard questions -- about the nature of today's threats and how we should confront them.

- President Obama, National Defense University speech

