The Role of Academia in Homeland Security

Dr. Robert Griffin
Director of First Responder Programs
DHS Science and Technology Directorate
At the inception of DHS in March 2003, the Science and Technology Directorate filled a unique niche in the Department as a start-up operation.

Leadership: Tara O’Toole, M.D., M.P.H., Under Secretary for Science and Technology

Dr. Tara O’Toole, M.D, M.P.H.
Under Secretary for Science and Technology
Department of Homeland Security
IRREGULAR WARFARE
SUBVERT, COERCE, ATTRIT, EXHAUST

A violent struggle among state and non-state actors for legitimacy and influence over the relevant population.
History Repeats Itself?

Can anyone name the speaker?

When and where the remarks were made?

President John F. Kennedy

USMA Commencement, June 1962
At Home and Abroad: U.S. Remains a Prime Target
Quadrennial Homeland Security Review

<table>
<thead>
<tr>
<th>Vision</th>
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<td>A Homeland that is safe, secure and resilient against terrorism and other hazards where American interests, aspirations, and way of life can thrive.</td>
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## The Core Missions

1. Preventing terrorism and enhancing security;
2. Securing and managing our borders;
3. Enforcing and administering our immigration laws;
4. Safeguarding and securing cyberspace; and
5. Ensuring resilience to disasters.
## Threats and Hazards

- High-consequence weapons of mass destruction
- Al-Qaeda and global violent extremism
- High-consequence and/or wide-scale cyber attacks, intrusions, disruptions, and exploitations
- Pandemics, major accidents, and natural hazards
- Illicit trafficking and related transnational crime
- Smaller scale terrorism

## Global Challenges and Trends

- Economic and financial instability
- Dependence on fossil fuels and the threats of global climate change
- Nations unwilling to abide by international norms
- Sophisticated and broadly available technology
- Other drivers of illicit, dangerous, or uncontrolled movement of people and goods
## DHS: 3rd Largest Department

<table>
<thead>
<tr>
<th>Agency</th>
<th>Description</th>
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<tbody>
<tr>
<td>USCG</td>
<td>Coast Guard</td>
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<tr>
<td>USSS</td>
<td>Secret Service</td>
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<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
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<tr>
<td>CBP</td>
<td>Customs and Border Protection</td>
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<tr>
<td>ICE</td>
<td>Immigration and Customs Enforcement</td>
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<tr>
<td>USCIS</td>
<td>Customs and Immigration Services</td>
</tr>
<tr>
<td>TSA</td>
<td>Transportation Security Administration</td>
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### 2010 Budget: $44B

- **USCG**: 18%
- **FEMA**: 19%
- **CBP**: 20%
- **ICE**: 10%
- **USCIS**: 5%
- **USSS**: 3%
- **TSA**: 14%
- **Other**: 11%
DHS S&T Mission:

Strengthen America’s security and resiliency by providing innovative science and technology solutions for the Homeland Security Enterprise.
Homeland Security Technology Enterprise

NON-FEDERAL GOV’T PARTNERS
- State
- Local
- Tribal
- Territorial

PRIVATE SECTOR PARTNERS
- Industry
- Associations
- International

FEDERAL PARTNERS
- DHS Labs
- National Labs
- DHS/S&T RESEARCH AFFILIATES
- FFRDCS Centers of Excellence
- DOD
- DOE
- DOJ
- DOT
- EPA
- HHS
- NASA
- NIST
- NIH
- NSF
- NOAA
- UARCs

NON-FEDERAL PARTNERS
- Federal Government
- State
- Local
- Tribal
- Territorial

INTERNATIONAL INDUSTRY ASSOCIATIONS
- Federal Partners
- Non-Federal Government
- Private Sector Partners
- Federal Research Centers
- DHS S&T Directorate
- DHS S&T Directorate
- Homeland Security
- Department of Homeland Security
DHS S&T Laboratories

Transportation Security Laboratory

National Biodefense Analysis and Countermeasures Center (NBACC)

National Urban Security Technology Laboratory

Plum Island Animal Disease Center

SRF/Chemical Security Analysis Center

... DHS S&T has five dedicated labs and access to DOE National Labs
International Collaborations: S&T Bilateral Partners in Research

Australia, Germany, Israel, Canada, Mexico, Singapore, France, New Zealand, Sweden, United Kingdom
DHS University Programs in Brief

- 12 Homeland Security Centers of Excellence aligned with one or more of the six DHS S&T divisions
- Over 200 U.S. colleges and universities, including several Minority Serving Institutions (MSIs)
- More than 180 other partners from laboratories, private industry and think tanks
- 47 states and territories represented
- Approximately 550 Scholars and Fellows (since 2003)
- Scholarships and fellowship opportunities in 17 research areas
- Science and engineering education grants for universities and MSIs
12 DHS Centers of Excellence

1. Center for Risk & Economic Analysis of Terrorism Events (CREATE)
   - Lead: University of Southern California

2. National Center for Foreign Animal & Zoonotic Disease Defense (FAZD)
   - Lead: Texas A&M University

3. National Center for Food Protection & Defense (NCFPD)
   - Lead: University of Minnesota

4. National Consortium for the Study of Terrorism & Responses to Terrorism (START)
   - Lead: University of Maryland

5. Center for Advancing Microbial Risk Assessment (CAMRA)
   - Lead: Michigan State University, in Partnership with U.S. EPA

6. National Center for Preparedness & Catastrophic Event Response (PACER)
   - Lead: Johns Hopkins University

7. Center for Awareness and Location of Explosives-Related Threats (ALERT)
   - Research Co-Lead: Northeastern University
   - Education Co-Lead: University of Rhode Island
12 DHS Centers of Excellence

8. National Center for Border Security and Immigration (NCBSI)
   - Research Co-Lead: University of Arizona
   - Education Co-Lead: University of Texas at El Paso

9. Center for Maritime, Island and Port Security (MIPS) - meets Safe Ports Act
   - Maritime and Islands Co-Lead: University of Hawaii (CIMES)
   - Port Security Co-Lead: Stevens Institute of Technology (CSR)

10. Natural Disasters, Coastal Infrastructure and Emergency Management (NDCIEM)
    - Research Co-Lead: University of North Carolina at Chapel Hill (DIEM)
    - Education Co-Lead: Jackson State University (NDCIEM)

11. National Transportation Security COE (NTSCOE) – Required by HR-1
    - Research Co-Lead: University of Connecticut
    - Education & Training Co-Lead: Tougaloo College
    - Petro-Chemical Transportation Co-Lead: Texas Southern University

12. Command Control and Interoperability (C2I)
    - Co-Lead: Purdue University
    - Co-Lead: Rutgers University
Study of Terrorism: Social and Behavioral Research
DHS Centers of Excellence

National Consortium for the Study of Terrorism and Responses to Terrorism (START) COE

Research Lead: University of Maryland

- Conducts basic social and behavioral science research aimed at understanding the formation and dynamics of terrorist groups, and impacts of terrorism.
- Largest terrorist event database with more than 80,000 events including worldwide terrorist attacks that have occurred since 1970
- Provides increased accuracy in terrorist trend analysis
- Addresses need for comprehensive, up-to-date unclassified database of terrorist incidents for use by researchers and intelligence analysts

**Sensor Suite**

**IR Carotid Monitoring Via BioLIDAR**
- **Eye Safe Light Detection and Ranging (LIDAR)**
  - Measures Heart and Respiration Rates

**Cardio and Respiratory Monitoring Via Doppler Radar**
- Low Power, Radio Frequency Energy used to Measure Heart and Respiration Rates

**Ocular Monitoring Via Eye Tracker**
- Measures Blink, Gaze, Pupil Diameter

**Facial Thermal Signature Monitoring Via Infrared Cameras**
- Detects Small Changes in the Skin’s Thermal Properties

- **Also includes Strain Gauges to Measure “Fidget” Activity**
Resilient Electric Grid
GLANSER - Geospatial Location Accountability and Navigation System for Emergency Responders
DHS Privacy Office

Mission Statement:
To preserve and enhance privacy protections and promote transparency of government operations while achieving the DHS mission.

The Privacy Office:
- Works within DHS to ensure privacy issues are addressed when updating, planning or implementing programs, systems or initiatives.
- Ensures that technologies used at DHS sustain, and do not erode privacy protections.
- Requires compliance with letter and spirit of federal laws promoting privacy.
- Provides education and outreach to build a culture of privacy and adherence to fair information principles across DHS.
- Communicates with public through published materials, formal notice, public workshops and meetings.

For more information, visit www.dhs.gov
Strengthening Community Relations

Enhancing Public Acceptance & Human Performance

- Enhancing safety, effectiveness, and usability of technology by systematically incorporating user and public input

- Community Perceptions of Technology Panels include experts from industry, public interest, and community-oriented organizations to identify acceptance issues

- Human Systems Research & Engineering optimizes human performance through improved selection, training, and advanced technologies

Where Human, Privacy and Technology Intersect
The Challenge: Strengthening Security in a Connected, Internet-Enabled World
Thoughts on a Career in Government