U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON HOMELAND SECURITY
SUBCOMMITTEE ON CYBERSECURITY, INFRASTRUCTURE PROTECTION, AND
SECURITY TECHNOLOGIES
AND
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY

JOINT SUBCOMMITTEE HEARING

Strategy and Mission of the DHS Science and Technology Directorate

Tuesday, September 9, 2014
10:00 a.m. – 12:00 p.m.
311 Cannon House Office Building

Purpose

On Tuesday, September 9, 2014 the Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies of the Committee on Homeland Security and the Subcommittee on Research and Technology of the Committee on Science, Space, and Technology will hold a joint oversight hearing to review the strategy, mission, programs, projects, and other activities of the Science and Technology Directorate of the Department of Homeland Security (DHS S&T).

Witnesses

- **The Honorable Reginald Brothers,** Under Secretary for Science and Technology, Department of Homeland Security

- **Mr. David C. Maurer**, Director, Homeland Security and Justice, U.S. Government Accountability Office

Background

The DHS S&T Directorate has primary responsibility for bringing new technologies to full readiness with support from other agencies, including the Department of Defense and National Institute of Standards and Technology.

In 2002, Title III of the Homeland Security Act (PL 107-296) established the role of Undersecretary for Science and Technology, the Directorate for S&T, and the Homeland Security Advanced Research Projects Agency (HSARPA) within DHS. The S&T Directorate is responsible for managing and carrying out scientific research and technology development for federal homeland security needs and coordinating this research with other federal research

entities.[1] The Committee on Science, Space, and Technology shares oversight jurisdiction of the S&T Directorate with the Homeland Security Committee. The current organization of the directorate has been in place since 2010.[2]

DHS S&T's mission statement is to strengthen America's security and resiliency by providing knowledge products and innovative technology solutions for the Homeland Security Enterprise (HSE). [3]

- Operationally Focused: S&T provides the Homeland Security Enterprise (HSE) with strategic and focused technology options and operational process enhancements.

- Innovation: S&T seeks innovative, system-based solutions to complex homeland security problems.

- Partnerships: S&T has the technical depth and reach to discover, adapt and leverage technology solutions developed by federal agencies and laboratories, state, local and tribal governments, universities, and the private sector - across the United States and internationally.[4]

Science and Technology Directorate (DHS S&T) Spending
(dollars in millions)

Account	FY13* Enacted	FY14** Enacted	FY15 Request	FY15 Request versus FY14 Enacted $	%
Science and Technology Directorate					
Acquisition and Operations Support	*46.0*	*41.7*	*41.7*	*-*	*-*
Laboratory Facilities	*158.1*	*547.8*	*435.2*	*(112.6)*	*(21)*
Research, Development, and Innovation	*425.3*	*462.0*	*433.8*	*(28.2)*	*(6)*
University Programs	*38.3*	*39.7*	*31.0*	*(8.7)*	*(22)*
Management and Administration	*126.5*	*129.0*	*130.1*	*1.1*	*.85*
Totals:	**797.1**	**1,220.1**	**1,071.8**	**(148.3)**	**(12)**

*FY 13 totals include emergency/supplemental funding and rescission.
**FY 14 totals include a rescission.

Source: FY 2015 Budget in Brief – Homeland Security[5]

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[1] Title III of P.L. 107-296, available at: http://www.gpo.gov/fdsys/pkg/PLAW-107publ296/pdf/PLAW-107publ296.pdf.
[2] DHS Science and Technology Directorate, available at: https://www.dhs.gov/sites/default/files/publications/ST%20Org%20Chart-12-2012_0.pdf.
[3] http://www.dhs.gov/science-and-technology-directorate
[4] Ibid.
[5] http://www.dhs.gov/sites/default/files/publications/FY15BIB.pdf p. 145-151

DHS S&T is organized into four groups that work to ensure each aspect of S&T's work (operational analyses, requirements generation, test and evaluation, technology development, and acquisition support) is given the appropriate emphasis.

This is how the S&T Directorate is organized:

Science and Technology Directorate
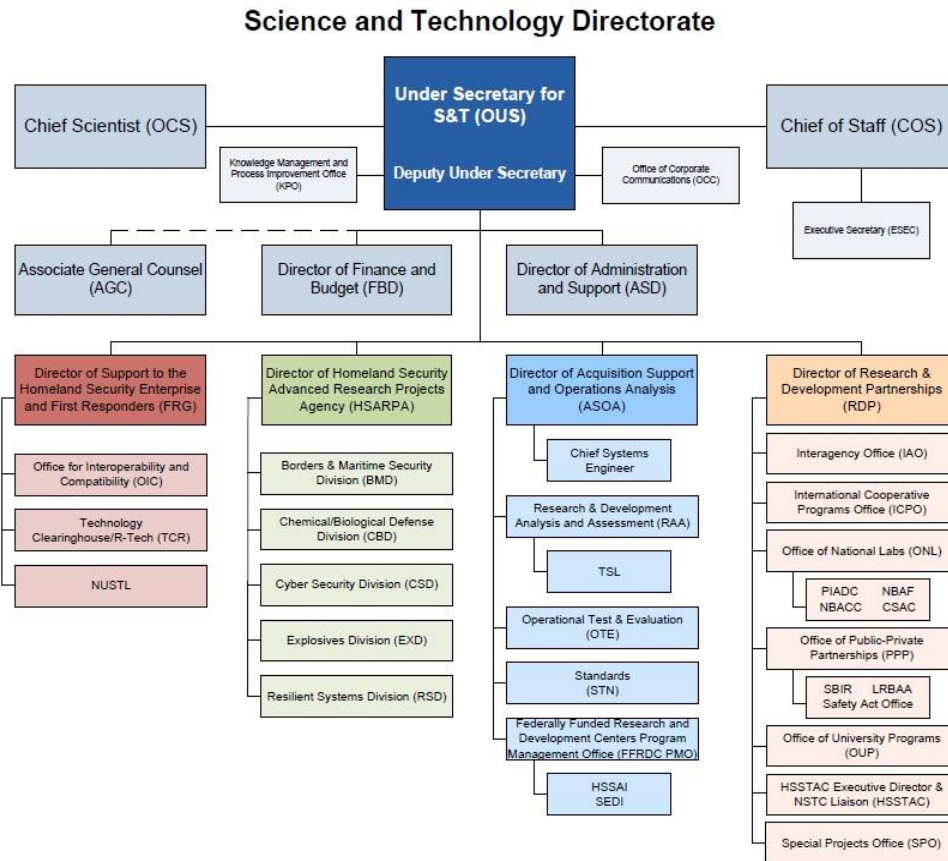
The mission statements for major organizational elements of the S&T Directorate are:

- The **Support to the Homeland Security Enterprise and First Responders Group** (FRG) works to strengthen the response community's abilities to protect the homeland and respond to disasters.[6]

- The **Homeland Security Advanced Research Projects Agency** (HSARPA) works to protect our nation's borders and infrastructure and identify, develop, and transition technologies and capabilities to counter chemical, biological, explosive, and cyber terrorist threats.[7]

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[6] http://www.dhs.gov/st-frg
[7] http://www.dhs.gov/st-hsarpa

- The **Acquisition Support and Operations Analysis** (ASOA) group works to secure the nation by providing analyses, engineering, and test expertise and testing products connecting Research, Development, and Acquisition to the operational end-user.[8]

- The **Research and Development Partnerships** (RDP) group works to build partnerships that deliver technology solutions to the Homeland Security Enterprise. RDP includes the *Homeland Security Science and Technology Advisory Committee* (HSSTAC), the Office of National Laboratories, and the Office of University Programs which includes responsibility for the DHS Centers of Excellence.[9]

The Government Accountability Office has reviewed the work and produced reports related to DHS S&T. In a June 2011 report titled, *DHS Science and Technology: Additional Steps Needed to Ensure Test and Evaluation Requirements are Met.*[10] GAO found that the Testing & Evaluation Standards Office (TES) had begun work to meet the Test and Evaluation (T&E) directive from 2009 but needed to document the approval process of the agency or contractor planning, conducting and reporting independent T&E on the selected DHS programs (or operational test agents). GAO also found TES needed to develop mechanisms to record and verify DHS component acquisition documentation.

In September 2012, GAO released a report titled, *Department of Homeland Security Oversight and Coordination of Research and Development Should Be Strengthened.*[11] GAO found that DHS does not know how much its components spend on research and development (R&D) and does not have policies and guidance for defining R&D and overseeing R&D resources across the Department. According to DHS, the S&T Directorate, the Domestic Nuclear Detection Office (DNDO), and U. S. Coast Guard are the only components that conduct R&D. However, GAO identified an additional $255 million in R&D being conducted by other DHS components. Some of this R&D was found to be similar or duplicative of other work already on-going. As a result, GAO recommended that DHS develop policies and guidance for defining, reporting, and coordinating R&D activities across the Department. GAO also recommended that DHS establish a better mechanism to track R&D projects.[12]

In a September 2013 report titled, *Department of Homeland Security Opportunities Exist to Better Evaluate and Coordinate Border and Maritime Research and Development,*[13] GAO found that DHS border and maritime R&D components reported producing 97 R&D deliverables between 2010 and 2012, at an estimated cost of $177 million. Customers expressed mixed views on the impact of these wide-ranging R&D products.[14]

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[8] https://www.dhs.gov/st-asoa
[9] http://www.dhs.gov/st-organization#
[10] GAO Report, " DHS Science and Technology: Additional Steps Needed to Ensure Test and Evaluation Requirements are Met," June 2011, available at: http://www.gao.gov/assets/320/319754.pdf
[11] GAO Report, "Department of Homeland Security Oversight and Coordination of Research and Development Should Be Strengthened," September 2012, available at: http://www.gao.gov/assets/650/648152.pdf.
[12] Ibid.
[13] GAO Report, "Department of Homeland Security Opportunities Exist to Better Evaluate and Coordinate Border and Maritime Research and Development," September 2013, available at: http://www.gao.gov/assets/660/658112.pdf.
[14] Ibid.

According to the 2013 report, while DHS is working to develop policies to define and coordinate R&D, additional actions could strengthen internal and external coordination of border and maritime R&D. Work still needs to be done at the agency level to make sure border and maritime R&D efforts are mutually reinforcing and being directed towards the highest priority needs. As a result, GAO recommended that S&T establish "timeframes and milestones for collecting and evaluating feedback from its customers to determine the usefulness and impact of its R&D efforts."[15] GAO also recommended that S&T ensure potential challenges with data reliability, accessibility, and availability are reviewed and understood before approving R&D projects through the network of universities that make-up the DHS Centers of Excellence.[16]

Issues and Concerns

Coordination of Research and Development Department Wide

One of the authorities and requirements given to the Under Secretary for Science and Technology in the Homeland Security Act of 2002 is "coordinating and integrating all research, development, demonstration, testing and evaluation activities of the Department." [17] The Congressional Research Service (CRS) noted in a 2003 report that this is a very difficult task because R&D is also conducted in other DHS components where the Under Secretary has very limited authority. [18] S&T has not yet been able to adequately fulfill this role.

Prioritizing Research and Development

It is unclear how S&T prioritizes their R&D portfolio. Concerns have been expressed that in responding to immediate needs, DHS has experienced challenges in pursuing basic research and development that could potentially aid the development of the innovative long-term capabilities needed to protect the homeland years down the road.

Vision and Strategy

In June 2014, DHS published its Quadrennial Homeland Security Review.[19] In looking at the threats and hazards over the next four years, DHS subscribes to five basic homeland security missions:
- Prevent Terrorism and Enhance Security
- Secure and Manage Our Borders
- Enforce and Administer Our Immigration Laws
- Safeguard and Secure Cyberspace
- Strengthen National Preparedness and Resilience

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[15] Ibid.

[16] Ibid.

[17] Homeland Security Act of 2002 (P.L. 107-296), Sec. 302

[18] Research and Development in the Department of Homeland Security, Congressional Research Service, updated June 20th 2003.

[19] Available at: http://www.dhs.gov/sites/default/files/publications/2014-qhsr-final-508.pdf

The S&T Directorate recently released the following visionary goals for public comment.

- Screening at Speed: Matching the Pace of Life
- A Trusted Cyber Future: Protecting Privacy, Commerce and Community
- Enable the Decision Maker: Actionable Information Ahead of Incident Speed
- Responder of the Future: Protected, Connected, and Fully Aware

How were these S&T goals selected? How do these visionary goals compare with the five homeland security missions?