

DHS Office of University Programs Overview



Office of University Programs
Science and Technology Directorate

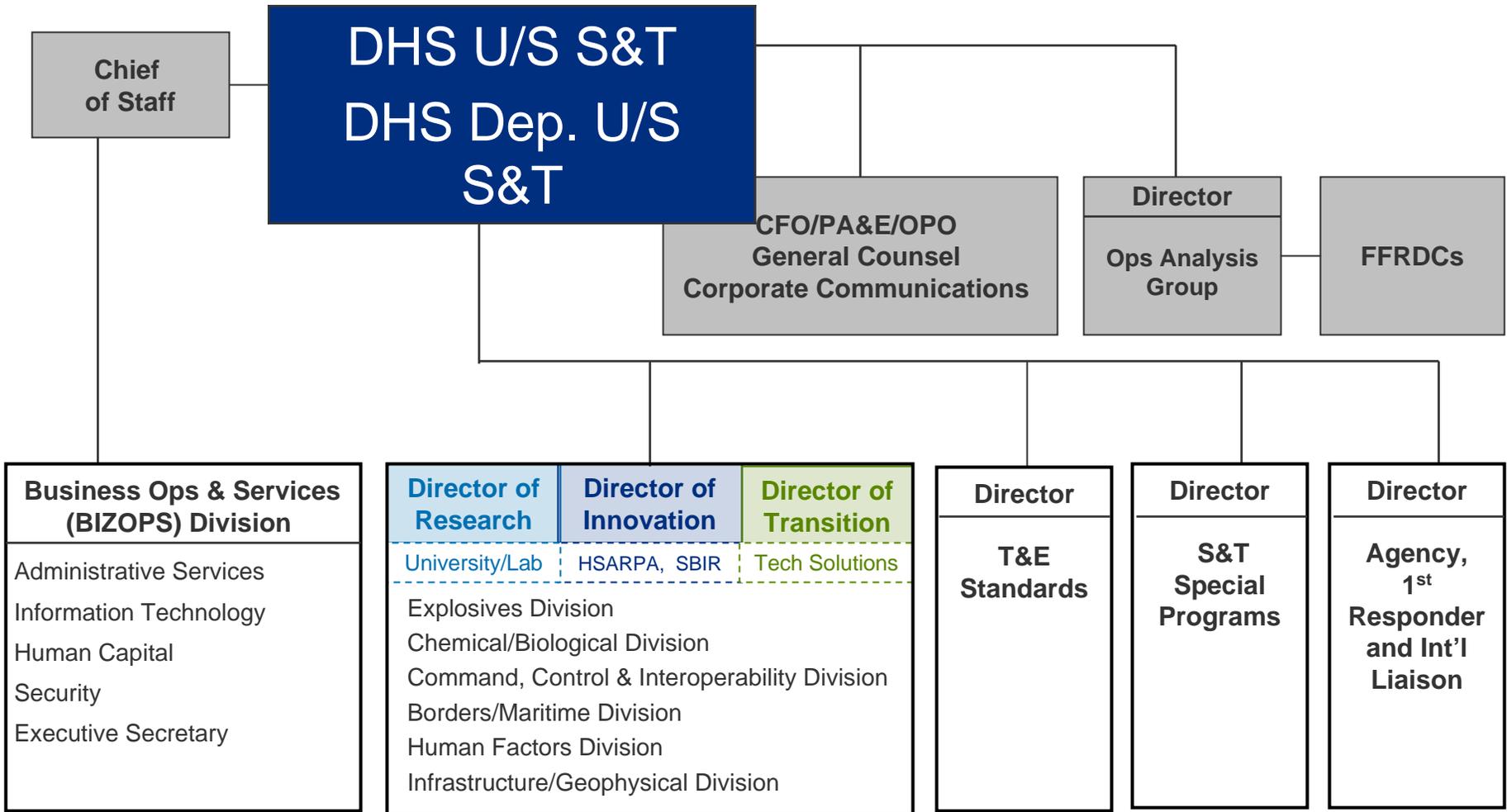
June 2010



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www.hsuniversityprograms.org

DHS S&T Directorate



DHS Office of University Programs

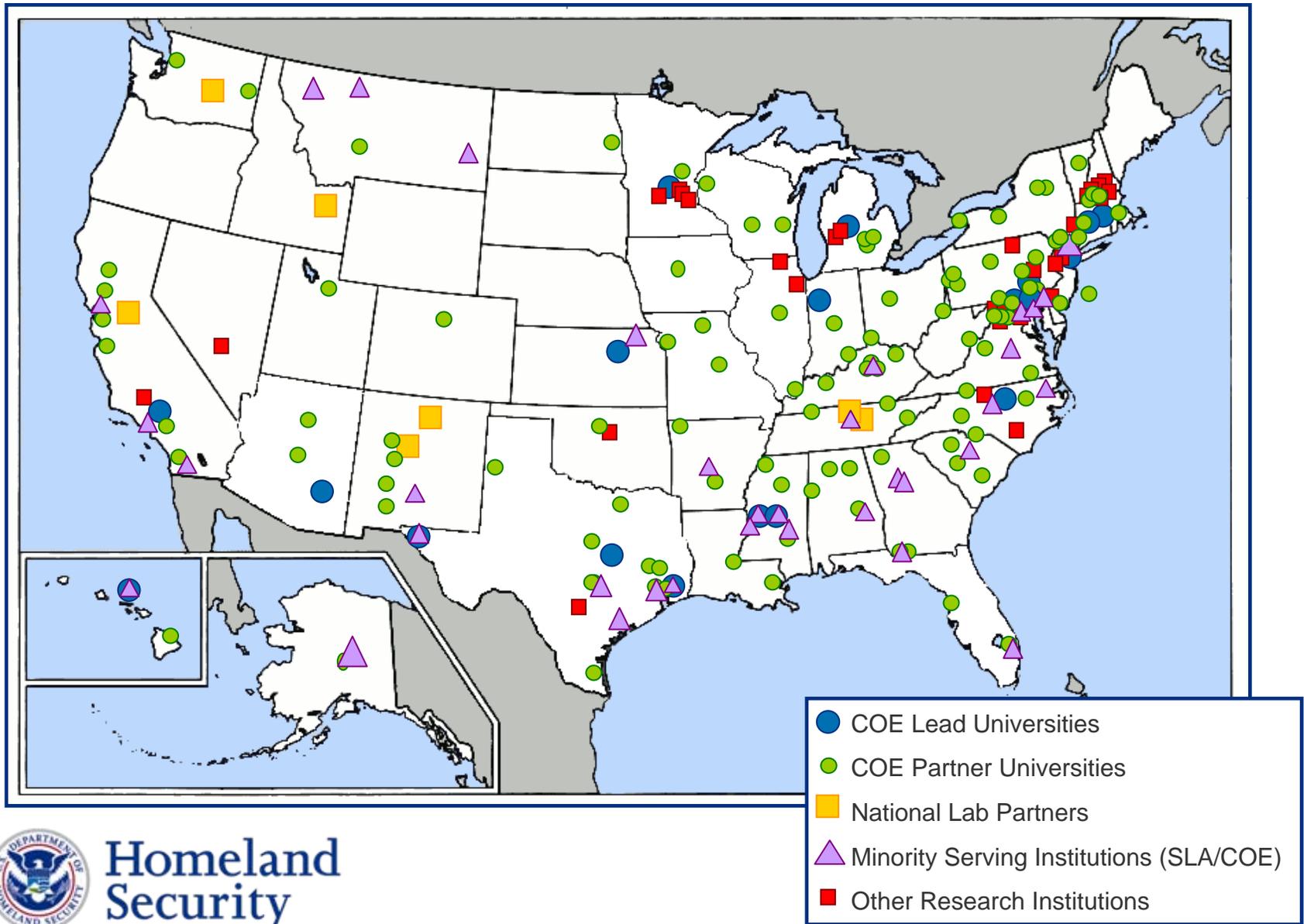
Programmatic Thrusts

- Centers of Excellence
- Education Programs
- Minority Serving Institutions



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The DHS S&T University Network



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COE Alignment with the S&T Divisions

COE Alignment with S&T Divisions					
Explosives	Chemical-Biological	Command, Control & Interoperability	Borders & Maritime	Human Factors	Infrastructure/ Geophysical
	<p>NATIONAL CENTER FOR FOOD PROTECTION AND DEFENSE A HOMELAND SECURITY CENTER OF EXCELLENCE</p>	  <p>Command, Control, and Interoperability Center for Advanced Data Analysis</p>			
					 <p>NDCIEM</p>
<p>National Transportation Security COE</p>		<p>National Transportation Security COE</p>		<p>National Transportation Security COE</p>	<p>National Transportation Security COE</p>
			 <p>National Transportation Security COE</p>		
 <p>Risk, Economics and Operations Analysis Risk Sciences Branch & HSI Risk Determination</p>					



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The 12 DHS Centers of Excellence

1. **Center for Risk & Economic Analysis of Terrorism Events (CREATE)**
 - **Lead: University of Southern California**
2. **National Center for Zoonotic & Animal Disease Defense (ZADD)**
 - **Lead: Kansas State University**
 - **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 the Study of Preparedness & Catastrophic Event Response (PACER)**
 - **Lead: Johns Hopkins University**
7. **The Center for Awareness and Location of Explosives-Related Threats (ALERT)**
 - **Research Co-Lead: Northeastern University**
 - **Education Co-Lead : University of Rhode Island**



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The 12 DHS Centers of Excellence, cont.

8. **The National Center for Border Security and Immigration (NCBSI)**
 - **Research Co-Lead: University of Arizona**
 - **Education Co-Lead: University of Texas at El Paso**
9. **The Center for Maritime, Island and Remote and Extreme Environment Security (MIREES)**
 - **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**



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Accomplishments: All COEs

Categories of Accomplishments	2004 through 12/31/2008 (Number/ Amount)	2004 through 12/31/2009 (Number/ Amount)	Increase 2008 - 2009	Percent Increase 2008 - 2009
Students in COE Program	1,154	1,958	804	70%
Papers Published	1,175	1,767	592	50%
Software Products Developed	106	167	61	58%
New Courses Developed	Not Requested	127		
New Certificates or Degree Programs Developed	Not Requested	34		
Patents	14	24	10	71%
Requests for assistance or advice from DHS	218	344	126	58%
Requests for assistance or advice from Federal, State, Local Government	509	687	178	35%
Follow-on funding from other sources	\$ 48,388,500	\$ 104,883,997	\$ 56,495,498	117%
Presentations	2,932	3,994	1,062	36%
Congressional Testimonies	15	25	10	67%
Projects Completed	179	268	89	50%



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COE Competitions Calendar

COE Timeline	Research Focus	Primary S&T Division	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19			
C2I	Data and visual analytics	Command, Control, Interoperability	Former IDS-UACs & RVACS		Command, Control & Interoperability COE													
CREATE	Risk and Economics	Multiple	CREATE			Re-competed Risk, Economics & Operations Research COE												
NCFPD	Food Safety	Chem/Bio	NCFPD			Re-competed Food Security COE												
FAZD	Animal Disease		FAZD			Re-competed Agricultural Security COE												
START	Social Science and Terrorism Studies	Human Factors	START					Re-competed Terrorism COE										
NTSCOE	Transportation Security	Multiple		NTSCOE				Re-competed Transportation Security COE (?)										
ALERT	Explosives Detection and Countermeasures	Explosives		ALERT				Re-competed Explosives COE (?)										
MIREES	Maritime, Island & Port Security	Borders & Maritime		MIREES				Re-competed Maritime COE (?)										
NCBSI	Border Security and Immigration	Borders & Maritime		NCBSI						Re-competed Borders COE (?)								
NDCIEM	Natural Disasters	Infrastructure/Geophysical		NDCIEM						Re-competed Natural Disasters COE (?)								
PACER	Catastrophic Response	Infrastructure/Geophysical		PACER			PACER Extension Period		New or re-competed COE?									
Minority Serving Institutions Capacity Development			MSI Programs at COEs															

S&T has 17 Priority Research and Education Areas

1. Explosives Detection, Mitigation and Response
2. Social, Behavioral, and Economic Sciences
3. Risk and Decision Sciences
4. Human Factors Aspects of Technology
5. Chemical Threats and Countermeasures
6. Biological Threats and Countermeasures
7. Food and Agriculture Security
8. Transportation Security
9. Border Security
10. Immigration Studies
11. Maritime and Port Security
12. Infrastructure Protection
13. Natural Disasters and Related Geophysical Studies
14. Emergency Preparedness and Response
15. Communications and Interoperability
16. Advanced Data Analysis and Visualization
17. Resilience



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Education Programs

- The **Homeland Security Science, Technology, Engineering and Mathematics (HS-STEM) Career Development Grants Program** provides institutional grants to colleges and universities to award scholarships and fellowships to students in HS-STEM disciplines.
- The **DHS Scholarship and Fellowship Program** provides individual scholarships and fellowships to support undergraduate and graduate students pursuing degrees in homeland security-focused courses of study.
- The **Summer Internship Program** provides undergraduate juniors and seniors the opportunity to work with homeland security professionals and researchers during the summer.
- The **K-12 STEM Education Initiatives** pilot innovative approaches to K-12 STEM education using technologies focused on homeland security issues
- The **National Defense University Science and Technology Leadership Program** provides partial fellowships for DHS employees to pursue Master's degrees in science and technology leadership.



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HS-STEM Scholarship and Fellowship Program

- * These awards are made to high quality individual STEM students attending universities throughout the U.S. Students are supported financially for up to three years. A post completion service commitment is required.
 - From 2003 to 2009, 522 student participants
 - Distribution - 47 states, 61 institutions
 - Summer internships completed at DHS, DHS laboratories, DHS Centers of Excellence and National laboratories
 - Underrepresented Minorities: ~90 (18%)
 - 25 students from 16 MSIs
 - Top Recipients - Carnegie Mellon, Georgia Tech, MIT, Michigan State, NC State, Stanford, Texas A&M, UC Berkeley, U of MD, U of Michigan, UT Austin, Yale, Harvard, Hopkins, Duke
 - One year payback student requirement



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HS-STEM Summer Internship Program

-Program provides rising juniors and seniors with the opportunity to conduct research in DHS mission-relevant research areas at federal research facilities for up to 10 weeks during the summer.

- From 2008 to 2010, 107 internships have been awarded
- Completed at DHS, DHS laboratories, DHS Centers of Excellence and National laboratories
- 10 weeks in duration

Support includes stipend and travel



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Career Development Grants Program

- Grants are competitive awarded to accredited Universities in the U.S. to development HS STEM related curricula and courses of study. The recipients recruit high quality students and mentor them to assure their success and direct them toward HS-STEM careers. Currently the grant stipulates that 92% of the award amount must go directly to support students.
 - From 2007 to 2009, awarded 28 institutional grants to 19 different institutions (see complete listing attached)
 - Awards only to schools with existing HS-STEM programs
 - 92% of funds go to students
 - ~125 students supported
 - One year payback student requirement



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Minority Serving Institutions Programs

- **The MSI Scientific Leadership Awards (SLA) are institutional awards to support the development of HS-STEM teaching initiatives, curriculum development and scholarships in HS-STEM fields**
- **The Summer Research Team (SRT) Program supports summer research collaborations that engage early career faculty and students with the COEs**



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Scientific Leadership Awards Grant Program

- Grants are competitively awarded to early career faculty at accredited Minority Serving Institutions (MSIs) to build HS-STEM capabilities, establish HS-STEM related curricula and courses of study, and recruit and mentor students. Currently the grant stipulates that 60% of the award must go to students, while the remaining 40% may go toward faculty development.
 - From 2007 to 2009, awarded 28 institutional grants to 23 different institutions
 - ~200 students supported



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Summer Research Team Program

The intent of the program is to provide research opportunities to increase and enhance the scientific leadership at Minority Serving Institutions in research areas that support the mission and goals of DHS by engaging early career faculty, along with undergraduate and graduate students, in research at one of several Research Centers of Excellence (COEs) which are funded by DHS.

- From 2005 to 2010, 41 teams have been supported
- Faculty and up to two students spend 10 weeks collaborating at a COE
- Follow on funding for continued collaboration is available for selected institutions
- Many recipients have subsequently received SLA grants



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References

DHS Office of University Programs

- http://www.dhs.gov/files/programs/editorial_0555.shtm
- <http://hsuniversityprograms.org/>
- <http://www.orau.gov/dhseducationprograms/>

DHS S&T Basic Research Focus Areas

- http://www.dhs.gov/xlibrary/assets/st_basic_research_focus_areas_may_2009.pdf

DHS S&T High Priority Technology Needs

- http://www.dhs.gov/xlibrary/assets/st_basic_research_focus_areas_may_2009.pdf

COE University Network Site

- <http://www.hsuniversityprograms.org/>



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Backup



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National Center for Risk and Economic Analysis of Terrorism Events

<p>Mission</p> <p>To evaluate the risks, costs, and consequences of terrorism, and provide decision support tools to protect the Nation</p>	<p>Partners</p> <p>Lead: University of Southern California</p> <p>Arizona State University, Carnegie Mellon University, Elizabeth City State University*, New York University, North Carolina State University, Penn State University, University of Illinois–Urbana-Champaign, University of Texas–Dallas, University of Wisconsin–Madison</p> <p>*Minority Serving Institutions</p>
<p>Impact and Relevance</p> <ul style="list-style-type: none">▪ Models and tools for generating random security/protection plans that serve as a strong terrorism deterrent, while achieving a sufficient use of security patrol▪ Support of the Risk Assessments of the National Bio-defense Analysis and Countermeasures Office (NBACC)▪ Risk-based Resource Allocation for California Buffer Zone Protection Program (BZPP) Funds▪ ARMOR IR13 Patrol Randomization	<p>Customers</p> <p>DHS Science and Technology Chem-Bio National Biodefense Analysis and Countermeasures Center (NBACC)</p> <p>Customs and Border Protection (CBP)</p> <p>Immigration and Customs Enforcement (ICE)</p> <p>Transportation Security Agency (TSA)</p> <p>DHS Office of Infrastructure Protection (OIP)</p> <p>State Homeland Security Agencies</p> <p>Port Authorities</p>



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National Consortium for the Study of Terrorism and Responses to Terrorism

Mission

To advance science-based knowledge about the human causes and consequences of terrorism that is directly relevant to homeland security policymakers and practitioners

Partners

Lead: University of Maryland

American Univ., Bar Ilan Univ., Brandeis Univ., Bryn Mawr College, Catholic Univ. of Sacred Heart, Dartmouth Medical School, Eastern Michigan Univ., European Univ. Institute, John Jay College, CUNY*, King's College, Massachusetts Institute of Technology, Michigan State Univ., Monterey Institute of International Studies, Morehouse College*, Nanyang Tech. Univ., Ohio State Univ., Pennsylvania State Univ., Purdue Univ., Rutgers Univ., San Diego State Univ.*, St. Andrews Univ., Stanford Univ., SUNY Purchase, Tufts Univ., Univ. at Albany, Univ. of Arkansas, Univ. of California–Irvine, Univ. of California–Los Angeles, Univ. of Colorado, Univ. of Macedonia, Univ. of Minnesota, Univ. of Missouri–Kansas City, Univ. of New Mexico*, Univ. of North Florida, Univ. of Oklahoma, Univ. of Pennsylvania, Univ. of Pittsburgh Medical Center, Univ. of South Carolina, Univ. of Surrey, Univ. of Texas, Univ. of Wisconsin–Madison, Wellesley College, Wesleyan Univ. *Minority Serving Institutions

Impact and Relevance

- Developing world's largest and most up-to-date open-source database of international and domestic terrorist events
- Models specifying characteristics of groups that might be most likely to engage in terrorism in the future
- Assessments of household and institutional preparedness around the United States
- Training a next generation of homeland security practitioners and researchers

Customers

DHS Science and Technology
DHS Office of Intelligence and Analysis
National Counterterrorism Center (NCTC), DNI
Federal Bureau of Investigations (FBI)
Port Authority of New York and New Jersey
State/Local Homeland Security and Emergency Management Offices



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Center for Advancing Microbial Risk Assessment

Mission

To develop critically reviewed and interpreted sets of models, tools and information that will be used in a credible risk assessment framework to reduce or eliminate health impacts from deliberate use of biological agents of concern (BAC) as bioterrorists agents in the indoor and outdoor environment.

Impact and Relevance

- Provide scientific basis for assessing risks of natural and malicious occurrences of infectious agents
- Provide scientific basis for assessing “how clean is clean”

Partners

Co-Lead: Drexel University

Co-Lead: Michigan State University

University of Arizona, *Northern Arizona University, Carnegie-Mellon University, University of California – Berkeley

*Minority Serving Institution

Customers

DHS Science and Technology Directorate

US EPA - National Homeland Security Research Center

National Bio-defense Analysis and Countermeasures Center



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Mission

To improve the Nation's preparedness and ability to respond to disasters through rigorous scientific research focused on medical and public health preparedness strategies, response capabilities, and surge capacity.

Partners

Lead: Johns Hopkins University

American Indian Higher Education Consortium, American Medical Association, Asia Pacific Center for Biosecurity, Disaster and Conflict Research, Brookings Institution, Columbia University, Dartmouth College, FEMA, George Washington University, Harvard College, Howard University*, Meharry Medical College*, MITRE, Morehouse College*, National Congress of American Law Enforcement Association, UCLA, University of Chicago, University of Hawaii, University of Pittsburgh, University of Tennessee, Vanderbilt University

*Minority Serving Institutions

Impact and Relevance

- Develop tools to assess and improve risk readiness for catastrophic events
- Improve response capabilities of agencies and first responders by harnessing the strength of informal networks
- Identify communications and data fusion techniques to improve situational awareness and critical decision making

Customers

DHS Science and Technology
DHS Policy Office
Civil Rights Civil Liberties
State Homeland Security Agencies



The Center for Maritime, Island and Remote and Extreme Environment Security



Mission

Conduct research and develop technologies, tools and advanced methods to strengthen maritime domain awareness and safeguard populations and properties unique to U.S. island, remote/extreme environments

Co-Lead: University of Hawaii

Co-Lead: Stevens Institute of Technology

Partners: Massachusetts Institute of Technology, Monmouth University, Rutgers University, *University of Alaska at Fairbanks, University of Miami, *University of Puerto Rico

Impact and Relevance

- Enhance maritime domain awareness
- Marine Transportation System Security, Critical Infrastructure Protection, Resiliency and Recovery
- Maritime Risk Management, Policy Analysis, and International Governance
- Maritime Enforcement, Operational Analysis and Command, Control and Communications

Customers

DHS Science and Technology, U.S. Coast Guard, FEMA, Customs and Border Protection Air & Marine, State Security Agencies, Nation's Ports and Inland Waterways



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National Center for Border Security & Immigration



Mission

The National Center for Border Security and Immigration, is developing technologies, tools and advanced methods to balance immigration and trade with effective border security, as well as assess threats and vulnerabilities, improve surveillance and screening, analyze immigration trends, and enhance policy and law enforcement efforts.

Research Co-lead: University of Arizona

Education Co-lead: University of Texas at El Paso

Partners: Arizona State University, Migration Policy Institute, New Mexico State University, Pennsylvania State University, RAND Corporation, RTI International, San Diego State University, University of California – Irvine, University of Minnesota, University of New Mexico, University of Texas - Pan American, University of Washington, West Virginia University, Duke University, New Jersey Institute of Technology, North Dakota State University, Prairie View A&M University, RTI International, Texas A&M University, Texas A&M University – Kingsville, University of California – Irvine, University of Connecticut, University of Texas at San Antonio, University of Washington, Wayne State University

Impact and Relevance

- Assess threats and vulnerabilities
- Improve surveillance and screening
- Provide immigration studies and analysis
- Enhance policy and law enforcement

Customers

DHS Science and Technology, Immigration and Customs Enforcement, Citizenship and Immigration Services, Customs and Border Protection, U.S. Coast Guard, State and Local Agencies



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Natural Disasters, Coastal Infrastructure & Emergency Management

Mission

To enhance the Nation's ability to safeguard populations, properties and economies and improve community resiliency to the consequences of natural disasters, including hurricanes, floods, earthquakes, and wildfires.

Partners

Research Lead: University of North Carolina – Chapel Hill

Education Lead: Jackson State University

Alcorn State University, California State Polytechnic University, Georgia State University, *Johnson C. Smith University, Louisiana State University, Medical University of South Carolina, Mississippi State University, *Mississippi Valley State University, North Carolina State University, Oklahoma University, Rensselaer Polytechnic Institute, Rice University, South Carolina State University, *Texas Southern University, *Tougaloo College, Tulane University, University of Connecticut, University of Delaware, University of Houston, University of North Carolina – Charlotte, University of Texas – Dallas, USACE Engineer Research and Development Center

Impact and Relevance

- Protect susceptible infrastructures
- Protect populations
- Enhance post-catastrophic recovery
- Improve pre-event communication
- Enhance critical supply chain resiliency

Customers

DHS Science and Technology
FEMA
Office of Infrastructure Protection
U.S. Coast Guard
USDA and DOI (wildfires)
Customs and Border Protection
State Homeland Security Agencies



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Command, Control and Interoperability



Mission

Conduct research and develop technologies, tools, and advanced methods to enable operational personnel, scientists, or decision- and policy-makers to analyze, understand and apply diverse, diffuse, and distributed data on threats and manmade or natural disasters in the presence of uncertainty

Partners

Lead: Purdue University

Lead: Rutgers University

Impact and Relevance

- Protect populations, critical facilities, and the nation's economic well-being
- Protect cyber infrastructure
- Enhance assessment of potential terrorist threats
- Improve pre-event analysis and post-event communications
- Improve understanding of human-technological communications interactions

Customers

DHS Office of Intelligence and Analysis, Office of Health Affairs, Preparedness Directorate, Office of Infrastructure Protection, Science and Technology Directorate, Customs and Border Protection
U.S. Coast Guard
Immigration and Customs Enforcement
State Homeland Security Agencies
State and Local Emergency Responders



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PURDUE
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COE for Explosives Detection, Mitigation and Response

Mission

Enable DHS to respond to both short- and long-term national needs in the areas of explosive materials formulation and characterization; investigation of mitigative materials and techniques; improved detection of high-energy materials and associated technologies; increased understanding of unconventional explosive threats; and continued algorithm development and sensor fusion strategies for improved threat detection.

Partners

Research Co- Lead: Northeastern University

Education Co-Lead: University of Rhode Island

Boston University, University of Puerto Rico at Mayaguez, Rensselaer Polytechnic Institute, Tufts University, Texas Tech University, University of Missouri at Rolla, Washington State University, Mass General Hospital, Woods Hole Oceanographic Institute,

California Institute of Technology, New Mexico State University, Purdue University, University of Illinois Hebrew University, Florida International University, Soreq NRC,

Impact and Relevance

- Conduct basic and transformational research in areas related to properties of explosive materials, detection, single and multi-sensor system approaches, unconventional approaches to identify threat signals, and mitigation of explosives-based terrorist incident.
- Build an outstanding educational program including a graduate degree and adjunct certificate program for academic and non-academic clientele.
- Educational offerings for first responders and a vehicle for access to knowledge of the relevant technologies emanating from research.

Customers

- DHS Science and Technology Explosives Division
- DHS Transportation Security Administration (TSA)
- US Secret Service
- Office of Bomb Prevention
- State Homeland Security Agencies
- First Responders



ALERT (Awareness and Localization of Explosives-Related Threats)



DHS Education Programs

<p>Mission</p> <p>Develop the science, technological, engineering and mathematics instruction and learning capabilities to ensure the U.S. is the leader in counter-terrorism, disaster preparedness and security science and technology</p>	<p>Partners</p> <p>Federal Research Institutions DHS Centers of Excellence Other Academic Institutions Private Partnerships</p>
<p>Goals</p> <ul style="list-style-type: none">▪ Enhance development of students who wish to study in homeland security related STEM fields▪ Promote DHS-related curriculum and programs to a wider community of academic and learning institutions and research facilities▪ Develop a diverse and well-trained scientific and technical workforce for the homeland security community▪ Pilot limited K-12 HS-STEM innovative program	<p>Customers</p> <p>DHS K-20 Educational Community DHS Laboratories DHS Centers of Excellence National Laboratories State Homeland Security Agencies</p>



OUP's Successes & Highlights

Office of University Programs – developed an interactive network of Centers of Excellence (COEs) and **hundreds** of partner institutions responsive to DHS needs

Education Thrust – supports 8 education programs focused on DHS mission-oriented scientific and technical leadership needed for the Nation's future security

Minority Serving Institutions (MSI) Thrust – supports 2 programs to enhance the diversity of the homeland security science and technology community by building MSI institutional capacity and supporting future workforce development of under-served populations in DHS mission-oriented areas

Scholarship & Fellowship Program Statistics, since 2003:

- Supported **467** Scholars & Fellows
- Represented **47** states and territories and **155** institutions
- Completed **467** summer internships at DHS, DHS laboratories, DHS Centers of Excellence and National laboratories
- Underrepresented Minorities* **82 (18%)**
- Supported **25** students (**6%**) from **16** MSIs (**11%**)



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*African Americans, Hispanic, Native American, Alaskan Native, Native Hawaiian or other Pacific Islander

COE Successes and Highlights

DyDAN & NVAC – COMPSTAT 2: The Center for Dynamic Data Analysis Center at Rutgers University, working with the National Visual Analytics Center at the Pacific Northwest National Labs, joined technologies to advance the Port Authority of New York and New Jersey's Computer Statistics (CompStat 2) program. CompStat2 makes real time crime information available to first responders at all levels of the organization and has already helped PANYNJ re-deploy security forces to reduce crime.

Stevens Institute of Technology (Maritime Security COE) - Hudson River Recovery Effort: On January 15, 2009, within minutes of US Airways flight 1549 crash landing on the Hudson River, Stevens Institute of Technology was contacted by the Director of Watch Command for the NYC Office of Emergency Management (OEM) and the EMS Command Center, Fire Department of New York to assist with the water analysis forecast of river condition of the Hudson River. Stevens Institute made specific suggestions to emergency personal to deploy rescue assets downstream, not upstream, along Manhattan and to guide the plane eastward to the Battery area for salvage operations. Since the Battery area had the weakest currents at the time and projected future, Stevens determined that that was the easiest and safest area to try to salvage the plane. DHS support has enabled Stevens to improve the real-time data delivery, including the fusion and visualization, of information. Taken together, DHS support makes it possible for a "system" to play an important role in supporting first responders in the maritime environment, such as occurred during the rescue and recovery operations in the US Airways flight 1549 event

University of North Carolina at Chapel Hill (Natural Disasters COE): The ADCIRC storm surge/inundation model was used extensively in 2008 during Hurricane Gustav. Surge and flooding forecasts were provided to the Louisiana Governor's Office for Homeland Security and Emergency Preparedness and the Army Corps of Engineers. These forecasts were used for emergency planning, mitigation and recovery efforts, including flood gate closures, response personnel positioning, and disaster aid estimation.



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COE Successes and Highlights Cont.

CREATE – ARMOR: LAX officials credited their interception of a significant number of firearms throughout the month of January 2009 to an artificial intelligence program (ARMOR) developed by the National Center for Risk & Economic Analysis of Terrorism Events (CREATE). ARMOR allows security forces to randomize patrols, searches, and check-points based on critical assets and intelligence, enabling security officials to allocate limited resources more effectively.

START – GTD: The recent 2008 terrorist attacks in India led officials to consult the Global Terrorism Database at The National Consortium for the Study of Terrorism and Responses to Terror (START). The GTD helped understand India's terrorism problem, including the frequency and impact of terrorist attacks in India since 1970. This will enable security forces to adapt strategies to counter deadly attacks. The Database includes actionable information on almost 80,000 terrorist attacks.

NCFPD – FOOD EVENT CONSEQUENCE MANAGEMENT SYSTEMS: The National Center for Food Protection and Defense (NCFPD) helped the FDA and the CDC to identify the sources of recent food outbreaks and recalls of contaminated products. NCFPD tools were instrumental in finding the jalapeno peppers that caused the 2008 Salmonella Saint Paul outbreak that sickened thousands.

FAZD – Avian Flu School: Researchers developed an Avian Flu Training for early responders. The training will avoid delayed detection and ineffective reactions. Sessions have been held in Texas, California, Minnesota, and in Africa, and are increasing in demand throughout the developing world.



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COE Successes and Highlights Cont.

CSR Director and others aid in the recovery of the accident over the Hudson

On Saturday August 8th, 2009, a small plane collided with a sightseeing helicopter carrying Italian tourists above the Hudson River, scattering debris into the water. The plane was carrying a pilot and two passengers, while the helicopter was part of 'Liberty Helicopter Sightseeing Tours' and carried the pilot and 5 passengers. Within an hour of the accident, CSR personnel from Stevens were called to the scene for analysis of currents and the proposed search area. The CSR forecast model indicated that the currents were incoming for the first hour after impact and then strongly outgoing. This helped the NYPD, NJ State Police, FBI Dive teams, and the USCG aerial search teams to plan the search. Over the next 3 days, the ocean forecasts proved invaluable to the search and recovery.

CSR Small Vessel Experiment

In November 2009, CSR conducted a coordinated experiment in the New York Harbor to determine the current limits of technologies for detecting and tracking small vessels. The experiment involved CSR partners as well as the Sandy Hook Pilot Association, which provided a vessel as a reference. The experiment also leveraged capabilities being provided for other Government Agencies, including NASA, NGA, NOAA, and NSF.

The purpose of the experiment was to determine the approximate minimum vessel size that can be detected using available sensing technologies, with the aim of assisting the CSR research team in planning future, integrated sensing system development. During the experiment, CSR recorded vessel acoustic signatures as part of a multi-layered approach to Maritime Domain Awareness as well as environmental noise in the surrounding area. CSR was able to record the acoustic signature of a 26-foot vessel up to 3 Km. CSR is in the process of analyzing the data to match satellite images and HF Radar with recorded acoustic data.



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