



NATIONAL TRAINING AND SIMULATION ASSOCIATION

**Department *of*
Homeland Security**

Training 2015
RELEASED IN NOVEMBER 2010

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Acknowledgements

Once again, NTSA is proud to have sponsored an effort which has resulted in a comprehensive assessment of future needs in the training and simulation markets. This year's effort was especially difficult because of the increased security and extensive budget changes.

The effort required many hours of hard work and dedication. I personally commend the NTSA members, government organizations, and commercial companies who contributed to the success of this venture.

I extend special thanks to Dr. Linda Brent, of The ASTA Group, LLC, who chaired the *NTSA Training 2015*. We could not have completed this high quality product without her leadership and organizational skills.

The Department of Homeland Security (DHS) report team conducted research, and authored the market survey report. The DHS report team members are listed below:

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- Tim Buehner, The ASTA Group, LLC

It is with much gratitude that I thank the government individuals and organizations, who participated in the *NTSA Training 2015*. Once again, those responsible for developing requirements, and acquiring and using training and simulation systems and products were most forthcoming with their perspectives.

RADM Fred Lewis (U.S. Navy Ret.), President

National Training Systems Association

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Department of Homeland Security

“We will lead the unified national effort to secure America. We will prevent and deter terrorist attacks and protect against and respond to threats and hazards to the Nation. We will secure our national borders while welcoming lawful immigrants, visitors, and trade.” (<http://www.dhs.gov>)

1.0 Introduction

The Department of Homeland Security (DHS) functions to prevent domestic terrorist attacks, reduce vulnerability to terrorism, and mitigate the damage from attack occurrences and facilitate recovery. DHS provides federal response and recovery efforts in the event of a natural disaster or other large-scale emergency. In addition, DHS has primary responsibility for ensuring that emergency response professionals are prepared for any situation (<http://www.dhs.gov>).

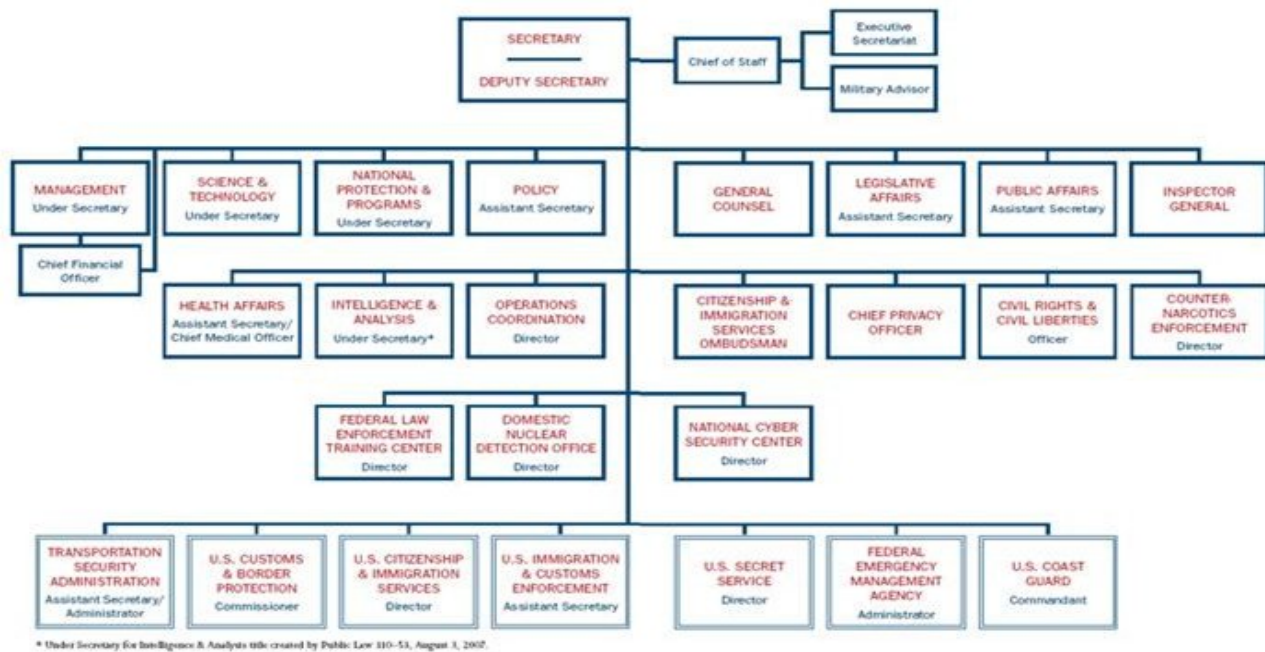
DHS secures the United States against all threats through five main missions: Preventing Terrorism and Enhancing Security; Securing and Managing U.S. Borders; Enforcing and Administering Immigration; Safeguarding and Securing Cyberspace; Ensuring Resilience to Disasters (<http://www.dhs.gov>).

1.1 Department of Homeland Security Organization Overview

DHS is comprised of the following operating agencies (<http://www.dhs.gov/xabout/structure/>).

1. The [Directorate for National Protection and Programs](#) (NPPD) works to advance the Department's risk-reduction mission.
2. The [Directorate for Science and Technology](#) (S&T Directorate) is the primary research and development arm of the Department.
3. The [Directorate for Management](#) is responsible for Department budgets, accounting and finance, procurement, human resources, and performance measurement, etc.
4. The [Office of Policy](#) is the primary policy formulation and coordination component to generate long-range plans to protect the United States.
5. The [Office of Health Affairs](#) (OHA) coordinates all medical activities to ensure appropriate preparation for and response to incidents having medical significance.
6. The [Office of Intelligence and Analysis](#) (OI&A) is responsible for using information to identify and assess current and future threats to the United States.
7. The [Office of Operations Coordination and Planning](#) monitors the security of the U.S. and coordinating activities nationwide.
8. The [Federal Law Enforcement Training Center](#) (FLETC) provides career-long training to law enforcement professionals.
9. The [Domestic Nuclear Detection Office](#) (DNDO) works to enhance the nuclear detection efforts and to ensure a coordinated response to such threats.

10. The [Transportation Security Administration \(TSA\)](#) protects the nation's transportation systems to ensure freedom of movement for people and commerce.
11. [United States Customs and Border Protection \(CBP\)](#) protects our nation's borders while facilitating the flow of legitimate trade and travel.
12. [United States Citizenship and Immigration Services \(USCIS\)](#) is responsible for the administration of immigration and naturalization adjudication functions.
13. [United States Immigration and Customs Enforcement \(ICE\)](#) identifies and shuts down vulnerabilities in U.S. border, economic, transportation and infrastructure security.
14. The [United States Coast Guard \(USCG\)](#) protects the public, the environment, and U.S. economic interests in U.S. ports and waterways, coastline, on international waters, etc.
15. The [Federal Emergency Management Agency \(FEMA\)](#) prepares for and manages Federal response and recovery efforts following any national incident.
16. The [United States Secret Service \(USSS\)](#) protects high-level officials and investigates counterfeiting and other financial crimes, including computer-based attacks.



Source: DHS.gov. http://www.dhs.gov/xabout/structure/editorial_0644.shtm.

Figure 1-1: DHS Organizational Chart

1.2 DHS Organizations Responsible for Education and Training

Various components conduct training activities under the larger umbrella of the DHS. Sample accomplishments and activities conducted by selected entities follow.

The Office of Security, through the Security Training and Technical Support Branch (ST&TS), has overall responsibility for the DHS Security Education, Training, and Awareness (SETA) Program. The SETA Committee is comprised of senior representatives from DHS. It functions

to develop training opportunities that leverage available technologies and shared resources (http://www.dhs.gov/xlibrary/assets/foia/mgmt_directive_11053_security_education_training_and_awareness_program_directive.pdf).

Through the Office of the Chief Security Officer (OCSO), the Chief Security Officer (CSO) delivers security training and education to DHS personnel; and provides security support to Components. (http://www.dhs.gov/xlibrary/assets/foia/mgmt_instr_121_01_001_instruction_for_the_office_of_the_chief_security_officer.9.3.08.pdf).

The USCG Aviation Training Center (ATC) in Mobile, Alabama serves the Coast Guard Aviation Community World Wide TRAINING DIVISION (TRADIV). TRADIV provides qualified aircrews and standardization to the HH-65, HH-60, HU-25, and HC-144 communities. TRADIV also provides standardization training and certification to the Coast Guard ship/helicopter community (<http://www.uscg.mil/hq/atcmobil/Tradiv/tradiv.asp>).

FLETC serves as an interagency law enforcement training organization for over 80 Federal agencies and provides services to state, local, tribal, and international law enforcement agencies (<http://www.fletc.gov/>). FLETC includes the Simulation Integration Management Branch (SIM) which promotes development and application of training technologies, especially modeling and simulation, to augment FLETC’s existing training delivery systems and methodologies (<http://www.fletc.gov/training/programs/training-innovation-division-tid/>).

Other training activities are conducted throughout entities within the DHS. Through ICE, the Office of the Principal Legal Advisor (OPLA) provides legal advice and training to ICE’s operational and management programs. The DHS Office for Civil Rights and Civil Liberties and the Privacy Office launched a national privacy and civil liberties training program for state, local, and tribal fusion centers (http://www.dhs.gov/xlibrary/assets/budget_bib_fy2011.pdf). Training accomplishments by other offices include: DNDO has trained over 3,600 federal, state and local officers and first responders in radiological and nuclear detection; FEMA has trained more than 2 million homeland security, emergency management, and first responders; the United States Fire Administration (USFA) has delivered 3,811 training programs to 116,350 fire and emergency response personnel (DHS, 2010).

1.2.1 Training Programs by Initiative

Below are links to training programs offered by various DHS organizations.

Table 1-1: DHS-sponsored Training Programs

Cybersecurity Training & Exercises	Preparedness, Response, and Recovery Training
<ul style="list-style-type: none"> • DHS/FEMA State Cybersecurity Training Program • Control Systems Security Program (US-CERT) • Cyber Storm: Securing Cyber Space 	<ul style="list-style-type: none"> • Community Emergency Response Teams • FEMA Training and National Domestic Preparedness Consortium • U.S. Fire Administration • The Emergency Management Institute. • The National Fire Academy • National Incident Management System (NIMS) Online Training • Critical Infrastructure Protection Training Program (CIPTP)

2.0 Market Description

In contrast to the bland or austere market outlooks of other organizations, the market forecast for the DHS looks encouraging. As of February 2010, the DHS market had grown by 12% ([HSNW, 2010](#)). The protection of mass events, protection and modernization of infrastructure, and border protection will drive security, enforcement, and investigation mission areas of DHS components, and likely a demand for training programs and activities.

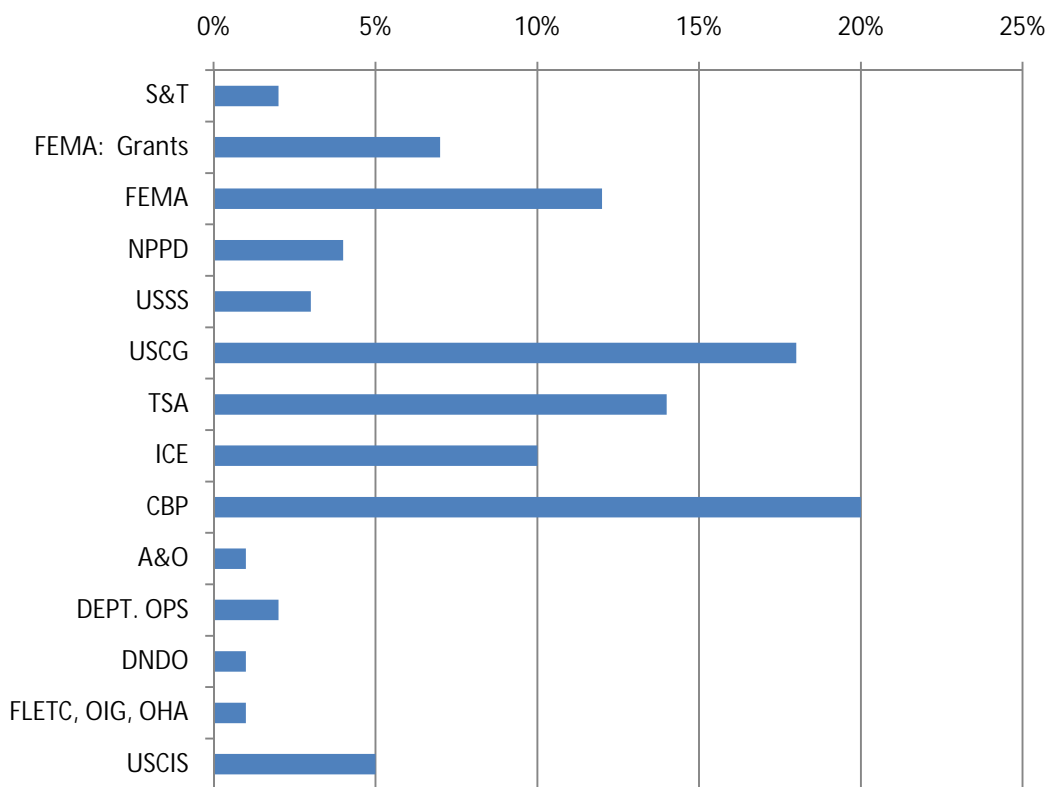
2.1 Budget

Though overall the market outlook is promising, the FY 2011 budget nevertheless focuses efforts on efficient and effective use of resources—exercising fiscal discipline, making sure that dollars are invested in what works, reducing redundancy, and eliminating ineffective programs (DHS, 2010). The following information presents an overview of FY 2011 budget authority.

Table 2-1: Comparative Budget Authority (2009-2011) for DHS Administrations and Offices

	FY 2009 Revised Enacted \$000	FY 2010 Revised Enacted \$000	FY 2011 President's Budget \$000
Departmental Operations (Dept. Ops)	659,109	802,931	1,270,821
Analysis and Operations (A&O)	327,373	335,030	347,930
Office of the Inspector General (OIG)	114,513	113,874	129,806
CBP	11,250,652	11,449,283	11,180,018
ICE	5,968,015	5,741,752	5,835,187
TSA	6,992,778	7,656,066	8,164,780
USCG	9,624,179	10,122,963	10,078,317
USSS	1,640,444	1,702,644	1,811,617
NPPD	1,188,263	2,432,755	2,361,715
OHA	157,621	139,250	212,734
FEMA	5,971,159	6,194,268	6,527,406
FEMA: Grant Programs	4,220,858	4,165,200	4,000,590
USCIS	2,876,348	2,859,997	2,812,357
FLETC	332,986	282,812	278,375
S&T	932,587	1,006,471	1,018,264
DNDO	514,191	383,037	305,820
TOTAL:	52,771,076	55,388,333	56,335,737
Less Rescission of Prior Year Carryover Funds	(61,373)	(40,474)	-
ADJUSTED TOTAL BUDGET AUTHORITY:	52,709,703	55,347,859	56,335,737

Source: DHS, FY 2011 Budget in Brief.



Source: U.S. DHS, FY 2011 Budget in Brief.

Figure 2-1: FY2011 Percent of Total Budget Authority by Organization

The total FY 2011 budget request for the Department of Homeland Security is a 2% increase over the FY 2010 enacted level. The FY 2011 gross discretionary and net discretionary budget requests are 2% and 3% increases over the FY 2010 enacted levels, respectively.

Table 2-2: Organizational Budget Authority, FY 2011 +/- % FY 2010 Enacted

Dept. Ops.	A&O	CBP	DNDO	FEMA	FEMA: Grants	FLETC	ICE	NPPD	OHA	OIG	S&T	TSA	USCG	USCIS	USSS
58	4	-2	-20	5	-4	-2	2	-3	53	14	1	7	0	-2	6

Source: Adapted from DHS, FY 2011 Budget in Brief.

2.2 Product Lines

According to information published in the Homeland Security Newswire (HSNW), DHS spending will focus on services rather than traditional security products. Services include IT integration, engineering consulting, management support, guard services, construction and facility management. Analysts quoted in the report expect that that trend will continue into 2013, with

the bulk invested in personnel (Frost and Sullivan, 2009 in HSNW, 2010). Historic service and product data is presented below.

Table 2-3: DHS Top Services and Products, as of 2007

Top Services	
Guard Services	\$1,051,773,396
Technical Services	\$948,957,516
Other ADP And Telecommunications Services	\$810,500,807
A/E Services (Incl Landscaping, Inter Layout & Design)	\$607,575,890
Construction (Basic)	\$447,194,949
Top Products	
Trailers	\$458,236,038
Radio Navigation Equip Except Air	\$330,700,772
Misc Signal Alarm, Security Systems	\$188,527,749
ADP Software	\$183,503,766
Aircraft Launching Equipment	\$144,062,839

Source: DHS Buying Profile information 2007

2.2.1 USCG Product Lines and Projects

The Coast Guard Acquisition Directorate (CG-9) manages a broad portfolio of acquisition projects across three major product lines: Aviation, Surface, and Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR).

Table 2-4: USCG Acquisition Projects by Type

Surface Projects	Air Projects	C4ISR Projects
<ul style="list-style-type: none"> • National Security Cutter • Offshore Patrol Cutter • Mission Effectiveness Project • Great Lakes Ice Breaker Replacement • Fast Response Cutter* • Response Boat-Medium • Coastal Patrol Boat • Response Boat-Small Long Range Interceptor Short Range Prosecutor 	<ul style="list-style-type: none"> • HC-130H/J Long Range Surveillance Aircraft* • HC-144A Medium Range Surveillance Aircraft* • HH/MH-60T Helicopter Upgrade* • HH/MH-65C Multi-mission Cutter Helicopter* • Unmanned Aircraft Systems* 	<ul style="list-style-type: none"> • Rescue 21 • Nationwide Automatic Identification System • Interagency Operations Centers / Command 21 • Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Platform and Facility Upgrades* • Coast Guard Logistics Information Management System

Source: USCG; <http://www.uscg.mil/acquisition/programs/acquisitionprograms.asp>

2.3 Priorities

DHS will focus on reducing costs by standardizing training modules across the Department. Further, DHS is improving access to training and information through technology. According to the FY 2011 Budget in Brief, Workforce Initiative priorities include:

- Developing cross component training opportunities for employees;
- Establishing a plan to ensure the DHS workforce has employees sufficient in number and skill to deliver core mission;
- Conducting an assessment of the number of full-time, part-time employees and contractors to better manage our workforce;
- Standardizing content for new-employee orientation and mandatory annual training modules DHS-wide.

2.3.1 Workforce Initiatives

Congressional members have deemed the high level of contract workers in the DHS unacceptable. As stated in the FY2011 Budget, the Department will continue executing the Balanced Workforce Strategy by converting contractor positions to Federal jobs (DHS, 2010). http://www.dhs.gov/xlibrary/assets/budget_bib_fy2011.pdf

3.0 Goals & Challenges

The FY 2011 budget requests reflect technology and training initiatives in support of DHS goals. Selected requests, gleaned from the [FY2011 budget request](#), are presented below, organized by over-arching DHS goals.

3.1 Preventing Terrorism and Enhancing Security

- An increase of \$214.7M to procure and install 500 advanced imaging technology machines (AITs) at airport checkpoints to detect dangerous materials, including non-metallic materials and an increase of \$60M to purchase portable explosive detection (ETD) machines and associated checkpoint consumables.
- An increase of \$218.9M for additional Transportation Security Officers (TSOs), managers, and support costs, to operate additional AITs at airport checkpoints.
- An increase of \$20M and 350 Behavior Detection Officers BDOs to enhance TSA's Screening Passengers by Observation Techniques program, enhancing coverage at high risk airports and expanding coverage to smaller airports.
- An increase of \$13.4M to fund DNDO systems engineering and architecture to address vulnerabilities in the Global Nuclear Detection Architecture (GNDA), designed to enhance the nation's ability to detect and prevent a radiological or nuclear attack.
- An increase of \$41M for the procurement and deployment of radiological and nuclear detection systems and equipment to support efforts across the Department.
- \$14M for start-up costs associated with the 2012 Presidential Campaign including training for candidate/nominee protective detail personnel.

- \$36M for the Secret Service Information Integration and Transformation program that will allow comprehensive IT transformation and modernization.

3.2 Securing and Managing Borders

- An increase of \$25M to support Customs and Borders Protection Intellectual Property Rights (IPR) Enforcement (IPR) efforts including IT systems that support IPR activities.
- An increase of \$5M for the ICE-led National IPR Coordination Center (IPR Center), with a focus on disrupting criminal organizations through the internet.
- \$1.4B to continue recapitalization of aging Coast Guard surface and air assets.

3.3 Enforcing and Administering Immigration Laws

- \$103.4M and 338 FTEs to develop and implement the USCIS E-Verify Program, enhancing E-Verify's monitoring and compliance activities.
- \$146.9M for nationwide implementation of the Secure Communities program—the identification, apprehension and removal of all Level 1 criminal aliens in state and local jails through criminal alien biometric identification capabilities, deterring their re-entry through aggressive prosecution. (Many observers agree that the marketplace for biometrics is likely to continue to grow, driven by government spending, with most of the growth likely in Central and South America, the Middle East, Eastern Europe, and Asia.)
- \$18M to fund USCIS Office of Citizenship initiatives including expansion of the competitive Citizenship Grant Program to support organizations preparing immigrants for citizenship and enhance English language learning and other tools for legal permanent residents. The Office of Citizenship will lead initiatives to monitor and evaluate the administration and content of the new naturalization test, and develop educational materials and resources for immigrants and the organizations that serve them.

3.4 Safeguarding and Securing Cyberspace

- \$379M for the National Cyber Security Division (NCSD) to support the development of capabilities to prevent, prepare for, and respond to incidents that might impede the Nation's critical information technology infrastructure and key cyber networks.
- \$10M for the National Cyber Security Center (NCSC) to enhance cyber security coordination capabilities including mission integration; collaboration and coordination; situational awareness and cyber incident response; analysis and reporting; knowledge management; and technology development and management.

3.5 Ensuring Resilience to Disasters

- \$100M for Pre-Disaster Mitigation Grants to provide program support and technical assistance to state, local and tribal governments to reduce the risks associated with disasters, support the national grant competition, and provide the required \$500,000 per state allocation. Resources will support the development and enhancement of hazard mitigation plans, as well as the implementation of pre-disaster mitigation projects.

- \$194M for Flood Map Modernization, to support the review and update of flood hazard data and maps to accurately reflect flood hazards and monitor the validity of published flood hazard information that communicates risk.
- \$36M for the Rescue 21 system, enabling the USCG to enhance preparedness, ensure efficient emergency response, and rapidly recover from disasters (replaces the U.S. Coast Guard's legacy National Distress and Response System).

3.6 Maturing and Strengthening the Homeland Security Enterprise

- \$24M to strengthen the Department's acquisition workforce capacity and capabilities and mitigate risks associated with skill gaps of the acquisition workforce.
- \$8M for the S&T Safe Container (SAFECON) and Time Recorded Ubiquitous Sensor Technology (TRUST) programs. These initiatives develop high reliability, high-throughput detection technologies to scan cargo containers entering the country for weapons of mass destruction, explosives, contraband and human cargo.
- \$4B for grant programs to support first responders, assisting state and local governments in prevention, protection, response, and recovery efforts.

4.0 Organizational Acquisition Strategies

From FY 2004-09, DHS' contract spending increased 66 percent (\$8.5 billion to \$14.2 billion) (Brodsky, 2010). Competition overview data is composed of all DHS contract information reported to FPDS-NG and current as of 2007.

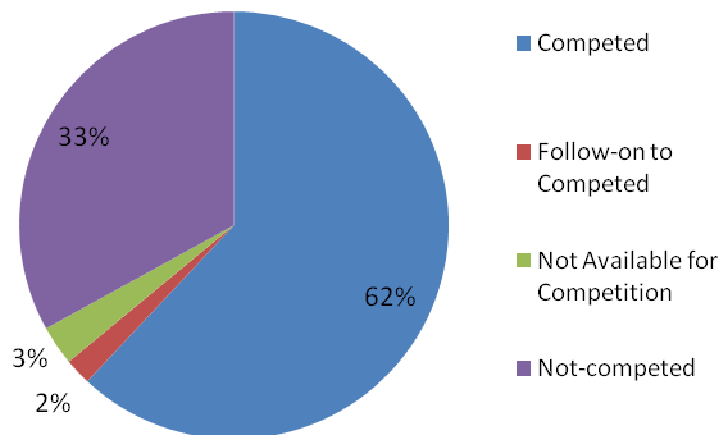


Figure 4-1: DHS Buying Profile Competition

Source: DHS Buying Profile http://www.dhs.gov/xlibrary/assets/opnbiz/cpo_acquisitionreportfy2006.pdf

The Government Accountability Office (GAO) has reported problems with DHS acquisition strategies and practices, including cost overruns, scheduling delays, and poor planning practices (Brodsky, 2010). DHS major acquisition programs have struggled with delivering system capabilities on time and within budget. Overruns have prompted and will likely continue

to drive changes in acquisition strategies and review. For example, in FY 2008, the DHS obligated about \$3.5 billion for procurements awarded through other than full and open competition, and in FY2009, \$3.4 billion (DHS 2010). The DHS Office of Inspector General (OIG) reviewed DHS component procurement files, policies, procedures, and management controls, for those contracts awarded during FY 2008 to determine whether acquisition personnel appropriately documented and supported contracting decisions. Based on a review of 39 FY 2008 contract files with a reported value of more than \$72 million, and a review of 39 FY 2009 contract files with a reported value of more than \$196 million, the OIG determined that acquisition personnel did not always follow federal regulations when awarding noncompetitive contracts. Award files did not always contain sufficient evidence of market research or adequate acquisition planning (DHS OIG, 2010).

The Coast Guard's Acquisition Directorate (CG-9) manages a \$27 billion investment portfolio including eight major programs and product lines, and more than [20 projects](#). Additional business opportunities exist throughout the Coast Guard's other 16 major program/procurement offices (USCG, 2010).

4.1 Major Contract Vehicles

DHS is establishing department-wide contracts for Information Technology (IT) services and commodities. These procurements are being conducted by the Office of Procurement Operations (OPO) in cooperation with the Chief Information Officer (CIO) and the Component IT and procurement communities (http://www.dhs.gov/xopnbiz/opportunities/editorial_0700.shtm). EAGLE (Enterprise Acquisition Gateway for Leading Edge Solutions) can be used by other government agencies, besides DHS, that are working on homeland security related programs.

- [Eagle](#) – Department-wide platform for acquiring IT service solutions
- [Eagle II](#) – Services-based contracts that will enable all Department components to acquire IT support services
- [First Source](#) – Access to a wide variety of IT commodity products

The Acquisition Program Management Branch (formerly Enterprise Solutions Office), is responsible for acquisition management oversight of the IT Acquisitions procurement process (http://www.dhs.gov/xopnbiz/opportunities/editorial_0700.shtm).

4.2 Projected Future Acquisition Strategies

As part of the 2011, Annual Performance Plan, the Acquisition Management & Support Division will work at processing acquisition requirements through standardizing and establishing guidelines to track, monitor, and process actions timely and efficiently (DHS OIG, 2010).

4.2.1 Contract Opportunities

Below are selected Prime Contractors who are interested in subcontracting with small, minority, women-owned, HUBZone-certified, 8(a), veteran-owned, and service-disabled, veteran-owned businesses, available at http://www.dhs.gov/xopnbiz/smallbusiness/gc_1192641073262.shtm.

Table 4-1: Selected DHS Prime Contractors

<p>CACI, INC. FEDERAL, training support Small Business Liaison: Nancy Peters npeters@caci.com ; Tom Perkins tperkins@caci.com Web site: http://www.caci.com/connect/s_b_sub.shtml DHS EAGLE http://www.caci.com/eagle/</p>	<p>CPS HUMAN RESOURCE SERVICES, training & development Small Business Liaison: Deborah Cousins dcousins@cps.ca.gov Web site: www.cps.ca.gov TSA – Admin Support Services</p>
<p>L-3 COMMUNICATIONS TITAN CORPORATION EIS Division, training; team facilitation Small Business Liaison: Alicia Dudley Alicia.dudley@L-3Com.com Web site: www.l-3com.com/supplier-info/smallbus.aspx</p>	<p>GENERAL DYNAMICS INFORMATION TECHNOLOGY, simulation & training Small Business Teaming: Ludmilla Parnell, Marketing Director, Small Business Partnerships ludmilla.parnell@gdit.com ; smallbusiness@gdit.com Web site: www.gdit.com</p>
<p>DEWBERRY, training Small Business Liaison: Becky Arehart rarehart@dewberry.com Web site: www.dewberry.com FEMA Contract: HSFE0207D0003</p>	<p>MICROSOFT CORPORATION, training & documentation support Small Business Liaison: David Monticello david.monticello@microsoft.com</p>
<p>THE BOEING COMPANY, training Small Business Liaison: Bradley Bruce bradley.p.bruce@boeing.com Web site: www.boeing.com/defense-space/sbinet/index.html</p>	

USCG Forecast of Contract Opportunities can be accessed on the [DHS Advance Acquisition Planning web site](#), including USCG and DHS EAGLE IT Procurement Forecast.

5.0 Market Trends and Technological Initiatives

DHS presents multiple opportunities for modeling and simulation, recognizing both the capabilities of modeling and simulation as well as how modeling and simulation can be better used to address DHS requirements.

5.1 Science and Technology Opportunities

The following are links to science and technology related opportunities.

- [Centers of Excellence](#)
- [Long Range Broad Agency Announcement \(BAA\)](#)
- [Small Business Innovation Research \(SBIR\) Program](#)
- [Domestic Nuclear Detection Office \(DNDO\) Business Opportunities](#)
- [SAFECOM](#) Program
- [FutureTECH](#) Program

- [The Support Anti-terrorism by Fostering Effective Technologies Act \(SAFETY Act\) of 2002](#)
- [System Efficacy through Commercialization, Utilization, Relevance and Evaluation \(SECURE\) Program](#)
- [S&T Tech Solutions Program](#)
- [Technology Transfer Program](#)

5.2 R&D

The Science and Technology (S&T) Directorate is the primary research and development arm of DHS. The Directorate's Transition Program aligns investments to Agency requirements and is managed by Capstone Integrated Product Teams (IPTs), specifically chartered to ensure that technologies are engineered and integrated into systems scheduled for delivery and made available to DHS customers. S&T's Five-Year R&D Plan lays out the blueprint for its investment portfolio, and outlines S&T's research emphasis, programs, and key milestones for the next 5 years (DHS, 2008).

Investments focus on DHS's highest-priority requirements that provide capability to DHS operating components and first responders. The S&T Directorate's near-term efforts align with DHS customers' critical needs in the form of Enabling Homeland Capabilities (EHCs)—consisting of technologies that can be developed, matured, delivered, and commercialized or validated as a standard within a 3-year period. The following information provides insight into the immediate and future technological needs as identified by the S&T Directorate (DHS, 2009; High Priority Technology Needs).

5.3 High Priority Needs

First Responders Representative Technology Needs — Technology solutions designed, tested, and assessed for usability and commercialized for the first responder community. Leads: FEMA; OI&A; NPPD.

- Cost-effective training technologies for first responders depicting real-world scenarios
- Capability to interrogate a vehicle at range and perform diagnostic and defeat procedures on explosives
- Non-lethal compliance measures for people, vehicles, vessels, or aircraft, allowing safe interdiction by law enforcement personnel
- Personnel-safe, handheld non-intrusive inspection devices that allow for the inspection of hidden or closed compartments
- Capability for law-enforcement personnel to detect and identify narcotics, chemical warfare agents, toxic industrial chemicals, explosives, and contraband materials. Improved screening and examination by non-intrusive inspection
- Capability to enhance disaster preparedness in communities
- Respiratory protection against airborne particulate matter and poisonous gases—in particular, protective breathing equipment during the clean-up and recovery process
- Capability to predict criminal and terrorist activity

- Enhanced ambulance safety and improved ambulance situational awareness and voice/data communications
- Enhanced capability to identify individuals and verify the professional credentials of individuals in both preplanned and developing events
- Provide emergency managers with seamless data, voice, and video information for enhanced situational awareness in major and minor crisis
- Enhanced information management capabilities to make available information more useful. In particular, the enhanced integration and intelligent prioritization of information

Border Security Representative Technology Needs — Enabling end users such as Border Patrol agents, CBP Air and Marine personnel, and ICE special agents. Leads: CBP and ICE.

- Improved analysis and decision-making tools that will ensure the development and implementation of border security initiatives—in particular, a decision support effort researching automated evaluation of proposed actions through expert systems and modeling and simulation for border security. The effort is researching ways to fully integrate multiple domains, including technology, managerial, policy, organizational, political, and contextual, to enhance decision making
- Detection, tracking, and classifying of all threats along the terrestrial and maritime border—in particular, technologies to support tunnel detection and rugged terrain, concealing foliage, water obstacles, mountains, and other environmental constraints
- Personnel-safe, handheld, non-intrusive inspection device to inspect hidden or closed compartments—in particular, the ability to find contraband and security threats (people) through steel walls. Technologies other than x-ray, gamma rays, and neutrons.
- Ability for law enforcement officers to assure compliance of lawful orders using non-lethal means—in particular, the ability to disable vehicles/vessels and temporarily incapacitate persons to prevent the infliction of damage or harm
- Non-lethal compliance measures for vehicles, vessels, or aircraft, allowing safe interdiction by law enforcement personnel—in particular, the use of a compact, tuned, and focused energy system to shut down or disrupt normal vehicle operation while leaving the braking and steering unaffected

Cargo Security Representative Technology Needs — Technological solutions that will satisfy clearly stated mission requirements, utilizing a system-of-systems integrated approach toward their development. Lead: CBP.

- Improved screening and examination by non-intrusive inspection—in particular, the ability to detect or identify contraband items, threat materials, or stowaways; improve penetration, resolution, throughput, contrast sensitivity, reliability, mobility, and interoperability; and integrate with future Automated Target Recognition capability
- Increased information fusion, anomaly detection, Automatic Target Recognition—in particular, automated imagery detection capability for anomalous content (e.g., stowaways, hidden compartments, contraband), and the ability to detect anomalous patterns in shipping

- Capability to screen 100% of air cargo—in particular, the use of next generation non-intrusive inspection systems to detect and identify contraband items or stowaways without disrupting the flow of commerce
- Track domestic high-threat cargo—in particular, the ability to track DHS-designated Toxic Inhalation Hazardous (TIH) cargos in domestic transit
- Positively identify cargo and detect intrusion or unauthorized access—in particular, in containerized, palletized, parcel, or bulk/break-bulk maritime and air cargo
- Reliable container seal security/detect intrusion devices—in particular, combining six-sided container/conveyance intrusion detection with the ability to sense the presence of harmful or hazardous materials

Maritime Security Representative Technology Needs — Communication, sensors, and surveillance capabilities leading to better operational situation awareness and management of mission-related information.

- Wide-area surveillance from the coast to beyond the horizon, including port and inland waterways, for detection, ID, & tracking— In particular, the detection of vessels between the port region and beyond the horizon, especially small vessels with the capability to geo-reference the images
- Improve the capability to continuously track contraband on ships or containers—in particular the ability to conceal transponders while maintaining effective transmissions
- Vessel compliance through less-lethal compliance methods—in particular, exploring a variety of technical approaches to interdict illegal migrant operations, contraband transport, fishing, security threats, or general law violation
- Ability for law enforcement personnel to detect and identify narcotics, chemical warfare agents, toxic industrial chemicals, explosives, and contraband materials—in particular, a safe, lightweight, non-intrusive inspection device for chemicals, explosives, and drugs featuring one-step operation and able to identify multiple threats (chemical warfare agents, toxic industrial chemicals, explosive chemicals, drugs) with one unit/one setup, operating on portable power, wearable, self-contained, using non-contact methodology to sample suspected contraband items
- Improved radar performance for detection and tracking of vessels in the port and coastal regions— in particular, through the use of more advanced signal processing

Cyber Security Representative Technology Needs — Technologies, processes, and mechanisms to support gathering, analyzing, managing, sharing, and protecting information. Research, development, testing, evaluation, and transition activities focused on protecting critical information infrastructure; developing the cyber research infrastructure; and delivering new technologies to relevant end users. Lead: National Cyber Security Center, USSS, NPPD.

- Secure Internet protocols, including standard security methods
- Improved capability to model the effects of cyber attacks—in particular, measuring security and risk in IT infrastructure and understanding of Internet Topography

- Software Testing and Vulnerability Analysis Technologies—in particular, services and capabilities to rigorously and routinely build, test, and analyze source and binary forms of software in realistic conditions representative of operational environments
- Usable Security—in particular, focused technologies that demonstrate new ways to address the confluence of usability and security
- Information-system insider-threat detection models and mitigation technologies—in particular, technology aids that increase the accuracy, reduce the time, and reduce the cost of detecting and discovering unauthorized insiders
- Analytical techniques for security across the IT system-engineering lifecycle—in particular, analytical techniques to facilitate detecting, quantifying, measuring, visualizing, and understanding system security
- Process Control Systems (PCS) security—in particular capabilities for metrics, wireless communications, and system vulnerability assessment
- Cyber Forensics—in particular, tools and investigative techniques that support law enforcement to address the full range of investigating and solving cyber related crimes

Information Sharing Representative Technology Needs — Technologies, processes, and mechanisms to support gathering, analyzing, managing, sharing, and protecting information to further the development of national standards to share information across jurisdictional boundaries. Lead: Office of Intelligence & Analysis

- Technologies to correlate and fuse sensor data from law enforcement, intelligence partners, and other sensors to support a user-defined operating picture (UDOP) into a comprehensive representation
- Technologies and standards to enable external identity adjudication; managing user identities, rights, and authorities
- Technologies and techniques to automate the distribution of unclassified or lower classification portions of intelligence information to DHS mission partners
- analytic capabilities for structured, unstructured, and streaming data to enable information sharing within and across sectors on terrorist threats
- technologies that provide automated, dynamic, real-time data processing and visualization capability and the information sharing protocols that enable them to improve situational awareness and decision support horizontally across Federal Law Enforcement and Intelligence partners as well as vertically through Federal, state, local and tribal partners
- the ability to correlate data and information for recognizing and potentially predicting terrorist attack patterns
- advanced data integrity techniques to automatically purge or anonymize personally identifiable information of U.S. citizens
- technologies that would improve real-time awareness through alerting others to and sharing information about suspicious activities and persons, improving cross-agency reporting of suspicious activity

6.0 Outlook/Summary

The market and budget outlook for DHS security services is positive. Experts report and expect future growth in the DHS market and budget resulting from increased global terrorist activities and perception of terrorist threat (HSNW, 2010). However, given the DHS focus on cost control, internal efficiency, and scrutinization of its acquisitions, providers will need to tailor products and services specific to DHS component needs, and demonstrate clear cost and benefits of products and services. Dominating trends of security concerns and attention to organization rather than contractor positions will drive service provision over product acquisition, and internal workforce training, CBP training FLETC training, and enabling technologies.

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