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INFORMATION TECHNOLOGY

DHS Needs to Enhance Management of Cost and Schedule for Major Investments

GAO-12-904

September 2012

GAO Highlights

Accountability * Integrity * Reliability

Highlights of GAO-12-904, a report to congressional requesters

INFORMATION TECHNOLOGY

DHS Needs to Enhance Management of Cost and Schedule for Major Investments

Why GAO Did This Study

DHS has responsibility for the development and management of the IT systems for the 22 federal agencies and offices under its jurisdiction. Of its 363 IT investments, 68 are in development and are classified by DHS as a "major" investment that requires special management attention because of its mission importance. Given the size and significance of these investments, GAO was asked to determine the (1) extent to which DHS IT investments are meeting their cost and schedule commitments, (2) primary causes of any commitment shortfalls, and (3) adequacy of DHS's efforts to address these shortfalls and their associated causes.

To address these objectives, GAO analyzed recent cost and schedule performance for DHS's major IT investments, as reported to OMB. To identify the primary cause(s) of any shortfalls and whether any corrective efforts were being taken to address them, GAO analyzed project plans and related documentation and interviewed responsible DHS officials and compared the corrective efforts to applicable criteria to assess their adequacy.

What GAO Recommends

GAO is recommending that the Secretary of Homeland Security direct the appropriate officials to address the guidance shortcomings and develop corrective actions for all major IT investment projects having cost and schedule shortfalls. In commenting on a draft of this report, DHS concurred with GAO's recommendations.

View GAO-12-904. For more information, contact David A. Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

Approximately two-thirds of the Department of Homeland Security's (DHS) major information technology (IT) investments are meeting their cost and schedule commitments (i.e., goals). Specifically, out of 68 major IT investments in development, 47 were meeting cost and schedule commitments. The remaining 21—which total about $1 billion in spending—had one or more subsidiary projects that were not meeting cost and/or schedule commitments (i.e., they exceeded their goals by at least 10 percent, which is the level at which the Office of Management and Budget (OMB) considers projects to be at increased risk of not being able to deliver planned capabilities on time and within budget.)

The primary causes for the cost and schedule shortfalls were (in descending order of frequency):

- inaccurate preliminary cost and schedule estimates,
- technology issues in the development phase,
- changes in agency priorities,
- lack of understanding of user requirements, and
- dependencies on other investments that had schedule shortfalls.

Eight investments had inaccurate cost and schedule estimates. For example, DHS's Critical Infrastructure Technology investment had a project where actual costs were about 16 percent over the estimated cost, due in part to project staff not fully validating cost estimates before proceeding with the project. In addition, six investments had technical issues in the development phase that caused cost or schedule slippages. For example, DHS's Land Border Integration investment had problems with wireless interference at certain sites during deployment of handheld devices used for scanning license plates, which caused a project to be about 2.5 months late. In past work on DHS investments, GAO has identified some of the causes of DHS's shortfalls and made recommendations to strengthen management in these areas (e.g., cost estimating, requirements), and DHS has initiated efforts to implement the recommendations.

DHS often did not adequately address shortfalls and their causes. GAO's investment management framework calls for agencies to develop and document corrective efforts to address underperforming investments. DHS policy requires documented corrective efforts when investments experience cost or schedule variances. Although 12 of the 21 investments with shortfalls had defined and documented corrective efforts, the remaining 9 did not. Officials responsible for 3 of the 9 investments said they took corrective efforts but were unable to provide plans or any other related documentation showing such action had been taken. Officials for the other 6 investments cited criteria in DHS's policy that excluded their investments from the requirement to document corrective efforts. This practice is inconsistent with the direction of OMB guidance and related best practices that stress developing and documenting corrective efforts to address problems in such circumstances. Until DHS addresses its guidance shortcomings and ensures each of these underperforming investments has defined and documented corrective efforts, these investments are at risk of continued cost and schedule shortfalls.

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Abbreviations

CBP	U.S. Customs and Border Protection
CIO	chief information officer
DHS	Department of Homeland Security
FEMA	Federal Emergency Management Agency
ICE	U.S. Immigration and Customs Enforcement
IT	information technology
NPPD	National Protection and Programs Directorate
OMB	Office of Management and Budget
SBInet	Secure Border Network
TSA	Transportation Security Administration
USCIS	U.S. Citizenship and Immigration Services
USCG	U.S. Coast Guard
USSS	U.S. Secret Service
US-VISIT	United States Visitor and Immigrant Status Indicator Technology

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GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

September 26, 2012

The Honorable Thomas R. Carper
Chairman
Subcommittee on Federal Financial Management, Government Information, Federal Services and International Security
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Michael T. McCaul
Chairman
The Honorable William R. Keating
Ranking Member
Subcommittee on Oversight, Investigations, and Management
Committee on Homeland Security
House of Representatives

As part of its mission to protect the homeland, the Department of Homeland Security (DHS) is responsible for 22 agencies and offices with related missions and for the development and management of the information technology (IT) investments and systems used by those organizations. For its approximately 363 ongoing IT investments for fiscal year 2012, DHS plans to spend about $5.6 billion. Of these 363 investments, 68 are under development and are classified by DHS as a "major" investment[1] that requires special management attention because of its importance to DHS's mission.

Given the size and significance of these investments, you asked us to determine the (1) extent to which DHS IT investments are meeting their cost and schedule commitments, (2) primary causes of any commitment shortfalls, and (3) adequacy of DHS's efforts to address these shortfalls and their associated causes. In addition to this report, we have also

[1] DHS defines a major IT Investment as one whose cost is $50 million or more.

recently issued a report focused on the management and performance of DHS's major acquisitions.[2]

To address these objectives, we analyzed how each of these 68 major investments was performing against its cost and schedules commitments[3] as reported by the department to the Office of Management and Budget (OMB) as of March 2012. In doing this, we identified investments that had one or more projects exceeding 10 percent of their cost and schedule commitments. We focused on these investments and on their subsidiary projects[4] because they are under development and because OMB considers them to be at an increased level of risk of not being able to deliver promised capabilities on time and within budget, and thus they require special attention from management. For each of these investments and associated projects experiencing such shortfalls, we reviewed project plans and related documentation and interviewed responsible DHS officials to identify the primary cause(s) for the shortfalls and whether any corrective efforts had been developed and documented to address the shortfalls. We also compared the corrective efforts to applicable criteria to assess their adequacy.

We conducted this performance audit from October 2011 to September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. Further

[2] In that report—entitled GAO, *Homeland Security: DHS Requires More Disciplined Investment Management to Help Meet Mission Needs*, GAO-12-833 (Washington, D.C.: Sept. 18, 2012)—we assessed the extent to which (1) DHS's major acquisition programs face challenges that increase the risk of poor outcomes; (2) DHS has policies and processes in place to effectively manage individual acquisition programs; (3) DHS has policies and processes in place to effectively manage its portfolio of acquisition programs as a whole; and (4) DHS has taken actions to address the high-risk acquisition management issues we have identified in previous reports. The report focused on, among other things, the extent to which major acquisitions were achieving their cost, schedule, and capability objectives and whether the department had policies in place to effectively manage these acquisition programs.

[3] Commitments are cost and schedule goals or targets that the department defined for the investment in its investment planning and approval documents, such as cost and schedule baselines.

[4] Major IT investments—which are typically multiyear efforts— are made up of one or more subsidiary projects. A project is a temporary effort (e.g., 9 months) to accomplish a unique product or service such as adding enhancements to a system.

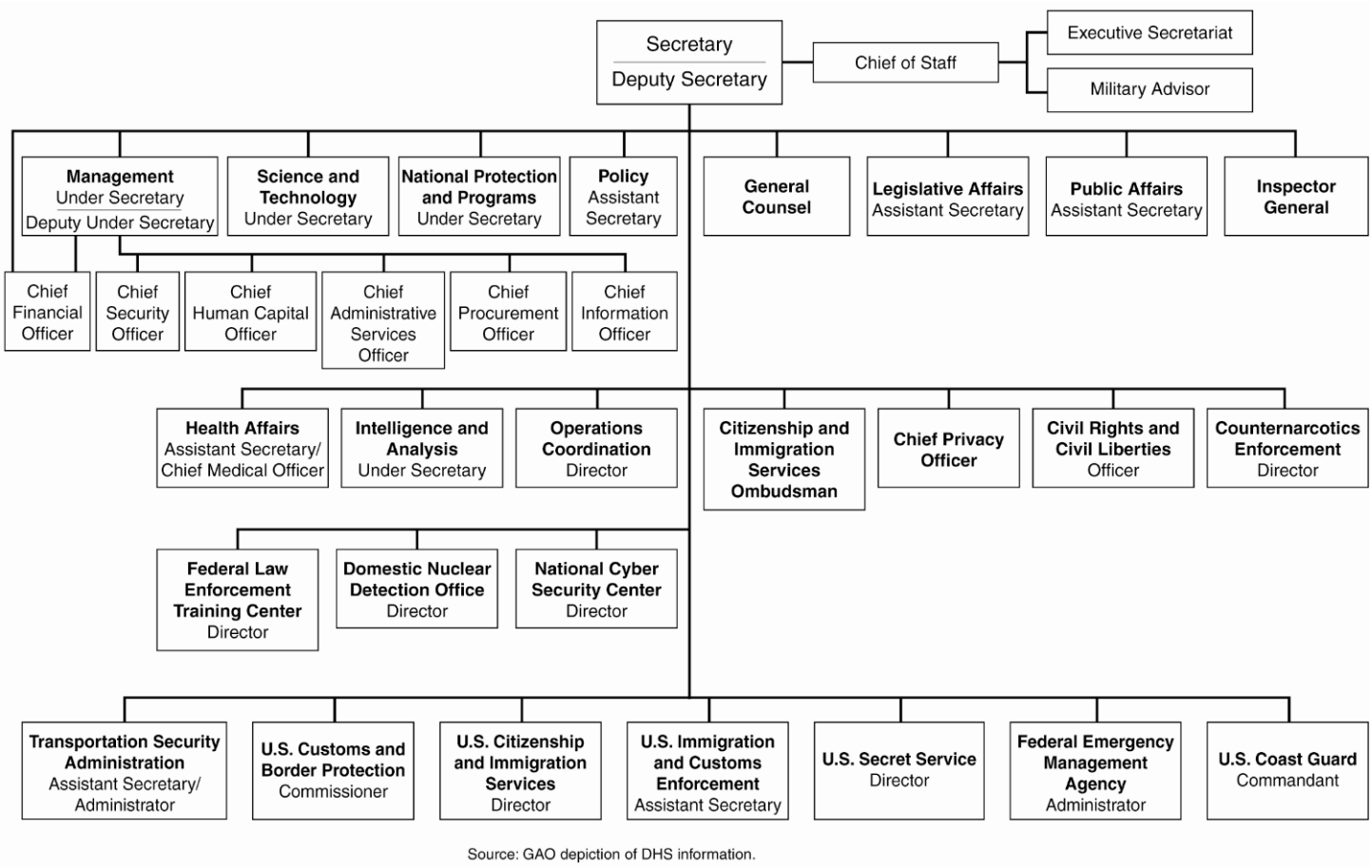
details on our objectives, scope, and methodology are included in appendix I.

Background

DHS's mission is to lead the unified national effort to secure America by preventing and deterring terrorist attacks and protecting against and responding to threats and hazards to the nation. DHS is also responsible for ensuring that the nation's borders are safe and secure, that they welcome lawful immigrants and visitors, and that they promote the free flow of commerce.

Created in 2002, DHS assumed control of about 209,000 civilian and military positions from 22 agencies and offices that specialize in one or more aspects of homeland security. The purpose behind the merger was to improve coordination, communication, and information sharing among these multiple federal agencies. Figure 1 shows DHS's organizational structure and table 1 identifies DHS's principal organizations and describes their missions.

Figure 1: DHS Organizational Structure



Source: GAO depiction of DHS information.

Table 1: DHS's Principal Component Organizations and their Missions

Principal organizations[a]	Mission
U.S. Customs and Border Protection (CBP)	Protects the nation's borders to prevent terrorists and terrorist weapons from entering the United States, while facilitating the flow of legitimate trade and travel.
Domestic Nuclear Detection Office	Protects the nation by detecting and reporting unauthorized attempts to import, possess, store, develop, or transport nuclear or radiological material for use against the nation.
Federal Emergency Management Agency (FEMA)	Prepares the nation for hazards, manages federal response and recovery efforts following any national incident, and administers the National Flood Insurance Program.
U.S. Immigration and Customs Enforcement (ICE)	Protects the nation's borders by identifying and limiting vulnerabilities in the nation's border, economic, transportation, and infrastructure security.
Intelligence and Analysis	Works closely with DHS components, as well as state, local, and tribal entities, to fuse nontraditional and traditional intelligence information streams into national threat assessments, and disseminates the resulting information to DHS and external homeland security customers.
Management Directorate	Oversees department budgets and appropriations, expenditure of funds, accounting and finance, procurement, human resources, IT, facilities and equipment, and identifies and tracks performance measurements. Includes the Offices of the Chief Information Officer, Chief Financial Officer, and Chief Procurement Officer.
National Protection and Programs Directorate (NPPD)	Works with state, local, and private sector partners to identify threats, determine vulnerabilities, and target resources where risk is greatest to safeguard the nation's critical physical and cyber infrastructures.
Office of Health Affairs	Protects the nation against biohazards through coordinated efforts with all levels of government and the private sector to develop and support a scientifically rigorous, intelligence-based biodefense and health preparedness architecture.
Office of Operations and Coordination Planning	Monitors the security of the United States and coordinates activities within the department and with governors, homeland security advisors, law enforcement partners, and critical infrastructure operators in all 50 states and more than 50 major urban areas nationwide.
Transportation Security Administration (TSA)	Protects the nation's transportation systems to ensure freedom of movement for people and commerce.
U.S. Citizenship and Immigration Services (USCIS)	Administers immigration and naturalization adjudication functions and establishes immigration services policies and priorities.
U.S. Coast Guard (USCG)	Protects the public, the environment, and U.S. economic interests in the nation's ports and waterways, along the coast, in international waters, and in any maritime region as required to support national security.
U.S. Secret Service (USSS)	Protects the President and other high-level officials and investigates counterfeiting and other financial crimes, including financial institution fraud, identity theft, computer fraud; and computer-based attacks on our nation's financial, banking, and telecommunications infrastructure.

Source: GAO analysis of DHS data.

[a]This table does not show the organizations that fall under each of the directorates. It also does not show all organizations that report directly to the DHS Secretary and Deputy Secretary, such as executive secretary, legislative and intergovernmental affairs, public affairs, chief of staff, inspector general, and general counsel.

Within the department's Management Directorate, headed by the Under Secretary for Management, is the Office of the Chief Information Officer

(CIO). The CIO's responsibilities include setting departmental IT policies, processes, and standards, and ensuring that IT acquisitions comply with DHS IT management processes, technical requirements, and approved enterprise architecture, among other things. Additionally, the CIO chairs DHS's Chief Information Officer Council (CIO Council), which is responsible for ensuring the development of IT resource management policies, processes, best practices, performance measures, and decision criteria for managing the delivery of IT services and investments, while controlling costs and mitigating risks.

DHS IT Investments Support Its Mission

DHS spends billions of dollars each year on IT investments to perform both mission-critical and support functions that frequently must be coordinated among components, as well as among external entities. Of the $5.6 billion that DHS plans to spend on 363 IT-related investments in fiscal year 2012, $4.4 billion is planned for the 83 the agency considers to be a major investment; namely, costly, complex, and/or mission critical.

Of these 83 major IT investments, 68 are under development and have planned fiscal year 2012 costs of approximately $4 billion. Examples of major investments under development that are being undertaken by DHS and its components include:

- **U. S. Customs and Border Protection—Automated Commercial Environment/International Trade Data System** will incrementally replace existing cargo processing technology systems with a single system for land, air, rail, and sea cargo and serve as the central data collection system for federal agencies needing access to international trade data in a secure, paper-free, web-enabled environment.

- **Immigration and Customs Enforcement —TECS Modernization** is to replace the legacy mainframe system developed by the U.S. Customs Service in the 1980s to support its inspections and investigations. Following the creation of DHS, those activities were assigned to CBP and ICE, respectively. CBP and ICE are now working to modernize their respective portions of the system in a coordinated effort with separate funding and schedules. ICE's portion of the investment will include modernizing the investigative case management and related support modules of the legacy system.

- **National Protection and Programs Directorate—National Cybersecurity Protection System**, also referred to as EINSTEIN, is an integrated system that includes intrusion detection, analytics, intrusion prevention, and information sharing capabilities that are used

to defend the federal executive branch civilian agencies' IT infrastructure from cyber threats. It consists of the hardware, software, supporting processes, training, and services that are being developed and acquired to support DHS's mission requirements.

Best Practices and OMB Guidance Stress Importance of Keeping IT Investments within Cost and on Schedule

The success of major IT investments are judged by, among other things, the extent to which they deliver promised system capabilities and mission benefits on time and within cost. Consequently, our best practices research and extensive experience at federal agencies, as well as OMB guidance, stress the importance of federal IT investments meeting cost and schedule milestones.

GAO's Information Technology Investment Management guidance[5] highlights the need to regularly determine each IT project's progress toward cost and schedule milestones using established criteria and calls for corrective efforts when milestones are not being met. The guidance also calls for such corrective efforts to be defined and documented. OMB plays a key role in helping federal agencies manage their investments by working with them to better plan, justify, and determine how much they need to spend on projects and how to manage their approved projects. In December 2010, OMB issued its *25 Point Implementation Plan to Reform Federal Information Technology Management*,[6] a plan to change IT management throughout the federal government by strengthening the role of investment review boards to enable them to more adequately manage agency IT portfolios, redefining the role of agency CIOs and the Federal CIO Council[7] to focus on portfolio management, and implementing face-to-face reviews to identify IT investments that are experiencing performance problems and to select

[5] GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: Mar. 1, 2004).

[6] Office of Management and Budget, *25 Point Implementation Plan to Reform Federal Information Technology Management* (Washington, D.C.: Dec. 9, 2010).

[7] The CIO Council is comprised of the CIOs and Deputy CIOs of 28 agencies and is chaired by OMB's Deputy Director for Management. It is the principal interagency forum for improving agency practices related to the design, acquisition, development, modernization, use, sharing, and performance of federal information resources and is responsible for developing recommendations for overall federal IT management policy, sharing best practices, including the development of performance measures, and identifying opportunities and sponsoring cooperation in using information resources.

them for a TechStat session—a review of selected IT investments between OMB and agency leadership that is led by the Federal CIO. In addition, OMB provides agencies with tools to measure how effectively investments are meeting established cost and schedule parameters. Specifically, OMB requires federal agencies to provide information on their IT investments as a part of their yearly budget submissions, and to do so using an exhibit 53, in which they list all of their IT investments and their associated costs, and an exhibit 300, also called the Capital Asset Plan and Business Case, which includes an investment's cost and schedule commitments.

Further, in June 2009, OMB deployed the IT Dashboard, a website that displays near real-time information on, among other things, the cost and schedule performance of all of an agency's major IT investments. The IT Dashboard provides, among other things, a cost and schedule performance rating for each major IT investment's subsidiary project. These ratings are based on the extent to which the project is meeting its cost and schedule commitments. For example, projects experiencing a 10 percent or greater cost and/or schedule variance are considered to be at an elevated risk of not delivering promised capabilities on time and within budget, and, as such, require management attention.

Prior GAO Reports Highlighted Cost and Schedule Shortfalls of Major DHS Investments

We have previously reported on the cost and schedule challenges associated with major DHS IT investments, such as those with CBP's Secure Border Network (SBInet) and NPPD's United States Visitor and Immigrant Status Indicator Technology (US-VISIT). For example, in 2007 we reported that the Secure Border Network had experienced significant cost and schedule shortfalls due, in part, to the project not having fully defined activities. In addition, in May 2010, we reported that continued delays to the investment were likely because, among other things, it had not developed a reliable integrated master schedule and the schedule did not adequately capture all necessary activities.[8] In these reports, we made recommendations to strengthen the program weaknesses to keep the investment on schedule and within cost.

[8] GAO, *Secure Border Initiative: SBInet Expenditure Plan Needs to Better Support Oversight and Accountability*, GAO-07-309 (Washington, D.C.: Feb. 15, 2007) and *Secure Border Initiative: DHS Needs to Reconsider Its Proposed Investment in Key Technology Program*, GAO-10-340 (Washington, D.C.: May 5, 2010).

With regard to the US-VISIT investment, we noted in a November 2009 report that officials had not adopted an integrated approach to scheduling, executing, and tracking the work that needed to be accomplished to deliver the Comprehensive Exit project to more than 300 ports of entry on schedule and within cost.[9] Accordingly, we recommended that DHS strengthen management of the project by ensuring that it develop and maintain integrated scheduling plans in accordance with applicable key practices; DHS concurred with the recommendations.

Further, in 2011, as a part of our High Risk series,[10] we reported that, because of acquisition weaknesses, major investments, such as the recently canceled SBInet, continued to be challenged in meeting capability, benefit, cost, and schedule expectations. Based on our prior work, we identified and provided to DHS key actions and outcomes critical to addressing this and other challenges.

Most recently, we reported[11] in July 2012 that DHS was making progress in developing and implementing a new IT governance process. We found that DHS had developed a new governance framework and that the associated policies and procedures were generally consistent with recent OMB guidance and with best practices for managing projects and portfolios identified in GAO's Information Technology Investment Management framework; however, the agency had not yet finalized most policies and procedures and was not fully using best practices for the implementation. Accordingly, we made recommendations to DHS to, among other things, strengthen its new governance process and related IT management capabilities; the agency agreed to implement the recommendations.

[9] GAO, *Homeland Security: Key US-VISIT Components at Varying Stages of Completion, but Integrated and Reliable Schedule Needed*, GAO-10-13 (Washington, D.C.: Nov. 19, 2009).

[10] GAO, *High Risk Series: An Update*, GAO-11-278 (Washington, D.C.: February 2011).

[11] GAO, *Information Technology: DHS Needs to Further Define and Implement Its New Governance Process*, GAO-12-818 (Washington, D.C.: July 2012).

DHS Meeting Cost and Schedule Commitments for Most Major IT Investments

As discussed previously, our best practices research and experience at federal agencies as well as OMB guidance stress the importance of investments meeting their cost and schedule commitments. OMB requires agencies to report to the IT Dashboard information on the cost and schedule performance of all their major IT investments.

Our analysis of the cost and schedule performance for DHS's 68 major IT investments shows that approximately two-thirds of these investments and their subsidiary projects were meeting cost and schedule commitments; the remaining one-third had at least one subsidiary project that was not meeting its commitments. Specifically, out of the 68 major investments under development, 47 were meeting their cost and schedule commitments. (See app. II for a listing of the 47 investments and subsidiary projects that are meeting their commitments.) The remaining 21 investments had one or more subsidiary projects that were not meeting cost and/or schedule commitments; the total planned cost for all projects in development for the 21 investments is approximately $1 billion. Table 2 lists the investments experiencing cost and/or schedule shortfalls, and the total planned project cost for each investment. A list of the investments and their subsidiary projects experiencing cost and/or schedule shortfalls is included in appendix III.

Table 2: DHS Major IT Investments with Cost and Schedule Shortfalls (dollars in millions)

Component	Investment	One or more projects with a cost shortfall	One or more projects with a schedule shortfall	One or more projects with a cost and schedule shortfall	Total planned project cost[a]

Component	Investment	One or more projects with a cost shortfall	One or more projects with a schedule shortfall	One or more projects with a cost and schedule shortfall	Total planned project cost[a]
CBP					
	Automated Commercial Environment/International Trade Data System		✓		$124.26
	Land Border Integration		✓		20.9
	Non-intrusive Inspection Systems Program		✓		332.3
	Northern Border, Remote Video Surveillance System		✓		8.2
	TECS Modernization		✓		43.03
DHS Office of the Chief Information Officer					
	Human Resources IT	✓			8.52
FEMA					
	Disaster Assistance Improvement Plan	✓	✓	✓	50.5
ICE					
	Detention and Removal Operations Modernization		✓		8.62
NPPD					
	Critical Infrastructure Technology and Architecture	✓			20.55
	Infrastructure Security Compliance-Chemical Security Assessment Tool	✓			72.76
	National Cybersecurity Protection System		✓		262.6
	Next Generation Networks Priority Services		✓		63.06
	US-VISIT: Arrival and Departure Information System		✓		7.18
	US-VISIT: Automated Biometric Identification System		✓		33.24
TSA					
	Air Cargo Security	✓	✓	✓	4.09
	Federal Air Marshal Service Mission Scheduling and Notification System		✓		5.43

Component	Investment	One or more projects with a cost shortfall	One or more projects with a schedule shortfall	One or more projects with a cost and schedule shortfall	Total planned project cost[a]
	Hazmat Threat Assessment Program		✓		4.09
	Security Technology Integrated Program		✓		27.99
USCG					
	CG Business Intelligence		✓		.86
	Naturalization: CLAIMS 4		✓		2.36
USSS					
	Information Integration and Technology Transformation		✓		43.61
TOTAL		**21**	**5**	**18**	**2**	**$1,144.14[b]**

Source: GAO analysis of OMB's federal IT Dashboard data.

[a] These are the total planned costs of all investment projects in development as of March 8, 2012.

[b] Differences in total are rounded off.

Of the 21 investments with a shortfall, 5 had one or more subsidiary project with a cost shortfall, 18 had one or more project with a schedule shortfall, and 2 had a project with both a cost and schedule shortfall. These shortfalls potentially impact the total cost of investments and can delay the implementation of key systems. For example:

- TSA's Federal Air Marshal Service Mission Scheduling and Notification System: project to modernize the core scheduling software component of the system, which, among other things, determines the allocation of federal air marshals to flights and coordinates and communicates mission assignments, was delayed.
- NPPD's Critical Infrastructure Technology and Architecture investment: project to develop an information-sharing application to be used by federal, state, and local stakeholders to increase their capability to combat terrorist use of improvised explosive devices had cost overruns of approximately 16 percent ($296,000).
- CBP's Northern Border, Remote Video Surveillance System investment: project to incorporate IT Security improvements to the remote video surveillance systems in Buffalo, New York, and Detroit, Michigan, was delayed by approximately 2 months.
- FEMA's Disaster Assistance Improvement Plan: a subsidiary project—site usability enhancements—that included enhancements to

the DisasterAssistance.gov website to improve usability by making it easier and more intuitive for users to apply for and find information about disaster assistance from federal, state, local, tribal, and private nonprofit organizations was delayed.

Causes of Investment Cost and Schedule Shortfalls Vary

The primary causes of the shortfalls in cost and schedule associated with DHS's 21 major IT investments were (in descending order of frequency): inaccurate preliminary cost and schedule estimates, technical issues in the development phase, changes in agency priorities, lack of understanding of user requirements, and dependencies on other investments that had schedule shortfalls. A summary of these causes by investment and the associated component are shown in table 3 and are followed by (1) our analysis of these causes by category and (2) discussion of our past work on the department's major investments and related IT management processes where we identified some of these same causes and made recommendations to strengthen management in these areas.

Table 3: Primary Causes of Shortfalls Experienced by Major DHS IT Investments (in descending order of frequency)

Causes		Inaccurate preliminary cost/schedule estimates	Technical issues in development phase	Changes in agency priorities	Lack of understanding of user requirements	Dependencies on other investments	Other causes
Component	**Investment**						
CBP	Automated Commercial Environment / International Trade Data System		✓				
	Land Border Integration		✓				
	Non-Intrusive Inspection Systems Program	✓					
	Northern Border, Remote Video Surveillance System	✓					
	TECS Modernization				✓		
DHS Office of the Chief Information Officer	Human Resources IT	✓					
FEMA	Disaster Assistance Improvement Plan	✓	✓			✓	
ICE	Detention and Removal Operations Modernization		✓		✓		

Causes		Inaccurate preliminary cost/schedule estimates	Technical issues in development phase	Changes in agency priorities	Lack of understanding of user requirements	Dependencies on other investments	Other causes
NPPD	Critical Infrastructure Technology and Architecture	✓					
	Infrastructure Security Compliance: Chemical Security Assessment Tool						✓
	National Cybersecurity Protection System	✓					
	Next Generation Networks Priority Services	✓		✓			
	US-VISIT: Arrival and Departure Information System			✓			
	US-VISIT: Automated Biometric Identification System			✓			
TSA	Air Cargo Security		✓			✓	
	Federal Air Marshal Service Mission Scheduling and Notification System						✓
	Hazmat Threat Assessment Program	✓					
	Security Technology Integrated Program		✓				
USCG	CG Business Intelligence			✓			
USCIS	Naturalization-CLAIMS 4				✓		
USSS	Information Integration and Technology Transformation					✓	
Totals		**8**	**6**	**4**	**3**	**3**	**2**

Source: GAO analysis of agency data.

Specifically, our analysis of these causes by category showed:

Inaccurate preliminary cost and schedule estimates: Inaccurate cost and schedule estimates in eight investments resulted in significant cost and schedule increases. For example:

- Preliminary schedule estimates for a project under CBP's Non-Intrusive Inspection Systems Program investment—which supports the detection and prevention of contraband from entering the

country—were inaccurate due to underestimating the time needed to complete a key task. Specifically, project officials did not accurately estimate how long it would take to complete an environmental assessment because they did not consider all requirements in their initial planning, thus resulting in a schedule delay of approximately 2 months.

- The NPPD investment called Critical Infrastructure Technology and Architecture had a project—integral to developing an information sharing application to be used by federal, state, and local stakeholders to increase their capability to combat terrorist use of improvised explosive devices—where actual costs for completing critical tasks were about 16 percent over the cost estimated at project initiation. According to investment officials, this was due in part to project staff developing the cost estimates very quickly and not fully validating them before proceeding with the project.

- TSA's Hazmat Threat Assessment Program (which performs a threat assessment on commercial truck drivers who transport hazardous materials to determine the threat status to transportation security) had a schedule shortfall with a project, because, in part, the time needed to modify a contract was not accurately estimated, which led to a schedule delay of nearly 3 months.

Technology issues in the development phase: Technical issues in the development phase caused cost or schedule slippages in six investments. Examples include:

- Changes made to one part of ICE's Detention and Removal Operations Modernization investment, which is designed to upgrade IT capabilities to support efficient detention and removal of non-U.S. citizens, created a cascading effect, leading to changes to other parts of the system and contributed to delays of more than a month.

- Issues in establishing a testing and development environment that matched the production environment delayed project testing in several projects under FEMA's Disaster Assistance Improvement Plan investment (which is to ease the burden on disaster survivors by providing them with a mechanism to access and apply for disaster assistance).

- Technical complications during deployment caused the schedule to slip by 79 days on a project under CBP's Land Border Integration investment, which assists with the processing of inbound and

outbound travel at border patrol checkpoints nationwide. Specifically, the handheld devices used for scanning license plates used a wireless spectrum that had interference problems at certain sites, and resolving this issue took more time than had been planned for.

Changes in agency priorities: Four investments experienced cost and schedule slippages due to changing priorities at the agency level. In particular,

- The schedules were delayed for two NPPD US-VISIT investments: the Arrival and Departure Information System, which collects arrival and departure information on non-U.S. citizens traveling to the United States as well as current immigration status updates for each traveler, and the Automated Biometric Identification System, a fingerprint repository and biometric-matching system. Delays were due to a management decision to focus on accelerating the development of other investments or projects, which took resources (i.e., personnel) away from the investment. Consequently, the Arrival and Departure Information System's fiscal year 2011 maintenance release project was delayed approximately 3 months, and the Automated Biometric Identification System's fiscal year 2011 product support project was delayed by approximately 7 months.

- A critical subsidiary project to deliver predictive analytical capabilities under USCG's Business Intelligence investment, which is designed to reduce organizational uncertainty and risk in decision making, had a schedule delay of approximately 3 months due to changing priorities. Project officials said that Coast Guard management directed resources to other projects with a higher priority, thus limiting the ability to work on the predictive analytics capability project.

Lack of understanding user requirements: Three investments had slippages resulting from misunderstanding or inadequately developed user requirements and expectations.

- A project under USCIS's Claims 4 investment, which is a processing system for the adjudication of naturalization applications, was delayed by 2 weeks because inadequate user requirements led to a design flaw that required additional time to address.

- Customer priorities and expectations for ICE's Detention and Removal Operations Modernization investment changed over time, which contributed to schedule delays of more than a month.

- The schedule for a CBP TECS Modernization investment project, which supports the screening of travelers entering the United States, was delayed due to users requesting that the application in development interface with a separate system. The project was delayed by 3 months while program officials developed new requirements.

Dependencies on other component's investments that had schedule shortfalls: Investments also encountered schedule slippages when interdependent investments encountered delays. For example:

- USSS's Information Integration and Technology Transformation investment to provide advanced security measures to electronically send, receive, and track access to USSS's unclassified and classified information was delayed approximately 6 months due to a component's project being delayed.

- Costs for a project under FEMA's Disaster Assistance Improvement Plan investment rose approximately 27 percent ($210,000) due, in part, to the delayed deployment of another investment.

Other causes of cost and schedule slippages that were cited by department officials included delays in receiving funding and gaps in leadership due to key management turnover. Specifically,

- The schedule for three projects under TSA's Federal Air Marshal Service Mission Scheduling and Notification investment was delayed due to delays in receiving full funding. DHS had provided the investment with partial funding, and thus investment officials produced an investment plan based on that funding level; when full funding was subsequently restored, the plan had to be updated, which resulted in delays.

- The costs for a key subsidiary project of NPPD's Infrastructure Security Compliance, Chemical Security Assessment Tool, which is to provide for the electronic submission of chemical facility data and controlled use of such data, rose approximately 20 percent ($719,000) due, in part, to multiple director-level program changes, which led to corresponding changes in the investment's vision and direction.

In our past work on DHS's investments and related IT management processes, we have identified some of these same causes and made recommendations to strengthen management in these areas. For

example, with regard to cost estimating, we reported that forming a reliable estimate of costs provides a sound basis for measuring against actual cost performance and that the lack of such a basis contributes to variances.[12] To help agencies establish such a capability, we issued a guide in March 2009 that was based on the practices of leading organizations.[13] In a July 2012 report examining how well DHS is implementing these practices, we reported that the department had weaknesses in cost estimating.[14] Accordingly, we made recommendations to DHS to strengthen its cost estimating capabilities, and the department has plans and efforts under way to implement our recommendations.

We have also reported[15] that developing sufficient requirements is key to effectively delivering systems on time and within budget and that DHS has experienced project delays and cost overruns resulting from initial requirements not being defined properly. To address this challenge, DHS has begun, as part of defining and implementing a new IT governance process, to establish centers of excellence to provide investment officials with expert assistance in requirements development and other essential IT management disciplines.[16] However, we also reported that DHS had yet to fully define and implement these initiatives; accordingly, we made recommendations to do so, and the agency agreed to implement the recommendations and has efforts planned and under way to complete implementation by September 2013.

[12] GAO, *Information Technology Cost Estimation: Agencies Need to Address Significant Weaknesses in Policies and Practices*, GAO-12-629 (Washington, D.C.: July 2012).

[13] GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009).

[14] GAO-12-629.

[15] GAO, *Department of Homeland Security: Assessments of Selected Complex Acquisitions,* GAO-10-588SP (Washington, D.C.: June 2010).

[16] GAO-12-818.

About Half of DHS's Investments with Shortfalls Do Not Have Well-Developed Corrective Efforts

A variety of best practices exist to guide the successful acquisition of IT investments, including how to develop and document corrective actions for projects experiencing cost and schedule shortfalls. In particular, GAO's Information Technology Investment Management framework calls for agencies to develop and document corrective efforts for underperforming projects. It also states that agencies are to ensure that, as projects develop and costs rise, the project continues to meet mission needs at the expected levels of cost and risk; if projects are not meeting expectations or if problems have arisen, agencies are to quickly take steps to address the deficiencies. In addition, DHS policy[17] requires corrective actions when cost or schedule variances exceed 8 percent.

DHS developed and documented corrective efforts for 12 of the 21 major investments with a shortfall, but the remaining 9 did not have documented corrective efforts. Table 4 depicts the investments with shortfalls and whether corrective efforts had been developed and documented.

Table 4: Extent to Which DHS Had Developed and Documented Corrective Efforts for Investment Shortfalls

Adequately developed and documented corrective efforts?		Yes	No
Component	**Investment**		
CBP	Automated Commercial Environment / International Trade Data System	✓	
	Land Border Integration	✓	
	Non-Intrusive Inspection Systems Program	✓	
	Northern Border, Remote Video Surveillance System	✓	
	TECS Modernization	✓	
DHS Office of the Chief Information Officer	Human Resources IT		✓
FEMA	Disaster Assistance Improvement Plan	✓	
ICE	Detention and Removal Operations Modernization	✓	
NPPD	Critical Infrastructure Technology and Architecture	✓	
	Infrastructure Security Compliance: Chemical Security Assessment Tool	✓	
	National Cybersecurity Protection System		✓

[17] Department of Homeland Security, *Acquisition Management Directive, Directive Number 102-01* (Jan. 20, 2010) and Department of Homeland Security, *Capital Planning and Investment Control Guide, version 7.2* (October 2011).

	Next Generation Networks Priority Services		✓
	US-VISIT: Arrival and Departure Information System		✓
	US-VISIT: Automated Biometric Identification System		✓
TSA	Air Cargo Security		✓
	Federal Air Marshal Service Mission Scheduling and Notification System		✓
	Hazmat Threat Assessment Program	✓	
	Security Technology Integrated Program	✓	
USCG	Coast Guard Business Intelligence		✓
USCIS	Naturalization-CLAIMS 4		✓
USSS	Information Integration and Technology Transformation	✓	
Total		**12**	**9**

Source: GAO analysis of DHS data.

DHS took corrective actions to address investment shortfalls in 12 investments. Actions for the 12 included:

- CBP: Automated Commercial Environment /International Trade Data System had schedule shortfalls due to an inadequate testing and development environment; they were resolved by leveraging CBP's disaster recovery site to perform the testing.
- CBP: Land Border Integration investment schedule delays due to technical complications were resolved through the use of risk management processes (e.g., identification, assessment, tracking, and mitigation of risks) identified in the investment's July 2011 risk management plan, which addressed the cause of the investment shortfalls.
- CBP: Non-Intrusive Inspection Systems Program, which had schedule shortfalls due to inaccurate estimates, tracked the project status and risks via project health status reports and other mitigation strategies.
- CBP: The Remote Video Surveillance System investment officials developed and documented an investment rebaseline to address the investment's schedule shortfall, which was due to an inaccurate initial project schedule estimate.
- CBP: The TECS Modernization investment—which had schedule shortfalls due to system development being delayed due to questions about whether planned enhancements duplicated functions performed by another agency system—program officials briefed key

management on the differences between the system functions and development was allowed to continue.

- FEMA: Disaster Assistance Improvement Plan cost and schedule shortfalls were due to, among other things, dependencies on other investments. DHS developed a remediation plan for each shortfall to limit the negative impact.

- ICE: Detention and Removal Operations Modernization investment schedule shortfalls were due in part to a lack of understanding of user requirements; to address these issues, investment officials worked with key stakeholders to engage users to more thoroughly identify user requirements.

- NPPD: Critical Infrastructure Technology and Architecture investment's cost shortfalls, which were due to inaccurate initial cost estimates, were resolved by investment officials through several corrective efforts, including completing the project's life cycle cost estimate.

- NPPD: Infrastructure Security Compliance, Chemical Security Assessment Tool investment schedule was delayed due to multiple changes in leadership and in the investment's direction. Project officials developed and documented an investment rebaseline, which was approved in February 2012. It was intended to, among other things, develop a more accurate schedule.

- TSA: The Hazmat Threat Assessment Program investment schedule was delayed because the time needed to adjust a contract had not been accurately estimated. In response, investment officials documented an investment rebaseline, which was approved in March 2012.

- TSA: The Security Technology Integrated Program investment had schedule shortfalls from inaccurate estimates of the time needed to revise a contract. To resolve these issues, officials developed and documented an initiative to improve methods used to identify and track risks and resolve the schedule shortfalls. This effort is intended to help the investment avoid additional schedule changes.

- USSS: The Information Integration and Technology Transformation investment had one project with schedule shortfalls due to dependencies on another component's investment that had schedule

slippages; issues were addressed by following the mitigation actions detailed in the investment's risk management plan.

With regard to the remaining nine investments, three were unable to provide us with documentation, even though project officials stated that they had developed some corrective efforts, and six did not engage in corrective efforts to address shortfalls. Of the three investments, officials from TSA's Federal Air Marshal Service Mission Scheduling and Notification System investment, for example, reported that they had addressed the project's schedule shortfall—which was due, in part, to a support contractor not having adequate staffing—by performing the work within the agency instead of relying on the contractor. Further, according to TSA officials, the cost and schedule shortfalls on the Air Cargo Security investment, which were due to technical complications and dependencies on other investments, were addressed by establishing a new cost and schedule baseline. Nonetheless, this lack of documentation is inconsistent with the direction of DHS's guidance and related best practices, and it shows a lack of process discipline and attention to key details, which raises concern about the thoroughness of corrective efforts.

Of the six investments without any corrective efforts, officials from these investments (namely, the Office of the Chief Information Officer's Human Resources IT investment, NPPD's US-VISIT Automated Biometric Identification System and Arrival and Departure Information System investments, USCG's Business Intelligence investment, NPPD's National Cybersecurity Protection System, and USCIS's Claims 4 investment), stated that they did not develop and document corrective efforts because they believed DHS's guidance does not call for it in their circumstances. Specifically, the officials said that although DHS's guidance[18] calls for corrective actions to be developed and documented when an investment or its projects experiences a life cycle cost or schedule variance of 8 percent or greater, the variances on their project activities thus far were not large enough to constitute such a life cycle variance.

The impact of this is that multiple projects can continue to experience shortfalls—which increases the risk that investments will experience serious lifecycle cost and schedule variances—without having to develop

[18] Department of Homeland Security, *Acquisition Management Directive, Directive Number 102-01* (Jan. 20, 2010) and Department of Homeland Security, *Capital Planning and Investment Control Guide, version 7.2* (October 2011).

and document corrective actions and thus alert top management about potential problems and associated risks. This is inconsistent with the direction of OMB, which requires agencies to report (via the IT Dashboard) on the cost and schedule performance of their projects and considers those projects with a 10 percent or greater variance to be at an increased level of risk of not being able to deliver promised capabilities on time and within budget, and thus they require special attention from management. It is also inconsistent with our best practices research and experience at federal agencies, which stresses that agencies report to management when projects are not meeting expectations or when problems arise and quickly develop and document corrective efforts to address the problems. Further, our research and work at agencies has shown that waiting to act until significant life cycle variances occur can sometimes be risky and costly, as life cycle schedules are typically for multiyear periods, allowing the potential for underperforming projects to continue to vary from their cost and schedule goals for an extended amount of time without any requirement for corrective efforts. Consequently, until these guidance shortcomings are addressed and each underperforming project has defined and documented corrective actions, the department's major investments these projects support will be at an increased risk of cost and schedule shortfalls.

Conclusions

Most of the projects comprising DHS's 68 major IT investments are meeting their cost and schedule commitments, but 21 major investments—integral to DHS's mission and costing approximately $1 billion—have projects that are experiencing significant cost and schedule shortfalls. These shortfalls place these investments at increased risk of not delivering promised capabilities on time and within budget, which, in turn, pose a risk to DHS's ability to fully meet its mission of securing the homeland. DHS guidance does not require projects experiencing significant cost and schedule shortfalls to develop and document corrective efforts until they cause a life cycle cost and schedule variance. This increases risk and is contrary to effective IT investment practices. Given that DHS is currently establishing and implementing new IT governance processes, the department is positioned to address the guidance shortfalls.

Recommendations for Executive Action

We recommend that the Secretary of Homeland Security direct the appropriate officials to:

- Establish guidance that provides for developing corrective efforts for major IT investment projects that are experiencing cost and schedule shortfalls of 10 percent or greater, similar to those identified in this report.

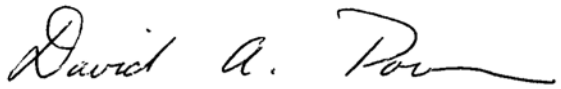
- Ensure that major IT investment projects with shortfalls of 10 percent or greater have defined and documented corrective efforts.

Agency Comments and Our Evaluation

In its written comments signed by the Director for the Departmental GAO-OIG Liaison Office and reprinted in appendix IV, DHS concurred with our recommendations and estimated that it would implement the first recommendation by September 30, 2013, and the second one immediately. It also commented that the department was pleased that the report positively acknowledged that DHS (1) is meeting cost and schedule commitments for most of its major IT investments and (2) has plans and efforts under way to improve cost estimating capabilities and implement a center of excellence for requirements engineering. The department also provided technical comments, which we have incorporated where appropriate.

We are sending copies of this report to interested congressional committees and the Secretary of Homeland Security. In addition, the report is available at no charge on the GAO website at http://www.gao.gov.

If you or your staffs have any questions on the matters discussed in this report, please contact me at (202) 512-9286 or pownerd@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix V.



David A. Powner
Director, Information Technology
Management Issues

Appendix I: Objectives, Scope, and Methodology

The objectives of our review were to determine the (1) extent to which Department of Homeland Security (DHS) IT investments are meeting their cost and schedule commitments, (2) primary causes of any commitment shortfalls, and (3) adequacy of DHS's efforts to address these shortfalls and causes.

To address our first objective, we analyzed how each of DHS's 68 major investments under development was performing against its cost and schedules commitments, as reported by the agency to the Office of Management and Budget (OMB) for inclusion on OMB's federal IT Dashboard. More specifically, we analyzed the extent to which each of these investments had met or exceeded, as of March 2012, cost and schedule commitments established when the investment was initiated. In doing this, we identified investments that had a project exceeding 10 percent of its cost and schedule commitments. We focused on these investments and their subsidiary projects because OMB considers them to be at an increased level of risk of not being able to deliver promised capabilities on time and within budget, and thus requiring special attention from management.

To assess the reliability of the IT Dashboard data we analyzed, we corroborated the data by interviewing investment and other DHS officials to determine whether the information on the dashboard was consistent with that reported by DHS. In addition, we followed up on the status of implementation of previous GAO recommendations to improve the quality of information on OMB's federal IT Dashboard.[1] Specifically, we analyzed plans and related documentation describing efforts by DHS to increase the scrutiny and quality of data submitted to the IT Dashboard. As part of this, we also interviewed department officials including those from the Office of the Chief Information Officer who are responsible for reviewing and submitting DHS's investment cost and schedule data to the federal IT Dashboard. The documentation and interviews provided us a level of assurance that the data we used for this engagement were, in fact, reliable.

For our second objective, we used a structured interview instrument to survey the DHS and component officials responsible for the investments

[1] *GAO, Information Technology: OMB Has Made Improvements to Its Dashboard, but Further Work Is Needed by Agencies and OMB to Ensure Data Accuracy,* GAO-11-262 (Washington, D.C.; Mar. 15, 2011).

experiencing cost and schedule shortfalls in order to identify the causes of the shortfalls. As part of surveying these officials, we analyzed project and related documentation to corroborate the causes reported to us via the survey. We then analyzed these causes for commonalities, grouped them accordingly, and tallied the frequency of each cause by investment. In addition, we compared the causes to our prior reports on major DHS investments and related IT management processes to identify the extent to which we had made recommendations to address the causes associated with the department's investment cost and schedule shortfalls.

To address our third objective, we initially identified and reviewed relevant criteria on developing and documenting corrective actions to address investment shortfalls. Specifically, these criteria included

- DHS's Acquisition Directive 102 (AD-102),[2]
- DHS's *Capital Planning and Investment Control Guide,*[3] and
- GAO's *Information Technology Investment Management* guide.[4]

We then used a structured interview instrument to survey DHS and component officials responsible for those investments experiencing shortfalls; we used the survey to identify whether any corrective actions had been developed and documented to address investment shortfalls. We also reviewed investment planning and execution documentation (e.g., project plans, project status reports, program meeting minutes, and acquisition program baselines) to corroborate information provided by the officials during the survey process. We then compared these corrective efforts to the criteria to identify any gaps and in those cases where there were, we reviewed documentation and interviewed agency officials to assess the reason for the gaps and any negative impacts.

We conducted this performance audit from October 2011 to September 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to

[2] Department of Homeland Security, *Acquisition Management Directive, Directive Number 102-01* (Jan. 20, 2010).

[3] Department of Homeland Security, *Capital Planning and Investment Control Guide, version 7.2* (October 2011).

[4] GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: Mar. 1, 2004).

obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: List of DHS Major IT Investments that Are Meeting Cost and Schedule Commitments

Table 5 lists the DHS major IT investments that were meeting their cost and schedule commitments.

Table 5: DHS Major IT Investments and Subsidiary Projects and Planned Project Costs (in millions)

Component	Investment Title	Project Name	Planned project costs[a,b]
Analysis and Operations			
	Common Operational Picture	DHS Common Operational Picture Infrastructure deployment at DHS Data Center 2	$0.50
		DHS Common Operational Picture enhanced functionality capabilities	0.10
	Homeland Security Information Network	Homeland Security Information Network 3.0 DME	22.34
		HS SLIC Consolidation	1.60
		Two Factor Authentication in Legacy	0.31
CBP			
	Advance Passenger Information System	Advance Passenger Information System	3.70
	Analytical Framework for Intelligence	Analytical Framework for Intelligence System	29.35
		Homeland Secure Data Network	4.29
	Automated Targeting System Maintenance	Passenger Iteration	15.79
		Cargo Iteration	17.76
	Block 1	Operations Task Order	5.00
		Maintenance Task Order	4.40
	Infrastructure	Windows 7	6.25
	Integrated Fixed Towers	Acquisition Planning	2.28
		Construct and Deployment of Integrated Fixed Towers System to Nogales Areas of Responsibility	
		Construct and Deployment of Integrated Fixed Towers System to Sonoita Areas of Responsibility	
		Construct and Deployment of Integrated Fixed Towers System to Casa Grande Areas of Responsibility	
	Mobile Surveillance Capabilities	First Article Test of vehicles	1.45
		Deployment to Arizona	

Component	Investment Title	Project Name	Planned project costs[a,b]
		Vehicle Maintenance	
	Remote Video Surveillance Systems	Remote Video Surveillance Systems	26.76
	SAP	SAP Budget Solution Upgrade	13.38
		SAP Support Patches	1.35
	Tactical Communications Modernization	Houlton	60.78
		El Paso	7.74
		Rio Grande Valley	33.85
		Digital in Place	19.50
DHS - Office of the Chief Information Officer			
	Homeland Secure Data Network	State and Local Fusion Center Build Out or Relocation	3.22
		Homeland Secure Data Network Enhancements	1.80
	Infrastructure Transformation Program	Data Center	161.90
		Network	21.61
		Email	2.14
		Wireless	3.20
FEMA			
	Disaster Management E-Government Initiative	Disaster Management PMO	3.80
		FEMA.gov migration to Drupal Content Management System	4.70
		Text Messaging and Mobile Platform	1.50
		RightNow CRM Integration	1.50
		Web Usability and Disaster Survivor Studies	1.00
		DHS Enterprise Hosting and Environment	2.69
	Integrated Public Alert & Warning System	Emergency Alert System Primary Entry Point Expansion	30.17
		Emergency Alert System Primary Entry Point Site Modernization	7.84
		Integrated Public Alert & Warning System - OPEN Sustainment and Enhancement	1.40
		Emergency Alert System Primary Entry Point Operation and Maintenance	3.70
	Logistics Supply Chain Management	Acquire Initial Operational Capability	2.16
		Commercial Off The Shelf Upgrade	29.20
		SOA GSS Integration	0.63
		Data Center Migration	3.36

Component	Investment Title	Project Name	Planned project costs[a,b]
	National Flood Insurance Program Information Technology Systems & Services	SAR Remediation	2.09
ICE			
	Criminal Alien Identification Initiatives	Alien Criminal Response Information Management System Modernization	7.31
		Status Determination Support	5.58
		Automated Threat Prioritization	11.79
	DRO Electronic Health Record System	eHR Acquisition & Validation Study	1.42
		eHR Acquisition & Deployment	
	Enforcement Information Sharing	Data Pattern Information Collection System-2	0.88
		Law Enforcement Information Sharing Service	0.34
	IT Infrastructure (Atlas)	Data Center Services	10.50
		Desktop Services	5.40
		Email Services	1.56
		Network Services	2.29
		Single Sign-On Services	1.76
		Video Services	4.50
	Student and Exchange Visitor Information System	Student and Exchange Visitor Information System	7.96
		Student and Exchange Visitor Information System II	4.70
	TECS Modernization	Core Case Management Release 1.0	21.55
NPPD			
	FPS Risk Assessment and Management Program	Risk Assessment and Management Program Maintenance Support	3.43
		FPS Modified Infrastructure Survey Tool Development	2.50
		FPS Gateway Development and Deployment	3.35
		Follow-on Assessment Tool Development and Deployment	
TSA			
	Crew Vetting	IBM Oasis WO#46	3.90
	FAMSNet (Common Operating Environment)	Security Updates	0.09
		Software Patches	0.09
	Information Technology Infrastructure Program	TSA Enterprise Integrated Test Environment	6.09
		TSA Enterprise Desktop Refresh	50.04

Component	Investment Title	Project Name	Planned project costs[a,b]
		TSA Enterprise Secure Mobile Computing	3.97
		TSA Enterprise IT Network Switches	12.00
	Performance Management Information System	Create Development Environment	0.87
		Commercial Off The Shelf Maintenance	0.65
		Performance Management Information System and PIMS Server/Application Migration	1.33
		Performance Management Information System, AIM, and PIMS Software Releases	
		Annual Customer Satisfaction Survey	
	Secure Flight	Functional Releases	6.77
		Secure Flight User Interface Releases	3.59
		Report Management System Releases	3.77
		Maintenance Releases BY 11 Q4	0.20
		Maintenance Releases BY 12	2.45
	Technology Infrastructure Modernization Program	Service Oriented Architecture Foundation	16.00
		Service Oriented Architecture Platform	
	Transportation Worker Identification Credential	4th Quarter Transportation Worker Identification Credential Maintenance	1.80
		Pre-Transition and Formal Transition work	2.00
		2012 Transportation Worker Identification Credential Maintenance	16.60
		Transportation Worker Identification Credential Reader Certification	1.10
	TSA Operating Platform	Enterprise Applications	0.23
		Applications Development	2.21
		Cloud Computing	0.06
USCG			
	Asset Logistics Management Information System	Asset Logistics Management Information System Project	8.15
	C4ISR	Segment 2	56.48
		Prototype Segment 2	22.70
		Video and Mission Processor Redesign	
		FRC Information Assurance/Authority To Operate	1.50
		National Security Cutters C4ISR Certification and Accreditation	5.00
		National Security Cutters 3-4 Operational Testing Support	2.50

Component	Investment Title	Project Name	Planned project costs[a,b]
	Coast Guard-LIMS	Segment 1	6.88
	Direct Access	Direct Access Technical Refresh	7.51
		Direct Access Maintenance	3.09
		CG-1 PMO Support	0.77
	Interagency Operations Centers	Segment 1	2.04
		Segment 2	3.53
	Nationwide Automatic Identification System	Increment 2	11.77
		Maintenance Support	6.49
	Ports and Waterways Safety System - IT	AIS Recapitalization	1.34
		INVS Recapitalization	0.32
	Rescue 21	Project Management	25.49
		Engineering	30.40
		System Support and Maintenance	37.36
		Rescue 21 Deployment	257.12
		VSAT AC&I	0.63
		R21 Western Rivers	5.64
		R21 Alaska	9.50
		Vessels	
USCIS			
	Benefits Provision - Verification Information System/Employment Eligibility Verification	Verification Information System	2.58
		Verification Information System	
	Immigration - CLAIMS 3.0	CLAIMS 3 - C&A	0.67
		CLAIMS MF DC Migration Deploy	0.10
		CLAIMS 3 MF R.3.14	0.35
		CLAIMS 3 MFAS R1.6	0.30
		CLAIMS 3 FD258	0.30
		CLAIMS 3 ICMS R1.18	0.27
		CLAIMS 3 CRISI R 4.9	0.45
		CLAIMS 3 FBASI R1.7	0.45
		CLAIMS 3 BRU	
		CLAIMS 3 ICMS R1.19	
		CLAIMS 3 MF R3.15	
		CLAIMS 3 MFAS R1.7	
		CLAIMS 3 Quarterly Table Updates	1.34
		CLAIMS 3 DBA Support	1.44

Component	Investment Title	Project Name	Planned project costs[a,b]
		LAN R6.21 Testing & Deploy	0.03
		LAN R6.22-Development	0.16
		LAN R6.23	0.35
		LAN R6.24	0.35
		LAN R6.25	
		ICMS R1.17 - Testing	0.03
		FBASEI R1.6-Development	0.16
	Infrastructure (Enterprise)	IT Physical Plant/HVAC/Electrical	4.58
		IT Data and Voice Systems (hardware Upgrades)	7.02
		Video Upgrade Project	0.57
		Windows 7 and Office 2010	0.01
		Video End-of-Life	0.03
		Voice End-of-Life	0.03
		Application & Network Monitoring	0.01
		Telework Expansion (Citrix Enterprise Telework Project)	0.24
		Data Server Suites	0.50
		Data & Voice circuits	7.05
	Integrated Document Production	Redesigned EAD card	0.06
		Card Personalization System Technology Refreshment Release 1.1	0.42
		Optical Card Consumables Contract	7.20
		Non-Optical Card Consumables Contract	2.30
		Card Personalization System Technology Refreshment	2.40
		Card Operations Services	2.50
	Transformation	Core Account and Case Management	756.28
USSS			
	IT Infrastructure	End User Systems & Support Maintenance Activities	3.15
		Mainframe and Servers Services & Support Maintenance Activities	0.12
		Telecommunications Systems & Support Maintenance Activities	6.57
		Datacenter Migration	18.00
Totals	47		**$2,135.29**[c]

Source: GAO analysis of OMB's federal IT dashboard data.

[a] This is the sum of the investment's project costs as of March 8, 2012.

[b] Some projects do not have project costs, because DHS has not yet provided the costs to OMB, and the projects are not yet in development.

[c] Differences in the total are due to rounding.

Appendix III: List of DHS Major IT Investments and Subsidiary Projects with Shortfalls

Table 6 lists the DHS major IT investments with cost and/or schedule shortfalls, their costs and subsidiary projects, whether or not they had a cost and/or schedule shortfall, and their planned costs.

Table 6: List of DHS Major IT Investments with Cost and/or Schedule Shortfalls and Subsidiary Projects (cost in millions)

Component	Investment title	Total planned project costs[a]	Subsidiary projects	Cost shortfall	Schedule shortfall	Planned project costs[b]
CBP						
	1. Automated Commercial Environment/International Trade Data System	$124.26	M1: e-Manifest Rail and Sea		✓	$10.22
			Cargo Control and Release Planning/ADE 2a/2b Approval Phase			3
			Task Order PROD			22.85
			Task Order ECOM			28.14
			Automated Commercial Environment Infrastructure Support			60.05
	2. Land Border Integration	20.89	Land Border Integration Phase 1		✓	20.9
	3. Non-intrusive Inspection Systems Program	332.3	Large Scale FY08			17.44
			Large Scale ARRA			61.93
			Small Scale ARRA			0.78
			Large-scale FY 2010		✓	31.41
			Non-Intrusive Inspection Maintenance FY11			58.18
			Non-Intrusive Inspection Acquisition FY11			46.45
			Non-Intrusive Inspection Maintenance FY12			116.11
	4. Northern Border, Remote Video Surveillance System	8.2	Northern Border Project Remote Video Surveillance System		✓	3.1
			Northern Border Project Remote Video Surveillance System			5.1
	5. TECS Modernization	43.05	Secondary Inspection			8.33
			High Performance Primary Query and Manifest Processing			8.65
			Travel Documents and Encounter Data			11.16

Component	Investment title	Total planned project costs[a]	Subsidiary projects	Cost shortfall	Schedule shortfall	Planned project costs[b]
			Lookout Record Data Services			9.98
			Secondary Inspection Maintenance		✓	4.93
DHS - Office of the Chief Information Officer						
	6. Human Resources IT	8.52	EmpowHR Deployment			0.4
			Reporting Tool Development			1.79
			PAS			0.9
			HQ Survey Tool			0.03
			NFC VPN			0.18
			Balanced Workforce Survey Tool			1.19
			USAJOBS 3.0			2.57
			Human Capital Segment Architecture	✓		1.46
FEMA						
	7. Disaster Assistance Improvement Plan	50.5	Surge IOC		✓	1.86
			ForSee Satisfaction Survey Integration			0.04
			SMS Pilot			0.15
			HUD SOA Interface	✓	✓	0.78
			Sustainment			3.05
			Site Usability Improvements		✓	5.78
			Development Support			6.68
			Louisiana DSNAP			1.09
			Address Locator Service			0.41
			DAIP Mobile Applicant Inquiry		✓	0.25
			WFA: Income and Insurance Verification		✓	0.59
			Other Needs Assistance		✓	0.36
			Usability and Portal Consolidation			2.71
			Centralized Application		✓	0.59
			Common State Application		✓	0.59
			SMS Phase II		✓	0.19
			Interface Enhancements FY 2012		✓	1.36
			Coordinated Assistance Network			
			Interface Enhancements FY 2013			

Component	Investment title	Total planned project costs[a]	Subsidiary projects	Cost shortfall	Schedule shortfall	Planned project costs[b]
			Stakeholder Outreach			3.34
			Program Support			20.69
ICE						
	8. Detention and Removal Operations Modernization	8.62	Risk Classification Assessment		✓	2.62
			EARM 4.0			4
			EARM 3.0 Release 2			2
NPPD						
	9. Critical Infrastructure Technology and Architecture	20.55	Protected Critical Infrastructure Information Management System: Development, Modification, and Enhancement			0.58
			Protected Critical Infrastructure Information Management System: Maintenance			1.5
			Infrastructure Protection Gateway: Development, Modification, & Enhancement			1.5
			Infrastructure Protection Gateway: Maintenance			3.26
			Infrastructure Information Collection System: Development, Modification, & Enhancement			2.46
			Infrastructure Information Collection System: Maintenance			4.56
			Infrastructure Protection Share: Maintenance			0.84
			Automated Critical Asset Management System: Maintenance			1.75
			Technical Resource for Incident Prevention Wire: Main	✓		1.86
			Web Emergency Operations Center: Maintenance			1.38
	10. Infrastructure Security Compliance-Chemical Security Assessment Tool	72.76	Ammonium Nitrate Analysis of IT Requirements FY11 Q4 Close Out			0.29
			Case Management FY11 Q4 close out			1.62
			Chemical Security Assessment Tool Enhancements FY 2011; Q4 Close Out	✓		3.65

Component	Investment title	Total planned project costs[a]	Subsidiary projects	Cost shortfall	Schedule shortfall	Planned project costs[b]
			Production System Update FY11 Q4 close out EA			1.19
			Ammonium Nitrate DME			5.34
			Case Management DME			6.07
			Chemical Security Assessment Tool DME			10.14
			Develop staging environment for Development & Testing			3.81
			Production Environment Migration to DHS DC			
			Maintenance Support FY11 Q4 Close Out			7.31
			Maintenance Support			33.35
	11. National Cybersecurity Protection System	262.6	National Cybersecurity Protection System Block 2.0		✓	0.77
			National Cybersecurity Protection System Block 2.1		✓	2.58
			National Cybersecurity Protection System Block 2.2			
			National Cybersecurity Protection System Block 3.0			96.45
			National Cybersecurity Protection System Maintenance			162.8
	12. Next Generation Networks Priority Services	63.06	Core SP1		✓	6.36
			Core SP2			20.19
			Core SP3			25.89
			Common			10.62
	13. US-VISIT: Arrival and Departure Information System	7.18	Arrival and Departure Information System FY 2011 Maintenance Release Project		✓	1.98
			Arrival and Departure Information System FY 2012 Maintenance Release Project		✓	5.2
			ADIS FY13 Maintenance Release Project			
	14. US-VISIT: Automated Biometric Identification System	33.24	Automated Biometric Identification System FY 2011		✓	14.56
			IDENT FY 2012			18.68
			IDENT FY 2013			

Component	Investment title	Total planned project costs[a]	Subsidiary projects	Cost shortfall	Schedule shortfall	Planned project costs[b]
TSA						
	15. Air Cargo Security	4.09	Known Shipper Management System 1.3	✓		0.55
			Known Shipper Management System 1.4			0.74
			Known Shipper Management System 1.5			
			Indirect Air Carrier Management System 2.5			0.44
			Indirect Air Carrier Management System 2.6			0.55
			Freight Assessment System 3.1		✓	0.33
			Freight Assessment System 4.0			0.6
			Freight Assessment System 4.1			
			Freight Assessment System 3.9	✓	✓	0.19
			Indirect Air Carrier Management System 2.7			0.68
	16. Federal Air Marshal Service Mission Scheduling and Notification System	5.43	Scheduling Software Modernization		✓	0.02
			DC2 Migration		✓	0.76
			Hardware Modernization			1.45
			IRIS Production Integration			
			ARES Production Integration			
			Portal Modernization		✓	1.2
			FAMIS Modernization			2
	17. Hazmat Threat Assessment Program	4.09	Hazardous Materials Endorsement SG Maintenance			0.74
			Hazardous Materials Endorsement Comparability		✓	1.4
			Hazardous Materials Endorsement SG Maintenance			1.95
	18. Security Technology Integrated Program	27.99	TSE Data Management FY2011			3.69
			TSE Data Management FY 2012			5.54
			Remote Monitoring and Maintenance/Maintenance Ticket Application FY 2011		✓	0.35

Component	Investment title	Total planned project costs[a]	Subsidiary projects	Cost shortfall	Schedule shortfall	Planned project costs[b]
			Remote Monitoring and Maintenance /Maintenance Ticket Application FY2012			4.51
			Security Equipment Modernization FY 2011		✓	3.27
			Security Equipment Modernization FY 2012		✓	10.64
USCG						
	19. Coast Guard Business Intelligence	0.86	CGBI 3.0			0.16
			Cognos 10 Upgrade			0.25
			Predictive Analytics Capability		✓	0.25
			Data Quality Capability			0.2
USCIS						
	20. Naturalization: CLAIMS 4	2.36	CLAIMS 4 Release 8.5			0.9
			CLAIMS 4 Release 8.6			0.9
			CLAIMS 4 Release 8.7			
			CLAIMS 4 Security			0.1
			Release 8.5.0.1			0.2
			Lean Agile Release 8.5.1.0			0.08
			Lean Agile Release 8.5.2.0		✓	0.08
			Lean Agile Release 8.5.3.0			0.08
			Release 8.5.2.1			0.02
			Release 8.5.3.1			0.02
USSS						
	21. Information Integration and Technology Transformation	43.61	IT Modernization			12.68
			Cyber Security			5
			Database Architecture & Maintenance			6.303
			Information Assurance			3.327
			COLD2			10
			Cross Domain/Multi-Level Security		✓	4.5
			Communications Capabilities			1.8
Total	**21**	**$1,144.14**		**6**	**34**	**$1,143.35[c]**

Source: GAO analysis of OMB's federal IT Dashboard data.

[a] This is the sum of the investment's project costs as of March 8, 2012.

[b] Some projects do not have project costs, because DHS has not yet provided the costs to OMB, and the projects are not yet in development.

[c] Differences in the total are due to rounding.

Appendix IV: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528

Homeland Security

September 19, 2012

David A. Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Draft Report GAO-12-904, "INFORMATION TECHNOLOGY: DHS Needs to Enhance Management of Cost and Schedule for Major Investments"

Dear Mr. Powner:

Thank you for the opportunity to review and comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO's) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's positive acknowledgement that DHS is meeting cost and schedule commitments for most of our major Information Technology (IT) investments. We are also pleased to note GAO's recognition of our plans and efforts underway to improve our cost-estimating capabilities, as well as our efforts underway to implement a Requirements Engineering Center of Excellence.

The draft report contained two recommendations with which the Department concurs. Specifically, GAO recommended that the Secretary of Homeland Security direct the appropriate officials to:

Recommendation 1: Establish guidance that provides for developing corrective efforts for major IT investment projects that are experiencing cost and schedule shortfalls of 10 percent or greater, similar to those identified in the report.

Response: Concur. DHS is currently reviewing and revising its *Acquisition Management Directive* (Directive 102-01), which guides acquisition oversight, regarding corrective actions for projects supporting major IT investments that experience cost and schedule shortfalls of 10 percent or greater. DHS expects approval and publication of the revised directive and development of supporting guidance by September 30, 2013.

Recommendation 2: Ensure that major IT investment projects with shortfalls of 10 percent or greater have defined and documented corrective efforts.

Response: Concur. DHS Office of Chief Information Officer personnel will immediately advise program officials with on-going projects having shortfalls of 10 percent or greater that they must define and document corrective actions.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you in the future.

Sincerely,

Jim H. Crumpacker
Director
Departmental GAO-OIG Liaison Office

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Appendix V: GAO Contact and Staff Acknowledgments

GAO Contact

David A. Powner at (202) 512-9286 or pownerd@gao.gov

Staff Acknowledgments

In addition to the contact named above, the following staff also made key contributions to this report: Gary Mountjoy (assistant director), Scott Borre, Camille Chaires, and Nancy Glover.

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