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HOMELAND SECURITY

Key US-VISIT Components at Varying Stages of Completion, but Integrated and Reliable Schedule Needed



GAO

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Highlights of [GAO-10-13](#), a report to congressional requesters

Why GAO Did This Study

The Department of Homeland Security's (DHS) U.S. Visitor and Immigrant Status Indicator Technology (US-VISIT) program stores and processes biometric and biographic information to, among other things, control and monitor the entry and exit of foreign visitors. Currently, an entry capability is operating at almost 300 U.S. ports of entry, but an exit capability is not. GAO has previously reported on limitations in DHS's efforts to plan and execute its efforts to deliver US-VISIT exit, and made recommendations to improve these areas. GAO was asked to determine (1) the status of DHS's efforts to deliver a comprehensive exit solution and (2) to what extent DHS is applying an integrated approach to managing its comprehensive exit solution. To accomplish this, GAO assessed US-VISIT exit project plans, schedules, and other management documentation against relevant criteria, and it observed exit pilots.

What GAO Recommends

GAO is augmenting its prior recommendations to the Secretary of Homeland Security aimed at strengthening US-VISIT exit planning and execution by recommending that the Secretary ensure that an integrated master schedule for the department's Comprehensive Exit project be developed and maintained in accordance with the key practices embodied in relevant guidance. DHS concurred with GAO's recommendation.

[View GAO-10-13 or key components.](#)
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What GAO Found

DHS has established a Comprehensive Exit project within its US-VISIT program that consists of six components that are at varying stages of completion. These components and the status of each according to the project execution process of US-VISIT's system life cycle management methodology are summarized in the figure below.

Comprehensive Exit Components and Status

Component	Project execution life cycle phases						
	Plan	Analyze	Design	Build	Test	Deploy	Transition
Air/Sea Biometric Release 1	Complete	Complete	Complete	Complete	In progress	Not yet started	Not yet started
Reporting Phase 1	Complete	Complete	Complete	Complete	Complete	Complete	Complete
Air Exit Pilots	Complete	Complete	Complete	Complete	Complete	Complete	N/A
Long-term Air/Sea	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started
Temporary Worker Visa Exit Pilot	Complete	Complete	Complete	Complete	In progress	Not yet started	Not yet started
Long-term Land	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started

Complete
 In progress
 Not yet started

Sources: GAO analysis of DHS data and information from program officials.
Note: Because the Air Exit Pilots were decommissioned upon completion, they were not transitioned beyond the project execution process.

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To DHS's credit, the US-VISIT program office has established integrated project management plans for, and has adopted an integrated approach to, interacting with and involving stakeholders in its Comprehensive Exit project. However, it has not adopted an integrated approach to scheduling, executing, and tracking the work that needs to be accomplished to deliver a comprehensive exit solution. Rather, it is relying on several separate and distinct schedules to manage individual components and the US-VISIT prime contractor's work that supports these components. Moreover, neither of the two component schedules that GAO reviewed are reliable because they have not been derived in accordance with relevant guidance. Specifically, both the Air Exit Pilots schedule and the Temporary Worker Visa Exit Pilot schedule only fully meet one of nine key schedule estimating practices, and either partially, minimally, or do not meet the remaining eight. In contrast, the prime contractor's schedule is largely reliable, as it fully or substantially meets all nine practices.

Without a master schedule for the Comprehensive Exit project that is integrated and derived in accordance with relevant guidance, DHS cannot reliably commit to when and how the work will be accomplished to deliver a comprehensive exit solution to its almost 300 ports of entry, and it cannot adequately monitor and manage its progress toward this end.

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Abbreviations

CBP	U.S. Customs and Border Protection
DHS	Department of Homeland Security
DMIA	Immigration and Naturalization Service Data Management Improvement Act of 2000
ELCM	Enterprise Life Cycle Methodology
FBI	Federal Bureau of Investigation
IDENT	Automated Biometric Identification System
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act of 1996
POE	port of entry
RFID	radio frequency identification
TSA	Transportation Security Administration
US-VISIT	U.S. Visitor and Immigrant Status Indicator Technology
WBS	work breakdown structure

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United States Government Accountability Office
Washington, DC 20548

November 19, 2009

The Honorable Bennie G. Thompson
Chairman
Committee on Homeland Security
House of Representatives

The Honorable Loretta Sanchez
Chairwoman
Subcommittee on Border, Maritime
and Global Counterterrorism
Committee on Homeland Security
House of Representatives

For many years, Congress and the executive branch have sought better ways to record and track the arrival and departure of foreign travelers through U.S. air, sea, and land ports of entry (POE). Pursuant to a series of statutory mandates, the Department of Homeland Security (DHS), in coordination with the Department of State, established a program to use biometric and biographic information to control and monitor the pre-entry, entry, status, and exit of certain foreign visitors and immigrants.

This program, which is called the U.S. Visitor and Immigrant Status Indicator Technology (US-VISIT) program,¹ is intended to enhance the security of U.S. citizens and visitors, facilitate legitimate travel and trade, ensure the integrity of the U.S. immigration system, and protect the privacy of visitors to the United States. Since 2006, DHS has been operating a US-VISIT entry capability at about 300 air, sea, and land POEs, and has conducted evaluations and proof-of-concept experiments relative to a US-VISIT exit capability. However, it has yet to develop and deploy an operational exit solution at U.S. POEs. The program's current efforts to

¹US-VISIT currently applies to a certain group of foreign nationals—nonimmigrants from countries whose residents are required to obtain nonimmigrant visas before entering the United States and residents of certain countries who are exempt from U.S. visa requirements when they apply for admission to the United States for up to 90 days for tourism or business purposes under the Visa Waiver Program. US-VISIT also applies to (1) lawful permanent residents; (2) Mexican nonimmigrants traveling with a Border Crossing Card, who wish to remain in the United States longer than 30 days, or who declare that they intend to travel more than 25 miles into the country from the border; and (3) Canadians traveling to the United States for certain specialized reasons. See 8 C.F.R. § 235.1(f).

develop an exit capability are collectively referred to as the Comprehensive Exit project.

Because of the strategic importance of a US-VISIT exit capability to our nation's evolving immigration and border management missions, you asked us to determine (1) the status of DHS's efforts to deliver a comprehensive exit solution and (2) to what extent DHS is employing an integrated approach to managing its Comprehensive Exit solution. To accomplish our objectives, we reviewed key program documentation, including plans and schedules, to determine the composition of the Comprehensive Exit project and the status of its components. We also reviewed key Comprehensive Exit project management documentation and compared it with guidance relevant to the management of interrelated initiatives.

We conducted this performance audit at the US-VISIT Program Office in Arlington, Virginia; U.S. Customs and Border Protection (CBP) headquarters offices in Washington, D.C.; Transportation Security Administration (TSA) headquarters offices in Arlington, Virginia; Detroit Metropolitan Wayne County Airport in Detroit, Michigan; and Hartsfield-Jackson Atlanta International Airport in Atlanta, Georgia, from January 2009 to November 2009 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. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. For more details on our objectives, scope, and methodology, see appendix I.

Background

US-VISIT's goals are to (1) enhance the security of U.S. citizens and visitors, (2) facilitate legitimate travel and trade, (3) ensure the integrity of the U.S. immigration system, and (4) protect the privacy of visitors.² The program is to achieve these goals by

- collecting, maintaining, and sharing information on certain foreign nationals who enter and exit the United States;

²US-VISIT program documentation now refers to these as "principles."

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- identifying foreign nationals who (1) have overstayed or violated the terms of their visit; (2) can receive, extend, or adjust their immigration status; or (3) should be apprehended or detained by law enforcement officials;
 - detecting fraudulent travel documents, verifying visitor identity, and determining visitor admissibility through the use of biometrics (digital fingerprints and a digital photograph); and
 - facilitating information sharing and coordination within the immigration and border management community.

Federal Statutes Provide a Strategic Framework for US-VISIT

A series of statutes that date back more than a decade have provided a framework for developing and deploying US-VISIT entry and exit capabilities. The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA)³ required the Attorney General to develop an automated system to record the departure of every foreign national from the United States and then match it to the individual's arrival record. Subsequently, section 2(a) of the Immigration and Naturalization Service Data Management Improvement Act (DMIA) of 2000⁴ amended the original entry-exit provisions of IIRIRA and required the Attorney General⁵ to implement an integrated entry and exit data system for foreign nationals.⁶ More specifically, DMIA required an electronic system that would provide access to and integrate foreign national arrival and departure data that are authorized or required to be created or collected under law and are in an electronic format in Department of Justice or Department of State databases, such as those used at POEs and consular offices. The system, as described in DMIA, is to compare available arrival records with available departure records, allow online search procedures to identify foreign nationals who may have overstayed their authorized period of admission, and use available data to produce a report of arriving and departing foreign nationals. DMIA also required the implementation of the system at airports and seaports by December 31, 2003, at the 50 highest-

³Pub. L. No. 104-208, div. C, § 110 (Sept. 30, 1996).

⁴8 U.S.C. § 1365a.

⁵Effective March 1, 2003, the functions of the Immigration and Naturalization Service moved from the Department of Justice to DHS.

⁶On April 29, 2003, the Secretary of DHS renamed the entry-exit system the US-VISIT system.

volume land POEs by December 31, 2004, and at all remaining POEs by December 31, 2005.

Subsequent laws added specific biometric requirements. The USA PATRIOT Act of 2001,⁷ as amended, required the development and certification of a technology standard by January 26, 2003, including appropriate biometric identifiers that can be used to verify the identity of persons applying for a U.S. visa or seeking to enter the United States pursuant to a visa, for the purposes of conducting background checks, confirming identity, and ensuring that a person has not received a visa under a different name. The act also required DHS and the Department of State to focus on the utilization of biometric technology and the development of tamper-resistant documents readable at POEs for the integrated entry and exit data system.

The Visa Waiver Permanent Program Act⁸ required DHS to develop and implement a fully automated system to control entry and exit of aliens at airports and seaports who enter the United States under the Visa Waiver Program. The act was subsequently amended to require, not later than August 3, 2008, an exit system that uses biometric information and records every alien participating in the Visa Waiver Program that departs the United States by air.⁹

The Intelligence Reform and Terrorism Prevention Act of 2004¹⁰ requires the collection of biometric exit data for all categories of individuals required to provide biometric entry data under US-VISIT, regardless of the POE where they entered the United States. The law also required DHS to develop a plan to accelerate the full implementation of the program.

The Implementing Recommendations of the 9/11 Commission Act of 2007¹¹ further addressed the Visa Waiver Program by restricting DHS's authority

⁷8 U.S.C. § 1379. USA PATRIOT Act stands for the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act of 2001. As applicable here, the act's requirements for the Immigration and Naturalization Service were taken over by DHS.

⁸8 U.S.C. § 1187(h).

⁹8 U.S.C. § 1187(i).

¹⁰8 U.S.C. § 1365b(d).

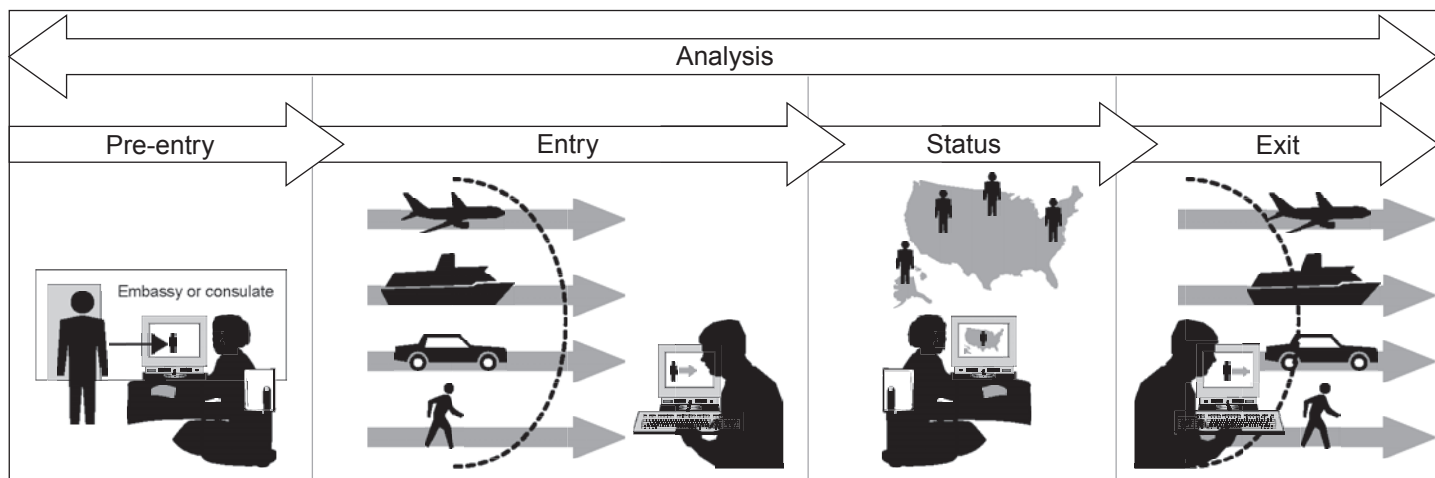
¹¹8 U.S.C. § 1187(c)(8).

to admit additional countries into the Visa Waiver Program until the department, among other things, was able to certify that it could verify the departure of not less than 97 percent of foreign nationals who exit from U.S. airports and had incorporated biometric indicators (such as fingerprints) into the air exit system by June 30, 2009.

Overview of US-VISIT Scope and Systems Environment

US-VISIT supports a series of homeland security-related mission processes that cover hundreds of millions of foreign national travelers who enter and leave the United States at about 300 air, sea, and land POEs. These five processes are described in the next section and depicted in figure 1.

Figure 1: Mission Processes Supported by US-VISIT



Sources: GAO analysis of US-VISIT data; Nova Development Corp. (clipart).

- **Pre-entry:** the process of evaluating a traveler's eligibility for required travel documents, enrolling travelers in automated inspection programs, and prescreening travelers entering the United States.
- **Entry:** the process of determining a traveler's admissibility into the United States at air, sea, or land POEs.
- **Status management:** the process of managing and monitoring the changes and extensions of the visits of lawfully admitted nonimmigrant foreign nationals to ensure that they adhere to the terms of their admission and that they notify appropriate government entities when they do not.

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- **Exit:** the process of collecting information on travelers departing the United States.
 - **Analysis:** the process of continuously screening against watch lists of individuals enrolled in US-VISIT for appropriate reporting and action.

To support these processes, US-VISIT systems and equipment must exchange data with a variety of other systems, some of which are owned by other agencies. For example, US-VISIT's Automated Biometric Identification System (IDENT) collects and stores biometric data about foreign visitors, including information from the Federal Bureau of Investigation (FBI), U.S. Immigration and Customs Enforcement information on deported felons and sexual offender registrants, and DHS information on previous criminal histories and previous IDENT enrollments. IDENT connects to a number of different systems, some of which are described here.

- Arrival and Departure Information System is owned by US-VISIT and stores noncitizen traveler arrival and departure biographic data received from air and sea carrier manifests. It matches entry, immigration status updates, and departure data to provide immigration status, including whether the individual has overstayed his or her authorized period of stay.
- Consular Consolidated Database is owned by the Department of State and includes information on visa applicants.
- TECS, formerly known as the Treasury Enforcement Communications System, is owned by CBP and maintains lookout (i.e., watch list) data, interfaces with other agencies' databases, and is currently used by CBP officers at POEs to verify traveler information and update traveler data.
- U.S. Coast Guard's Mona Pass Proof-of-Concept is determining the feasibility of deploying a mobile biometrics identification capability on Coast Guard cutters in the Mona Passage¹² and in the Coast Guard's South Florida patrol area.

¹²The Mona Passage is located between the Dominican Republic and Puerto Rico. The objective of the U.S. Coast Guard's effort is to demonstrate the feasibility of using biometric data (fingerprints) to identify and support prosecution of interdicted individuals. Using real-time satellite connectivity, interdicted individuals are enrolled in US-VISIT's IDENT database and are biometrically checked against known and suspected terrorists, aggravated felons, previous deportees, and recidivists.

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- Integrated Automated Fingerprint Identification System is owned by FBI and is the bureau's automated 10-fingerprint matching system and is electronically connected to all 50 states, as well as some federal agencies.

Overview of US-VISIT History, Organizational Placement, and Progress

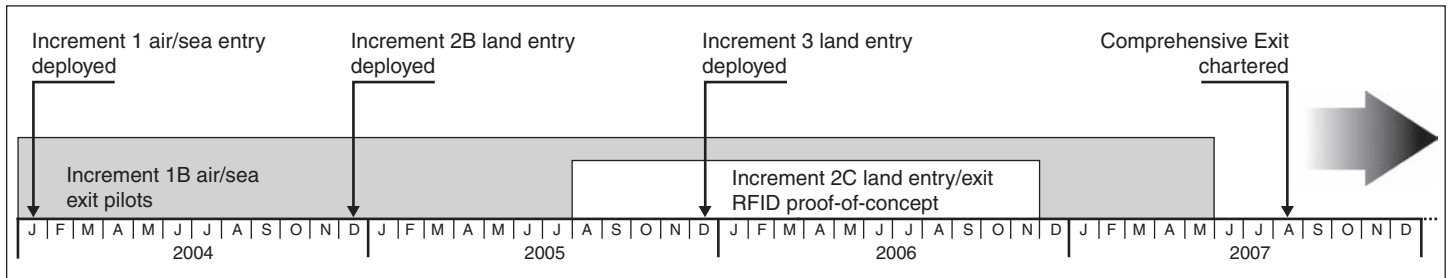
The US-VISIT program has roots in a program known as Entry Exit, which was established by the former Immigration and Naturalization Service in 2002 in response to IIRIRA and other relevant legislation. Following the merger of the functions of the Immigration and Naturalization Service into DHS in 2003, the program was placed in DHS's Border and Transportation Security Directorate and renamed US-VISIT. In 2007, US-VISIT was moved to DHS's National Protection and Programs Directorate.

DHS has delivered US-VISIT entry, and evaluated exit, capabilities in a series of increments. As a result, a biometrically enabled entry capability has been fully operational at about 300 air, sea, and land POEs since December 2006 (115 airports, 14 seaports, and 154 of 170 land ports¹³), but an exit capability has yet to be fully deployed. Increment 1 (air and sea entry), Increment 2B (land entry),¹⁴ and Increment 3 (land entry) addressed the deployment of an entry capability, while Increment 1B (air and sea exit) and Increment 2C (land exit) evaluated different alternatives for collecting exit information. The timing and purpose of each increment, as well as the delivery of other significant US-VISIT capabilities, are depicted in figure 2 and described after the figure.

¹³According to program officials, 14 of the remaining 16 POEs do not have an operational need to deploy US-VISIT because visitors subject to US-VISIT are, by regulation, not authorized to enter the United States at these locations, with the exception of lawful permanent residents who are allowed to enter the United States at any POE. The other two POEs do not have the necessary transmission lines to operate US-VISIT, and thus they process visitors manually.

¹⁴Increment 2A enhanced existing entry capability at land, sea, and air POEs to biometrically authenticate machine-readable visas and other travel and entry documents issued by the Department of State and DHS to foreign nationals. These capabilities were deployed to all POEs by October 23, 2005, except for e-Passports, which were deployed to 33 POEs by November 14, 2006. These 33 POEs account for 97 percent of all travelers entering with e-Passports.

Figure 2: Timeline of Incremental US-VISIT Capabilities



Source: GAO analysis of DHS documentation.

Increments 1, 2B, and 3, which largely involved building interfaces among existing systems and enhancing the systems' capabilities and supporting infrastructure, were delivered sequentially from January 2004 to December 2006. Specifically, in January 2004, the program office began operating most aspects of its planned biometric entry capability at 115 airports and 14 seaports for certain foreign nationals, including those from visa waiver countries (Increment 1).¹⁵ This capability was expanded to the 50 busiest land POEs by December 2004 (Increment 2B) and essentially deployed to 104 remaining land POEs by December 2005 (Increment 3).¹⁶ As of December 2006, the program office was operating this entry capability at 154 of 170 land POEs.

According to DHS, US-VISIT entry operations have produced mission value. For example, as of June 2009, the program reported that it had more than 150,000 biometric hits in entry resulting in more than 8,000 people having adverse actions, such as denial of entry, taken against them. Further, about 43,000 leads were referred to the U.S. Immigration and Customs Enforcement immigration enforcement unit, resulting in 1,691 arrests.¹⁷ Although difficult to demonstrate, officials have also cited the possible deterrence of terrorist entry due to the program's publicized capability to verify visitor identity at U.S. borders during entry and to match visitors against watch lists of known and suspected terrorists.

¹⁵On September 30, 2004, US-VISIT expanded biometric entry procedures to include individuals from visa waiver countries applying for admission.

¹⁶At one POE, these capabilities were deployed by December 19, 2005, but were not fully operational until January 7, 2006, because of a telephone company strike that prevented the installation of a T-1 line.

¹⁷We did not verify this information.

In parallel with the delivery of entry capabilities, DHS examined the use of technology for recording the exit of travelers in the air, sea, and land environments.

- Increment 1B consisted of a series of air and sea biometric exit pilots that operated from January 2004 to May 2007 at 14 U.S. POEs. The purpose of these pilots was to evaluate three different types of technology solutions: self-service kiosk, mobile device, and a combination of the two. All three solutions involved capturing a traveler's digital photograph and fingerprint. The pilots established the technical feasibility of a biometric exit solution at air and sea POEs. They also identified issues that limited the operational effectiveness of the solution (e.g., unacceptably low traveler compliance rates).
- Increment 2C, land entry/exit proof-of-concept demonstrations, operated at five ports of entry from August 2005 to November 2006. The purpose of these demonstrations was to examine the feasibility of using passive radio frequency identification (RFID) technology¹⁸ to record travelers' entry and exit via a unique ID number tag embedded in the Form I-94 and to provide CBP officers in pedestrian lanes with biographic, biometric, and watch list data. The demonstrations showed that RFID technology was too immature to meet the requirements of a land exit solution.

Currently, US-VISIT development and deployment efforts consist of two ongoing projects: (1) Unique Identity and (2) Comprehensive Exit.

- Unique Identity is to establish a single identity for all individuals encountered across the immigration and border mission area. This project consists of developing and deploying three capabilities. First, 10-print identification is to provide the means for capturing 10 fingerprints and enables the other two Unique Identity components, and increases the fingerprint matching accuracy in IDENT. DHS plans to complete 10-print deployment to all POEs in the fall of 2009. Second, enumeration is to associate the biometric and biographical data within IDENT and FBI's fingerprint identification system with individuals encountered by immigration and border management entities. DHS reports that enumeration is being used by DHS's U.S. Citizenship and Immigration Services. Third, IDENT interoperability with FBI's fingerprint

¹⁸Radio frequency technology relies on proximity cards and card readers. Radio frequency devices read the information contained on the card when the card is passed near the device. The information can contain personal identification of the cardholder.

identification system is to enable DHS and FBI to share biometric and related biographic, criminal history, and immigration history data. DHS reports the development of this interoperability is in the second of three phases, each of which expands the types and amount of data shared between DHS and FBI, and that planning has begun for the third phase. In 2007, DHS estimated that Unique Identity would cost the department about \$5.7 billion to acquire, and about \$40.1 billion to operate and maintain through the year 2020.

- Comprehensive Exit was chartered in August 2007 to develop and deploy air and sea exit capability and to plan for a land exit solution. Project stakeholders include U.S. Immigration and Customs Enforcement, the Office of Screening Coordination and Operations, CBP, air and sea carriers, port authorities, TSA, and the U.S. Coast Guard.

In April 2008, DHS issued a Notice of Proposed Rule Making¹⁹ to announce the intent to implement biometric exit verification at air and sea POEs. Under this notice, commercial air and sea carriers would be responsible for developing and deploying the capability to collect the biometrics from departing travelers and transmit them to DHS. According to program planning documents, US-VISIT originally planned to publish a final rule in June 2008 and for an initial capability to be deployed by December 2008. However, a final rule has yet to be published and, according to US-VISIT program officials, an official date for doing so has not been established.

Subsequent to the rule making notice, the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009²⁰ mandated that no US-VISIT fiscal year 2009 appropriations be used for the implementation of an air exit solution pursuant to the rule making notice until DHS reported to the Senate and House Committees on Appropriations on pilot tests that had been conducted for at least two scenarios: (1) airline collection and transmission of biometric exit data, as proposed in the rule making notice and (2) CBP collection of such information at the departure gate.

Through fiscal year 2009, DHS had been appropriated about \$2.5 billion for US-VISIT. As of July 2009, the program reported that about \$186 million of that amount had been obligated to develop air/sea and land exit solutions

¹⁹73 Fed. Reg. 22065 (Apr. 24, 2008).

²⁰Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009, Pub. L. No. 110-329, 122 Stat. 3574, 3668-70 (Sept. 30, 2008).

since 2002.²¹ The department requested about \$356 million for US-VISIT in fiscal year 2010 and was appropriated about \$374 million.

Prior GAO Reviews of US-VISIT Exit Have Raised Challenges and Issues

Since 2004, we have identified a range of management challenges and issues associated with DHS efforts to develop and deploy an exit solution. For example, we reported in May 2004²² that a limited exit portion of US-VISIT had deployed to only two POEs. In February 2005,²³ we reported that the ongoing air and sea exit pilot faced a compressed timeline, had missed milestones, and potentially was to be reduced in scope and that the changing facts and circumstances surrounding the exit pilot had introduced additional risk. In December 2006,²⁴ we reported that DHS could not implement a biometric exit capability without incurring a major impact on land POE facilities. In February and August 2007,²⁵ we found that DHS had not adequately defined and justified its proposed expenditures for exit pilots and demonstration projects and that it had not developed a complete schedule for biometric exit implementation.

In February 2008,²⁶ we reported that the Comprehensive Exit project had not been adequately defined, citing its lack of appropriate analysis to support established high-level project milestones. Accordingly, we recommended that DHS develop a plan for delivering a comprehensive exit capability that included, among other things, key milestones and

²¹We did not independently verify the accuracy of this information.

²²GAO, *Homeland Security: First Phase of Visitor and Immigration Status Program Operating, but Improvements Needed*, [GAO-04-586](#) (Washington, D.C.: May 11, 2004).

²³GAO, *Homeland Security: Some Progress Made, but Many Challenges Remain on U.S. Visitor and Immigrant Status Indicator Technology Program*, [GAO-05-202](#) (Washington, D.C.: Feb. 23, 2005).

²⁴GAO, *Border Security: US-VISIT Program Faces Strategic, Operational, and Technological Challenges at Land Ports of Entry*, [GAO-07-248](#) (Washington, D.C.: Dec. 6, 2006).

²⁵GAO, *Homeland Security: Planned Expenditures for U.S. Visitor and Immigrant Status Program Need to Be Adequately Defined and Justified*, [GAO-07-278](#) (Washington, D.C.: Feb. 14, 2007) and *Homeland Security: U.S. Visitor and Immigrant Status Program's Long-standing Lack of Strategic Direction and Management Controls Needs to Be Addressed*, [GAO-07-1065](#) (Washington, D.C.: Aug. 31, 2007).

²⁶[GAO-08-361](#).

performance measures. In September 2008,²⁷ we further reported that DHS was unlikely to meet its timeline for implementing an air exit system with biometric indicators, such as fingerprints, by July 1, 2009, due to several unresolved issues, such as opposition to the department's published plan by the airline industry. Most recently, in December 2008,²⁸ we reported that DHS still had not developed a schedule for the full implementation of a comprehensive exit solution. In each of these reports, we made recommendations to ensure that US-VISIT exit was planned, designed, developed, and implemented in an effective and efficient manner. DHS generally agreed with our recommendations.

US-VISIT Projects Governed by Life Cycle Development Methodology

The US-VISIT Enterprise Life Cycle Methodology (ELCM) is a framework for planning, managing, and implementing capabilities program-wide that applies to all US-VISIT program increments, task orders, mission capability enhancements, projects, components, acquisitions, and all agreements with partner/stakeholder and contractor organizations. Among other things, the ELCM provides guidance for managing related US-VISIT projects that have distinct cost, schedule, scope, and risk components, and that may be at different project phases at a given time.

The ELCM consists of several process areas, such as program management, project execution, and operations and maintenance. The project execution process area includes seven subprocesses, or phases. The subprocesses are

- **plan**, which focuses on project-level planning for individual initiatives and builds on the strategic planning that occurs in the program planning process area;
- **analyze**, which includes the gathering, identification, refinement, analysis, and management of requirements;
- **design**, which includes designing the applications, technical architecture, technical infrastructure, and application training;

²⁷GAO, *Visa Waiver Program: Actions Are Needed to Improve Management of the Expansion Process, and to Assess and Mitigate Program Risks*, [GAO-08-967](#) (Washington, D.C.: Sept. 15, 2008).

²⁸GAO, *Homeland Security: U.S. Visitor and Immigrant Status Indicator Technology Program Planning and Execution Improvements Needed*, [GAO-09-96](#) (Washington, D.C.: Dec. 12, 2008).

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- **build**, which includes the development of the application, technical architecture, and technical infrastructure;
 - **test**, which includes testing the components built and validating the solution with users;
 - **deploy**, which includes rolling out the application, technical architecture, technical infrastructure, and training to the organization; and
 - **transition**, which includes ensuring that all identified transition tasks are carried out and any open issues from deployment are documented and addressed.

The operations and maintenance process provides for ongoing support of a deployed system solution. A typical project will be planned, developed, and deployed during project execution and sustained as part of operations and maintenance.

Within each subprocess, the ELCM specifies certain activities that are to be performed. For example, the test subprocess defines a series of nine tests that are to be conducted, including user acceptance testing, which verifies that the system meets user requirements, and operational readiness testing, which ensures the operational environment's readiness to accept the new system.

Comprehensive Exit Project Consists of Six Components That Are in Various Phases of Delivery

Comprehensive Exit was initiated to develop and implement a means to capture biometric information from travelers who are subject to US-VISIT as they exit the United States, and to do so in a way that integrates biometrics collection into existing exit procedures at air, sea, and land POEs and enables the matching of biometric exit and entry records to determine which travelers have left the country. According to DHS, this capability will allow the department to confirm the identity of a person leaving the country, and thereby (1) maximize investigative resources by preventing searches for travelers who have already left the country; and (2) identify overstays by country and by visa category, to better inform policy decision makers.

DHS is pursuing the Comprehensive Exit project through six component efforts, each of which addresses either the air/sea or land environments:

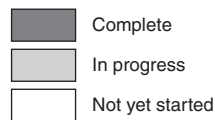
- The air/sea environment is being addressed through Air/Sea Biometric Exit Release 1, Reporting Phase 1, the Air Exit Pilots, and Long-term Air/Sea Exit.
- The land environment is being addressed through the Temporary Worker Visa Exit Pilot and Long-term Land Exit.

The two long-term components for Air/Sea and Land have yet to begin. They are to be informed or supported by the four other components. According to program officials, planning for the two long-term components is contingent upon departmental decisions that have not yet been made.

DHS is employing the ELCM to manage each component. The status of each exit component relative to the ELCM project execution subprocesses is summarized in figure 3 and discussed in more detail after the figure.

Figure 3: Comprehensive Exit Components and Status

Component	Project execution life cycle phases						
	Plan	Analyze	Design	Build	Test	Deploy	Transition
Air/Sea Biometric Release 1	Complete	Complete	Complete	Complete	In progress	Not yet started	Not yet started
Reporting Phase 1	Complete	Complete	Complete	Complete	Complete	Complete	Complete
Air Exit Pilots	Complete	Complete	Complete	Complete	Complete	Complete	N/A
Long-term Air/Sea	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started
Temporary Worker Visa Exit Pilot	Complete	Complete	Complete	Complete	In progress	Not yet started	Not yet started
Long-term Land	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started	Not yet started



Sources: GAO analysis of DHS data and information from program officials.

Note: Because the Air Exit Pilots were decommissioned upon completion, they were not transitioned beyond the project execution process.

Air/Sea Biometric Exit Release 1

The purpose of Air/Sea Biometric Exit Release 1 is to modify IDENT to collect, validate, and store the biometric and biographic data for travelers who are subject to US-VISIT and exiting the United States via the air or sea environments. For example, this component allows for the biographic and biometric information provided by a departing passenger to be matched against a watch list and, if a hit is found, the passenger's IDENT record is annotated to make the information available for any future encounters between that individual and other agencies, such as CBP, U.S. Immigration and Customs Enforcement, or local law enforcement. According to program officials, Release 1 was initiated to support the Long-term Air/Sea Exit solution, but it will also allow IDENT to process land POE exit-related data.

Testing for this component is in progress, and its completion depends upon the completion of another component. Requirement validation testing of Release 1 was completed in October 2008, with all planned test cases executed. According to program officials, final testing of the release will not occur until data from the Long-term Air/Sea Exit solution are available.

Reporting Phase 1

The purpose of Reporting Phase 1 is to enhance IDENT's reporting capabilities in order to support the information needs of a wide range of US-VISIT users, including the analysis and evaluation of the Air Exit Pilot results.²⁹ Additional phases are envisioned to deliver other US-VISIT reporting capabilities, such as text-based reporting, charts and graphs, spreadsheet downloading to authorized users' workstations, on-demand reporting, and near real-time reporting. However, these additional phases have yet to be defined.

Final testing of Phase 1 was completed in April 2009, with all planned requirements and test cases executed and five problems of low and medium severity detected. All five were addressed during final testing. Phase 1 was deployed in April 2009 and has transitioned to the operations and maintenance process area.

²⁹Exit-related reporting capabilities were originally managed under the Comprehensive Exit project but were later moved to the Unique Identity project. This component is also known as US-VISIT Integrated Enterprise Web-based Reporting, which was originally called Enterprise Reporting Services.

Air Exit Pilots

The purpose of the Air Exit Pilots was to evaluate the impact on airport exit operations of identifying, verifying, and collecting information from passengers who were subject to US-VISIT and leaving the United States. More specifically, the pilots are to

- evaluate identity verification and exit-recording capabilities when used with existing POE operations and infrastructure and
- biometrically and biographically verify the identity, record the exit, and update the IDENT and Arrival and Departure Information System records of each subject traveler departing the United States at the pilot locations.

DHS originally announced the purpose and conditions of an air exit capability in the Notice of Proposed Rulemaking³⁰ published by DHS in April 2008. As noted earlier, the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009³¹ subsequently required DHS to pilot the two exit operational scenarios described in the notice: airline collection and transmission of biometric exit data and CBP collection of such information at the departure gate. DHS decided to pilot two government alternatives: passenger screening by CBP officers at the departure gate (as required by the act) and passenger screening by TSA officials at the TSA security checkpoint. DHS did not pilot the airline alternative because the airlines decided not to participate.

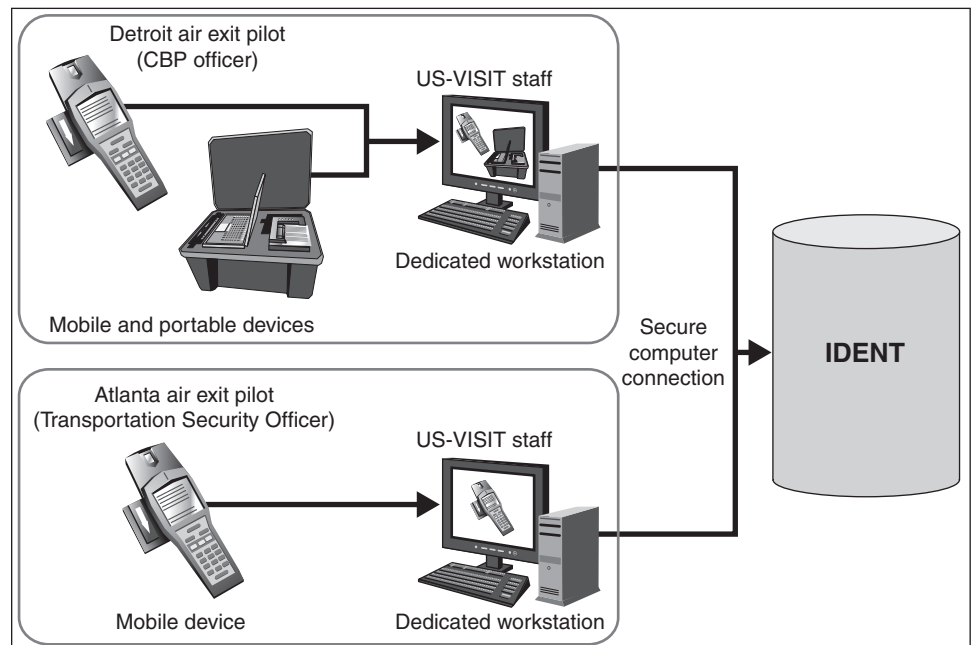
The CBP alternative was piloted at Detroit Metropolitan Wayne County Airport and the TSA alternative at Hartsfield-Jackson Atlanta International Airport. Pilot testing at both locations was completed in May 2009, using biographic and biometric data collected from a sampling of travelers who were subject to US-VISIT. Although one system problem was found (collected fingerprint images appeared upside down and mirrored), it was corrected and all planned requirements and test cases successfully executed. The pilots began in May 2009, and they operated until July 2009, as planned. The US-VISIT Comprehensive Exit project manager told us that the pilots have been decommissioned. According to the Air Exit Pilots schedule, the only remaining activity for this component is developing and issuing the final rule for the Long-term Air/Sea Exit component.

³⁰73 Fed. Reg. 22065 (Apr. 24, 2008).

³¹Pub. L. No. 110-329 (Sept. 30, 2008).

The Air Exit Pilots used two types of portable biometric collection devices: (1) a hand-held device (“mobile device”) that scanned information on travel documents and collected biometrics one fingerprint at a time and (2) a small suitcase (“portable device”) that contained a laptop computer, document scanning device, and a biometric scanner that collected a four-print slap. (See fig. 4.) The Detroit pilot used both devices. According to a TSA official, only mobile devices were used in Atlanta because of the limited space available within the checkpoint area.

Figure 4: Illustration of Air Exit Pilots Biometric Data Collection and Transmission Process



Source: GAO analysis of agency data.

The pilots consisted of these four steps:

- **Identification.** For the CBP pilot, CBP officers prescreened passengers after they provided their boarding passes to airline employees to identify passengers who were subject to US-VISIT and to then direct them to a CBP processing station in the jetway. For the TSA pilot, a TSA Ticket Document Checker prescreened every passenger entering the checkpoint

to identify subject passengers³² who were escorted to a processing station manned by Transportation Security Officers equipped with mobile devices.

- **Collection.** Both CBP and TSA officers scanned a machine-readable travel document presented by a passenger to collect biographic data. If the document did not scan correctly, the officers were instructed to enter the biographic data manually into the device. The officers then used the mobile or portable device to collect an index and middle fingerprint or a four-print image, respectively.
- **Processing.** Once the device indicated that the collected prints were of sufficient quality, the CBP and TSA officers directed the passenger to continue onto the departing aircraft or through the normal checkpoint security screening.
- **Transmission.** US-VISIT staff uploaded the information from the devices to a dedicated workstation and transmitted the data to IDENT via a secure network connection. Once transmitted, the data were matched to existing records.

DHS approved a report on the pilot results in October 2009. We are statutorily required to review this report.³³

Long-term Air/Sea Exit

According to program officials, planning for a target solution for air and sea POEs will begin once the pilots have been completed and after the final rule has been published. According to the US-VISIT Deputy Director, an official date for publishing the final rule has not been established. In general, program officials said that the final rule is to specify how and when an operational air/sea exit solution will be implemented.

Temporary Worker Visa Exit Pilot

The purpose of the Temporary Worker Visa Exit Pilot is to capture the final departure of certain H2 visa temporary workers at two land border crossings. The pilot is to use kiosks adapted for outdoor use to record the

³²This was accomplished by determining several basic flyer characteristics, including whether the passenger was a U.S. citizen and, if not, whether the passenger was flying to a foreign destination.

³³Pub. L. No. 110-329, 122 Stat. 3669-3670 (Sept. 30, 2008).

exit of H-2A and H-2B visa holders³⁴ who (1) previously entered and are now departing the United States through either San Luis, Arizona, or Douglas, Arizona, and (2) are required to record their final departure with CBP. In December 2008, DHS issued two Federal Register notices announcing the implementation of the pilot,³⁵ one addressing H-2A visa holders and one addressing H-2B visa holders. According to the notices, the pilot was to be deployed in August 2009. However, according to the US-VISIT Comprehensive Exit Project Manager, the pilot was suspended during the testing subprocess due to lack of CBP funding. The CBP Program Manager for Admissibility and Passenger Programs told us that the pilot is now scheduled for deployment in December 2009.

Both the US-VISIT program office and CBP are involved in the pilot. The program office is responsible for project management and kiosk design, development, and operations and maintenance. CBP is to support the development and deployment of the kiosks, and is to operate the pilot. As with the Air Exit Pilots, exit information collected from departing travelers is to be transmitted to IDENT, where it is to be matched against existing records. Assembly testing was completed in May 2009, with all planned requirements and test cases executed.

The pilot was originally planned to run for 1 year, after which its effectiveness and feasibility as a potential part of Comprehensive Exit was to be analyzed. However, according to the CBP Program Manager for Admissibility and Passenger Programs, CBP intends to assess the pilot after 6 months of deployment to determine whether to continue it. According to US-VISIT and CBP officials, the pilot results will help inform future decisions on the pedestrian component of the Long-term Land Exit component.

Long-term Land Exit

According to the US-VISIT Program Director and program documentation, a land exit strategy for recording biometric exit at land POEs was completed in November 2008 as planned, and is currently being reviewed by DHS leadership. The Program Director further told us that until the strategy is approved, no other Land Exit activities will be initiated. As a

³⁴H-2A visas are issued to temporary agricultural workers and H-2B visas are issued to temporary nonagricultural workers.

³⁵73 Fed. Reg. 77049 (Dec. 18, 2008) and 73 Fed. Reg. 77817 (Dec. 19, 2008).

result, this component has yet to begin the first ELCM project execution subprocess.

DHS Approach to Managing Comprehensive Exit Project Is Not Fully Integrated

Given that the Comprehensive Exit project is part of the larger US-VISIT program and consists of multiple components involving several DHS component organizations, it is important for the project to be planned and executed in an integrated fashion. To this end, the US-VISIT program office has established integrated project management plans, and has adopted an integrated approach to interacting with and involving project stakeholders, both of which are important ingredients to project success. However, US-VISIT has not developed and employed an integrated approach to scheduling, executing, and tracking the work that needs to be accomplished to deliver the Comprehensive Exit solution. Rather, it is relying on several separate and distinct schedules to manage individual aspects of the project. Moreover, not all of these individual schedules are reliable because they have not been derived in accordance with relevant schedule estimating guidance. Without a Comprehensive Exit integrated master schedule that is derived in accordance with relevant guidance, the program office cannot reliably commit to when and how the work needed to deliver the Comprehensive Exit solution will be performed, and it cannot adequately manage and measure its progress in executing the work needed to deliver it.

Comprehensive Exit Project Management Plans Are Integrated

According to relevant guidance,³⁶ a key to project success is a well-defined project management plan that provides a complete and integrated view of how the project is being managed. Among other things, the project management plan should (1) define or reference key project management processes, (2) be integrated with other plans that affect project management, and (3) reflect the current and complete scope of the project.

The US-VISIT program has developed a plan for managing Comprehensive Exit that is largely well defined. Specifically, the project management plan calls for tailoring the ELCM framework, which defines a standard set of project management processes. Further, the program office has applied this tailored approach to individual Comprehensive Exit components (e.g,

³⁶Carnegie Mellon University Software Engineering Institute, *CMMI for Acquisition*, version 1.2 (November 2007).

Release 1, Reporting Phase 1, and Air Exit Pilots). In addition, the project management plan is aligned with relevant US-VISIT program plans and procedures, as well as individual Comprehensive Exit component plans. For example, it incorporates by reference a number of key management processes defined in the US-VISIT program-level management plan, such as risk management, configuration management, requirements management, and schedule management. Also, it is referenced in, and aligned with, the component management plan for the Air Exit Pilots. Further, the project management plan has recently been revised, as called for in the plan, to define a more current and complete scope of the project, and to incorporate actual and planned project changes.³⁷

By having a Comprehensive Exit management plan that reflects an integrated approach to project management, the US-VISIT program office has established an important means for managing project activities in a standard and consistent manner.

DHS Stakeholders Have Been Integrated into Comprehensive Exit Pilots

Relevant system acquisition guidance recognizes that collaboration among relevant stakeholders is an important part of an integrated project management approach.³⁸ We have reported that such collaboration can produce better results and outcomes than could be achieved when stakeholders do not act in an integrated and coordinated manner.³⁹ In this regard, our research shows that effective collaborative activities involve the following practices.

- **Establishing common outcomes:** defining and articulating a shared or common outcome(s) or purpose(s) that organizations or programs are mutually seeking to achieve and that are consistent with their respective goals and missions.
- **Establishing mutually reinforcing or joint strategies:** creating strategies that work in concert with those of partner organizations or programs, or that are joint in nature.

³⁷The revision is dated May 2009 and, according to the Comprehensive Exit Project Manager, it will not be completed until a decision on Air Exit has been reached. This revision does not yet include the Temporary Worker Visa Exit Pilot.

³⁸*CMMI for Acquisition.*

³⁹GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, [GAO-06-15](#) (Washington, D.C.: Oct. 21, 2005).

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- **Leveraging resources:** identifying the human, technological, physical, and financial resources needed to initiate or sustain the collaborative effort.
 - **Agreeing on roles and responsibilities:** working together to define and agree on partners' respective roles and responsibilities, including how the collaboration efforts will be led.
 - **Establishing a compatible means to operate across organizational boundaries:** creating compatible standards, policies, procedures, and data systems that will be used in the collaborative effort.
 - **Developing mechanisms to monitor, evaluate, and report on results:** putting in place the means to monitor, evaluate, and report on the collaborative effort to identify areas for improvement.

As previously discussed, the Comprehensive Exit project's pilot components involve multiple stakeholders, including the US-VISIT program office, CBP, and TSA. To their credit, these stakeholders have collaborated in a manner that is consistent with these practices. As a result, they have established the means to align their activities, processes, and resources to accomplish the objectives of the Comprehensive Exit project pilots.

Establishing Common Outcomes

Within DHS, the US-VISIT program office, along with CBP and TSA, share a common mission to secure our nation's borders. Consistent with this shared mission, these organizations have defined a common purpose for both the Air Exit Pilots and the Temporary Worker Visa Exit Pilot. Specifically, the shared purpose of the Air Exit Pilots was to evaluate the operational impact of collecting biometric exit data from travelers near the departure gate and at the TSA security checkpoint, and thereby help inform the implementation of the Air Exit solution. The shared purpose of the Temporary Worker Visa Exit Pilot is to ensure that temporary guest workers depart the United States at the completion of their work authorizations and to analyze the effectiveness and feasibility of one part of the overall Land Exit solution.

Establishing Mutually Reinforcing or Joint Strategies

The US-VISIT program office, CBP, and TSA have established joint management strategies for executing the Air Exit Pilots and the Temporary Worker Visa Exit Pilot. Specifically, an Integrated Project Team, which is led by the program office and includes representatives from CBP and TSA, was assigned responsibility for planning, execution, and control of both pilots. In addition, the program office developed an Air

Exit Pilots Management Plan that defines the project management approach for implementing the Air Exit Pilots. While the program office did not establish a comparable management plan for the Temporary Worker Visa Exit Pilot, it developed a business concept of operations that documents the proposed business process and operational changes needed to implement the Temporary Worker Visa Exit Pilot. Both documents were reviewed by relevant stakeholders.

Leveraging Resources

As previously noted, an Integrated Project Team was assigned responsibility for planning, execution, and control of both pilots. This team has leveraged human, technological, physical, and financial resources provided by the program office, CBP, and TSA. Specifically, key personnel from each organization are members of the Integrated Project Team, and are involved in supporting the execution of the pilots. For example, CBP and TSA provided or plan to provide personnel for collecting biometrics during the pilots, and the program office provided or plans to provide on-site technical support during the pilots. In addition, the program office and CBP have funded their respective efforts, while an interagency agreement has been executed for the program office to fund TSA personnel needed for pilot operations. Also, the program office provided or plans to provide the technology (e.g., mobile and portable devices and kiosks for collecting biometrics and the IDENT system to process and store the biometric data received). Further, CBP and TSA leveraged their physical presence at the Detroit Metropolitan Wayne County Airport and the Hartsfield-Jackson Atlanta International Airport. Also, CBP is leveraging and augmenting its physical infrastructure at the San Luis and Douglas POEs in Arizona. For example, it is ensuring that proper network connectivity exists from the kiosks to IDENT and that needed electrical and facility modifications are made at the sites.

Agreeing on Roles and Responsibilities

The program office, CBP, and TSA have defined and agreed on roles and responsibilities for the Air Exit Pilots and the Temporary Worker Visa Exit Pilot. Specifically, the Air Exit Pilots Management Plan and business concept of operations documents define roles and responsibilities for the program office, CBP, and TSA, and these documents were reviewed or approved by all relevant parties. For example, the Air Exit Pilots Business Concept of Operations states that the program office is to evaluate and determine which biometric data collection devices will be used and provide these devices, as well as the necessary training, to CBP and TSA, while CBP and TSA are to collect the biometric exit data from travelers who were subject to US-VISIT during the pilot. Also, the Air Exit Pilots Management Plan identifies individual roles and responsibilities for key program personnel providing direct support to the project. Further, the

Establishing a Compatible Means to Operate Across Organizational Boundaries

Temporary Worker Visa Exit Pilot business concept of operations states that the program office is to serve as the overall project manager and acquire the kiosks, while CBP is to serve as the operational manager and perform the day-to-day maintenance and operation of the kiosks once they have been deployed to the sites. It also defines more detailed roles and responsibilities for specific groups within the program office and CBP, such as US-VISIT Project Management, US-VISIT Information Technology Management, CBP Office of Field Operations, and CBP Office of Information Technology.

As the overall project management lead for both pilots, the program office established an Integrated Project Team that includes CBP and TSA and has aligned the pilots with the ELCM and other project management procedures to ensure they are managed consistently. For example, CBP and the program office were both involved in developing requirements for the Temporary Worker Visa Exit Pilot. As another example, when CBP officials identified a lack of CBP funding for the Temporary Worker Visa Exit Pilot, they reported this to the program office as a risk. The risk was subsequently tracked through the risk management process. As another example, CBP required a change in the kiosk solution for the Temporary Worker Visa Exit Pilot to allow it to withstand outdoor use, and submitted a change request through the established change management process to “ruggedize” the kiosks.

Developing Mechanisms to Monitor, Evaluate, and Report on Results

The Comprehensive Exit project management approach includes mechanisms for monitoring, evaluating, and reporting on the results of project efforts. For example, the project management plan discusses quality assurance activities, such as peer review of project artifacts and deliverables, and testing and evaluation of hardware and software. As another example, the project management plan identifies status reporting requirements, such as quarterly program management reviews, which provide an overview of the project’s status, budget, resource levels, and any outstanding issues. In addition, the program office has applied pilot-specific mechanisms for monitoring, evaluating, and reporting on results. For example, the Air Exit Pilots Management Plan describes a five-step process improvement model for identifying, implementing, and evaluating solutions to problems during the execution of the pilots. Also, this plan establishes a stakeholder communication matrix, which documents the activities and reports for intra/inter-agency communication throughout different phases of the pilot (e.g., ongoing, predeployment, deployment, pilot operations, and disposition and analysis). Further, the program office defined performance metrics for the evaluation of the Air Exit Pilots, and it involved CBP and TSA in doing so.

Comprehensive Exit Schedules Are Not Integrated and Reliable

The success of a project depends in part on having an integrated and reliable master schedule that defines, among other things, when work activities will occur, how long they will take, and how they are related to one another. As such, the project schedule not only provides a road map for systematic project execution, but also provides the means by which to gauge progress, identify and address potential problems, and promote accountability. In addition, US-VISIT's program and project management guidance and plans recognize that schedule management plays a critical role in the success of its activities. For example, the program management plan requires a tiered and integrated master schedule that includes contractor schedules for each task order and a project level schedule. Further, US-VISIT's program guidance states that the integrated master schedule provides a means to ensure attainability of program objectives and evaluate the project's progress in doing so.

Program officials told us they do not have an integrated master schedule for the Comprehensive Exit project. Instead, each ongoing project component⁴⁰ has its own separate schedule. In addition, the US-VISIT prime contractor has its own schedule to support the project components, although program officials said that the work in this schedule is manually incorporated into each component schedule. However, our analysis of the schedules for ongoing Comprehensive Exit components, as well as the contractor's schedule, did not show any evidence of this, and the program office provided no other documentation to demonstrate that the manual incorporation exists. According to program officials, DHS cannot develop a complete schedule for the Comprehensive Exit project until decisions have been made on the direction and scope of the Air/Sea and Land exit solutions. However, relevant guidance⁴¹ states that a comprehensive schedule should reflect all activities for a project and recognizes that there can be uncertainties and unknown factors in schedule estimates due to, among other things, limited data. In light of such uncertainties and unknowns, the guidance discusses the need to perform a schedule risk analysis to determine the level of uncertainty and to help identify and mitigate the risks.

⁴⁰At the time of our review, the Air Exit Pilots were ongoing. As discussed earlier in this report, the pilots have since been completed.

⁴¹GAO, *Cost Estimating and Assessment Guide*, [GAO-09-3SP](#) (Washington, D.C.: March 2009).

As a result, DHS does not have a comprehensive project view of the work that must be, among other things, sequenced, timed, resourced, and risk-adjusted to deliver the Comprehensive Exit solution. Without such a view, a sound basis does not exist for knowing with any degree of confidence when and how the project will be completed.

The lack of an integrated master schedule is compounded by the fact that the individual component schedules are not reliable. Our research has identified nine practices associated with developing and maintaining a reliable schedule.⁴² These practices are (1) capturing all activities, (2) sequencing all activities, (3) assigning resources to all activities, (4) establishing the duration of all activities, (5) integrating schedule activities horizontally and vertically, (6) establishing the critical path for all activities, (7) identifying float⁴³ between activities, (8) conducting a schedule risk analysis, and (9) updating the schedule using logic and durations to determine the dates. In addition, the project management plan states that a project schedule should reflect the work breakdown structure for the project as well as ELCM required artifacts. The plan also requires that the project schedule be horizontally and vertically integrated, that all scheduled milestones and tasks be linked logically, and that schedule status be captured on a regular basis.

Both the Air Exit Pilots schedule and the Temporary Worker Visa Exit Pilot schedule only fully meet one of the nine key schedule estimating practices, and either partially, minimally, or do not meet the remaining eight. In contrast, the prime contractor's schedule is largely reliable, as it fully or substantially meets all nine practices. To be considered reliable, relevant guidance states that a schedule needs to fully meet all nine practices. The extent to which the two component schedules and contractor's schedule meet the nine practices are summarized below and in table 1. A detailed discussion of the extent to which each schedule meets the nine practices is in appendix II.

- **Component schedules:** Both the Air Exit Pilots and Temporary Worker Visa Exit Pilot schedules establish the duration of time planned for executing key activities, and they detail work activities that are integrated

⁴²GAO-09-3SP.

⁴³Float is the amount of time an activity can slip before affecting the critical path. The critical path is the longest path through the schedule. If an activity on the critical path slips, the entire project will be delayed.

with higher-level milestones and summary activities. However, neither schedule reflects a valid critical path due to a high number of missing dependencies and rigid schedule constraints. For example, the schedule contains 16 remaining activities that identify dates when the activities must begin. These are rigid schedule constraints and such dates remain fixed regardless of the allocation of resources or predecessor activities finishing on time, earlier, or later. This is important because the critical path represents the longest chain of activities through the network and determines the length of the project. Thus, delays in an activity that is on the critical path would cause the entire component effort to slip. Without a valid critical path, the program office cannot accurately determine the amount of time required to complete the project component and assess how delays impact the projected completion date. According to program officials, they manage each exit component to a critical path that is calculated by the scheduling software on a weekly basis. However, as noted above, the critical paths are not valid due to missing dependencies and rigid schedule constraints.

In addition, neither schedule is based on a schedule risk analysis. A schedule risk analysis is important because it allows high-priority risks to be identified and mitigated, and the level of confidence in meeting projected completion dates to be predicted. Also, officials stated they do not perform regular, electronic checks on the schedules to know the true status of the components and thus ensure the integrity of the schedules' logic. Furthermore, neither schedule assigns resources to activities, which limits insight into current or projected resource allocation issues. Without assigning resources, the risk of the projected completion date slipping is increased.

- **Contractor schedule:** The prime contractor's schedule reflects a number of best practices. For example, this schedule can be traced to the contractor's work breakdown structure, activities have appropriate logical sequencing, and resources are assigned to activities. In addition, contractor representatives stated they have performed a risk assessment of the schedule and regularly update the status and perform tests to ensure the integrity of schedule logic. However, the schedule does not reflect a valid critical path because it contains two separate critical paths that are not linked. By definition, the critical path must run from the first event to the last event without a break in continuity. As stated previously, without a valid critical path, the contractor cannot accurately determine the amount of time required to complete scheduled work.

Table 1: Component and Contractor Schedules Satisfaction of GAO Schedule Estimating Best Practices

Practice	Air Exit Pilots	Temporary Worker Visa Exit Pilot	Contractor schedule
Capturing all activities	Partially	Partially	Met
Sequencing all activities	Partially	Minimally	Met
Assigning resources to all activities	Minimally	Minimally	Met
Establishing the duration of all activities	Met	Met	Met
Integrating schedule activities horizontally and vertically	Partially	Partially	Substantially
Establishing the critical path for all activities	Minimally	Minimally	Substantially
Identifying float between activities	Minimally	Minimally	Met
Conducting a schedule risk analysis	Not Met	Not Met	Met
Updating the schedule using logic and durations to determine the dates	Partially	Partially	Met

Source: GAO analysis of US-VISIT data.

Notes: “Met” means the program provided complete evidence that satisfies the entire criterion. “Substantially” means the program provided evidence that satisfies a large portion of the criterion. “Partially” means the program provided evidence that satisfies about half of the criterion. “Minimally” means the program provided evidence that satisfies a small portion of the criterion. “Not met” means the program provided no evidence that satisfies any of the criterion.

Without a fully integrated and reliably derived schedule for the entire Comprehensive Exit project, the program office cannot identify when and how a full exit capability will be delivered, and it cannot adequately manage and measure its progress in executing the work needed to deliver it.

Conclusions

To DHS’s credit, it has completed or has under way five of six components that fall under the auspices of its US-VISIT Comprehensive Exit project, the status of which range from preplanning to transitioning to operations and maintenance, and it is managing some aspects of these various project components in an integrated manner. For example, each component is being governed by a defined and standardized US-VISIT project execution methodology, and each component is subject to the management processes, such as processes managing project risks. Further, those components that involve multiple organizational stakeholders are being executed to ensure that stakeholders interact in an integrated and coordinated manner.

Nevertheless, if and when Comprehensive Exit will be operational remains unclear, in part because DHS still does not have an integrated master schedule defining the timing and sequencing of the work and events needed to deliver US-VISIT exit capabilities to its air, sea, and land ports of entry. Instead, it has separate schedules for managing individual components, as well as the prime contractor's schedule that supports all the components, that do not collectively provide a road map for delivering a comprehensive exit solution, including things such as the sequencing and timing of the work needed to produce the solution, a realistic target date for doing so, and the resources associated with executing the work. Moreover, even the individual schedules governing the execution of what DHS described as unrelated components are not sufficiently reliable as standalone schedules. For the Comprehensive Exit project to be managed in a fully integrated manner, it is important for DHS to develop and implement an integrated master schedule. If it does not, it will not be able to commit to when and how the exit side of US-VISIT will become operational, and it will not have a key aspect of the means by which to get there and to measure its progress in doing so.

Recommendation for Executive Action

To better ensure the successful delivery of a comprehensive US-VISIT exit solution, we are augmenting our prior recommendations aimed at strengthening Comprehensive Exit project planning. Specifically, we recommend that the Secretary of Homeland Security direct the Undersecretary for National Protection and Programs to have the US-VISIT Program Director develop and maintain an integrated master schedule for the Comprehensive Exit project in accordance with the nine practices discussed in this report.

Agency Comments and Our Evaluation

In written comments on a draft of this report, signed by the Director, Departmental GAO/Office of the Inspector General Liaison Office and reprinted in appendix III, the department stated that it concurred with our recommendation.

DHS also provided technical comments, which we have incorporated into this report as appropriate.

We will send copies of this report to the Chairman and Ranking Member of the Senate Committee on Homeland Security and Governmental Affairs, the Chairmen and Ranking Members of the Senate and House Appropriations Committees, and other Senate and House committees and

subcommittees that have authorization and oversight responsibilities for homeland security. We will also send copies to the Secretary of Homeland Security and the Director of the Office of Management and Budget. In addition, this report will be available at no charge on the GAO Web site at www.gao.gov.

Should you or your offices have any questions on matters discussed in this report, please contact me at (202) 512-3439 or at hiter@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix IV.

A handwritten signature in black ink that reads "Randolph C. Hite". The signature is written in a cursive style with a large, sweeping initial "R".

Randolph C. Hite
Director, Information Technology Architecture
and Systems Issues

Appendix I: Objectives, Scope, and Methodology

Our objectives were to determine (1) the status of the Department of Homeland Security's (DHS) efforts to deliver a comprehensive exit solution for the United States Visitor and Immigrant Status Indicator Technology (US-VISIT) program and (2) the extent to which DHS is applying an integrated approach to managing its comprehensive exit solution.

To determine the status of efforts to deliver a comprehensive exit solution, we first identified the component efforts which constitute the Comprehensive Exit project, and then we identified the status of each relative to the phases in the US-VISIT Enterprise Life Cycle Methodology (ELCM). We reviewed key program documentation, such as the US-VISIT Comprehensive Exit Project Plan and Comprehensive Exit project documentation (e.g., concepts of operation, design documents, project schedules, requirements documentation, and test plans). In doing so, we focused on determining such key factors as what project activities were planned, when and how they were to be accomplished, and whether activities were completed as planned. We also interviewed officials from the US-VISIT program office, U.S. Customs and Border Protection (CBP), and the Transportation Security Administration (TSA) to determine how the comprehensive exit solution is being designed and implemented, and what future plans for the project have been developed. Finally, we visited the Detroit Metropolitan Wayne County Airport and the Hartsfield-Jackson Atlanta International Airport to observe the operation of the Air Exit Pilots and interviewed officials from US-VISIT (both locations), CBP (Detroit), and TSA (Atlanta) to obtain details as to how the pilots were operating.

To determine the extent to which DHS is applying an integrated approach to managing the Comprehensive Exit Project, we assessed project planning, stakeholder coordination, and schedule estimation efforts against relevant best practices. Specifically,

- To identify the extent to which DHS is applying an integrated approach to project planning, we reviewed key project planning documentation, such as the US-VISIT Comprehensive Exit Project Plan and Air Exit Pilots Management Plan, and compared it with relevant best practices for integrated project management.¹

¹Carnegie Mellon University Software Engineering Institute, *CMMI for Acquisition*, version 1.2 (November 2007).

- To establish the extent to which DHS is applying key stakeholder coordination and collaboration practices to the Comprehensive Exit project, we reviewed key project planning documentation (e.g., Comprehensive Exit Project Plan, Air Exit Pilots Management Plan, concepts of operation, and project tailoring plans) and compared it with relevant best practices.²
- To determine the extent to which DHS is applying key schedule estimating practices to the Exit Project, we reviewed schedule estimates for ongoing exit work³ (Air Exit Pilots schedule, Temporary Worker Visa Exit Pilot schedule, contractor schedule) and compared them with relevant best practices.⁴ In doing so, we categorized our determinations as either met, substantially, partially, minimally, and not met.⁵ Our determinations were also based on interviews with knowledgeable US-VISIT, CBP, and TSA officials.

We conducted this performance audit at the US-VISIT Program Office in Arlington, Virginia; CBP headquarters offices in Washington, D.C.; TSA headquarters offices in Arlington, Virginia; Detroit Metropolitan Wayne County Airport in Detroit, Michigan; and Hartsfield-Jackson Atlanta International Airport in Atlanta, Georgia, from January 2009 to November 2009 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. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

²GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, [GAO-06-15](#) (Washington, D.C.: Oct. 21, 2005).

³At the time of our review, the Air Exit Pilots were ongoing. As discussed earlier in this report, the pilots have since been completed.

⁴GAO, *GAO Cost Estimating and Assessment Guide*, [GAO-09-3SP](#) (Washington, D.C.: March 2009).

⁵“Met” means the program provided complete evidence that satisfies the entire criterion. “Substantially” means the program provided evidence that satisfies a large portion of the criterion. “Partially” means the program provided evidence that satisfies about half of the criterion. “Minimally” means the program provided evidence that satisfies a small portion of the criterion. “Not met” means the program provided no evidence that satisfies any of the criterion.

Appendix II: Detailed Results of GAO Assessment of Schedules for Ongoing Comprehensive Exit Components and Prime Contractor Schedule

Our research has identified nine practices associated with effective schedule estimating:¹ (1) capturing all activities, (2) sequencing all activities, (3) assigning resources to all activities, (4) establishing the duration of all activities, (5) integrating schedule activities horizontally and vertically, (6) establishing the critical path for all activities, (7) identifying float² between activities, (8) conducting a schedule risk analysis, and (9) updating the schedule using logic and durations to determine the dates.

For the Comprehensive Exit project, we analyzed schedules representing ongoing work, which included the Air Exit Pilots component schedule, the Temporary Worker Visa Exit Pilot component schedule, and the prime contractor schedule,³ against the nine best practices. Tables 2, 3, and 4 provide the detailed results of our analyses of these schedules.

Table 2: US-VISIT Air Exit Pilots Schedule Compared to Best Practices

Practice	Explanation	Criterion met ^a	GAO analysis
Capturing all activities	The schedule should reflect all activities (e.g., steps, events, outcomes, etc.) as defined in the program's work breakdown structure (WBS), to include activities to be performed by both the government and its contractors.	Partially	While officials stated that the schedule is built from the bottom up by subject matter experts on integrated project teams consisting of both government and contractor staff, and that the schedule is linked to a statement of work via activity identification numbers, the Air Exit Pilots schedule contains neither activity identification information, nor unique WBS elements that would link to an overarching WBS.

¹[GAO-09-3SP](#).

²Float is the amount of time an activity can slip before affecting the critical path.

³The prime contractor schedule contains activities for the task order covering its support of Comprehensive Exit.

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Practice	Explanation	Criterion met ^a	GAO analysis
Sequencing all activities	The schedule should be planned so that it can meet program-critical dates. To meet this objective, key activities need to be logically sequenced in the order that they are to be carried out. In particular, activities that must finish prior to the start of other activities (i.e., predecessor activities) as well as activities that cannot begin until other activities are completed (i.e., successor activities) should be identified. By doing so, interdependencies among activities that collectively lead to the accomplishment of events or milestones can be established and used as a basis for guiding work and measuring progress.	Partially	The Air Exit Pilots schedule does not adequately sequence activities due to a high number of missing dependencies and the use of “hard” constraints. While the schedule contains some logically sequenced activities, 26 percent of remaining activities ^b are missing dependencies (i.e., predecessor or successor activities). The majority of these activities are missing successor activities. If an activity that has no logical successor slips, the schedule will not reflect the effect on the critical path, float, or scheduled start dates of downstream activities. In addition, the schedule contains 10 “dangling” activities, which are activities that have no link from their finish date. These tasks can continue indefinitely without disrupting any other activity, including the finish milestone date. Further, 10 percent of the remaining activities (16 activities) identify dates that the activities must start on. These are considered “hard” constraints because they are inflexible. Such dates remain fixed regardless of the allocation of resources or predecessor activities finishing on time, earlier, or later. Officials told us these constraints reflect congressionally mandated dates. However, a schedule should serve as a proactive, dynamic management tool that reflects the current reality of the effort and accurately projects remaining duration, rather than a calendar of proposed dates. Also, the schedule may be misconstrued when reported to higher levels of management if senior management is not aware of the number of days behind schedule.
Assigning resources to all activities	The schedule should reflect what resources (i.e., labor, material, and overhead) are needed to do the work, whether all required resources will be available when they are needed, and whether any funding or time constraints exist.	Minimally	Labor, material costs, other direct charges, and resources (such as testing facilities or other equipment) are not reflected in the schedule. Instead, groups are assigned to activities at the organization level (e.g., Information and Technology Management). Officials confirmed they do not assign resources in their schedules beyond the organization level. It is important that the program office gain an understanding of resources needed to complete the work. This information would assist US-VISIT in forecasting the likelihood of activities being completed based on their projected end dates. The current schedule does not allow for insight into current or projected overallocation of resources, thus significantly increasing the risk of the component effort slipping.

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Practice	Explanation	Criterion met^a	GAO analysis
Establishing the duration of all activities	The schedule should realistically reflect how long each activity will take to execute. In determining the duration of each activity, the same rationale, data, and assumptions used for cost estimating should be used for schedule estimating. Further, these durations should be as short as possible and they should have specific start and end dates. Excessively long periods needed to execute an activity should prompt further decomposition of the activity so that shorter execution durations will result.	Met	Durations of key activities in the schedule reflect scheduling best practices, and officials stated that activity durations are based on government and contractor expert opinions, as well as historical data.
Integrating schedule activities horizontally and vertically	The schedule should be horizontally integrated, meaning that it should link the products and outcomes associated with already sequenced activities. These links are commonly referred to as handoffs and serve to verify that activities are arranged in the right order to achieve aggregated products or outcomes. The schedule should also be vertically integrated, meaning that traceability exists among varying levels of activities and supporting tasks and subtasks. Such mapping or alignment among levels enables different groups to work to the same master schedule.	Partially	The schedule is mostly vertically integrated with the majority of milestones and detail activities being subsumed by higher summary milestones and activities. In addition, the Air Exit Pilots schedule is not horizontally integrated, meaning that the activities across the multiple teams are not arranged in the right order to achieve aggregated products or outcomes. It is not possible to accurately trace the network from beginning to end because the schedule does not reflect a valid critical path. In addition, program officials stated that the schedule reflects all government and contractor activities for the component, and that integration of the schedule with the prime contractor's schedule is addressed through a manual process performed on a weekly basis. However, we did not receive evidence demonstrating that the Air Exit Pilots schedule and prime contractor schedule were integrated.
Establishing the critical path for all activities	Using scheduling software, the critical path—the longest duration path through the sequenced list of key activities—should be identified. The establishment of a program's critical path is necessary for examining the effects of any activity slipping along this path. Potential problems that may occur on or near the critical path should also be identified and reflected in the scheduling of the time for high-risk activities.	Minimally	Officials told us they manage to the critical path, as defined by the scheduling software, on a weekly basis. However, the Air Exit Pilots schedule does not exhibit a valid critical path. A valid critical path represents the longest chain of activities through the schedule and determines the length of the component effort. By managing to the hard constraints rather than the true critical path, management does not have a clear picture of available float that would mitigate the risks associated with slipping tasks. Furthermore, removing all hard constraints will not identify the true critical path within the schedule because of the high number of missing dependencies.

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Practice	Explanation	Criterion met ^a	GAO analysis
Identifying float between activities	The schedule should identify float—the time that a predecessor activity can slip before the delay affects successor activities—so that schedule flexibility can be determined. As a general rule, activities along the critical path typically have the least amount of float.	Minimally	The Air Exit Pilots schedule displays an unrealistic amount of float. Specifically, 49 activities have greater than 100 days of float. Officials told us they were aware of the float and are satisfied that the float reflects reality because of unique circumstances. However, 17 of the activities with high float times (between 97 to 236 days) are missing successor activities. A missing successor link will cause excessive float because the activities can essentially slip or carry on for months without affecting the finish date. Total float cannot be truly determined unless all activities have at least one predecessor link and one successor link. However, as stated previously, 26 percent of the remaining activities are missing such links.
Conducting a schedule risk analysis	A schedule risk analysis uses a good critical path method schedule and data about project schedule risks as well as Monte Carlo simulation techniques to predict the level of confidence in meeting a program's completion date, the amount of time contingency needed for a level of confidence, and the identification of high-priority risks. This analysis focuses not only on critical path activities but also on other schedule paths that may become critical. A schedule/cost risk assessment recognizes the interrelationship between schedule and cost and captures the risk that schedule durations and cost estimates may vary because of, among other things, limited data, optimistic estimating, technical challenges, and lack of qualified personnel. As a result, the baseline schedule should include a buffer or a reserve of extra time. Schedule reserve for contingencies should be calculated by performing a schedule risk analysis. As a general rule, the reserve should be held by the project manager and applied as needed to those activities that take longer than scheduled because of the identified risks. Reserves of time should not be apportioned in advance to any specific activity since the risks that will actually occur and the magnitude of their impact is not known in advance.	Not met	The program office has not performed a schedule risk analysis. Thus, it is not possible to determine a level of confidence in meeting the projected completion date or whether proper reserves have been incorporated into the schedule. A schedule risk analysis will calculate schedule reserve, which can be set aside for those activities identified as high risk. Without this reserve, the program office faces the risk of delays to the scheduled completion date if any delays were to occur on critical path activities.

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Practice	Explanation	Criterion met^a	GAO analysis
Updating the schedule using logic and durations to determine the dates	The schedule should use logic and durations in order to reflect realistic start and completion dates for program activities. The schedule should be continually monitored to determine when forecasted completion dates differ from the planned dates, which can be used to determine whether schedule variances will affect downstream work. Maintaining the integrity of the schedule logic is not only necessary to reflect true status, but is also required before conducting a schedule risk analysis. The schedule should avoid logic overrides and artificial constraint dates that are chosen to create a certain result on paper. To ensure that the schedule is properly updated, individuals trained in critical path method scheduling should be responsible for updating the schedule status.	Partially	Program officials told us they use the schedule in weekly management and risk meetings. However, according to the schedule's status date, there are eight activities that should have started but do not have an actual start date; nine activities that should have finished but do not have an actual finish date; and two activities that have an actual start date 1 week in the future. These anomalies indicate the presence of questionable logic in the schedule, suggesting that management may need to re-evaluate the process for correctly updating the schedule. In addition, the manual process for updating the progress of contractor activities in the component schedule may lead to errors, especially without unique WBS elements assigned to the activities to assist schedulers in the process. Furthermore, program officials stated they do not routinely verify the validity of the schedule logic using scheduling software diagnostic reports. Assessing the health of the schedule after updating its status is encouraged, as actual progress typically overrides scheduled logic.

Source: GAO analysis of US-VISIT data.

^a“Met” means the program provided complete evidence that satisfies the entire criterion.

“Substantially” means the program provided evidence that satisfies a large portion of the criterion.

“Partially” means the program provided evidence that satisfies about half of the criterion. “Minimally” means the program provided evidence that satisfies a small portion of the criterion. “Not met” means the program provided no evidence that satisfies any of the criterion.

^bAn activity that is less than 100 percent complete is considered a “remaining activity.”

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Table 3: US-VISIT Temporary Worker Visa Exit Pilot Schedule Compared to Best Practices

Practice	Explanation	Criterion met^a	GAO analysis
Capturing all activities	The schedule should reflect all activities (e.g., steps, events, outcomes, etc.) as defined in the program's WBS, to include activities to be performed by both the government and its contractors.	Partially	While officials stated that the schedule is built from the bottom up by subject matter experts on integrated project teams consisting of both government and contractor staff, and that the schedule is linked to a statement of work via activity identification numbers, the Temporary Worker Visa Exit Pilot schedule does not contain activity identification information. In addition, the WBS for Comprehensive Exit does not include tasks for the effort and therefore cannot be mapped to the pilot's schedule.
Sequencing all activities	The schedule should be planned so that it can meet program-critical dates. To meet this objective, key activities need to be logically sequenced in the order that they are to be carried out. In particular, activities that must finish prior to the start of other activities (i.e., predecessor activities) as well as activities that cannot begin until other activities are completed (i.e., successor activities) should be identified. By doing so, interdependencies among activities that collectively lead to the accomplishment of events or milestones can be established and used as a basis for guiding work and measuring progress.	Minimally	The Temporary Worker Visa Exit Pilot schedule does not adequately sequence activities due to a high number of missing dependencies. Specifically, 42 percent of the remaining activities have missing dependencies (i.e., predecessor or successor activities). The majority of these activities are missing successor activities. If an activity that has no logical successor slips, the schedule will not reflect the effect on the critical path, float, or scheduled start dates of downstream activities. In addition, we identified five "dangling" activities, meaning they do not have proper links to logically determine their start or finish dates. Further, 13 percent of the remaining activities identify dates for which the activity may not start earlier than. These are considered "soft" constraints, in that they are past-limiting, not future-limiting. This means that if predecessor tasks slip, the constrained task will slip if properly sequenced. While not necessarily a poor scheduling practice, the use of this many soft constraints does limit the ability of the schedule to dynamically respond to changes. If predecessor tasks are completed earlier than scheduled, these downstream tasks will not shift to take advantage of time savings.

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Practice	Explanation	Criterion met ^a	GAO analysis
Assigning resources to all activities	The schedule should reflect what resources (i.e., labor, material, and overhead) are needed to do the work, whether all required resources will be available when they are needed, and whether any funding or time constraints exist.	Minimally	Labor, material costs, other direct charges, and resources (such as testing facilities or other equipment) are not reflected in the schedule. Instead, groups are assigned to activities at the organization level (e.g., Information and Technology Management). Program officials confirmed they do not assign resources in their schedules beyond the organization level. It is important that the program office gain an understanding of resources needed to complete the work. This information would assist the program office in forecasting the likelihood of activities being completed based on their projected end dates. The current schedule does not allow for insight into current or projected overallocation of resources, thus significantly increasing the risk of the component effort slipping.
Establishing the duration of all activities	The schedule should realistically reflect how long each activity will take to execute. In determining the duration of each activity, the same rationale, data, and assumptions used for cost estimating should be used for schedule estimating. Further, these durations should be as short as possible and they should have specific start and end dates. Excessively long periods needed to execute an activity should prompt further decomposition of the activity so that shorter execution durations will result.	Met	Durations of key activities in the schedule reflect scheduling best practices. Further, officials stated that activity durations are based on government and contractor expert opinions, as well as historical data.
Integrating schedule activities horizontally and vertically	The schedule should be horizontally integrated, meaning that it should link the products and outcomes associated with already sequenced activities. These links are commonly referred to as handoffs and serve to verify that activities are arranged in the right order to achieve aggregated products or outcomes. The schedule should also be vertically integrated, meaning that traceability exists among varying levels of activities and supporting tasks and subtasks. Such mapping or alignment among levels enables different groups to work to the same master schedule.	Partially	The Temporary Worker Visa Exit Pilot schedule is mostly vertically integrated, with the majority of milestones and detail activities being subsumed by higher summary milestones and activities. In addition, the Temporary Worker Visa Exit Pilot schedule is not horizontally integrated, meaning that the activities across the multiple teams are not arranged in the right order to achieve aggregated products or outcomes. It is not possible to accurately trace the schedule from beginning to end because of the number of missing dependencies and the fact that the schedule does not reflect a valid critical path. In addition, program officials stated that the schedule reflects all government and contractor activities for the component, and that integration of the schedule with the prime contractor's schedule is addressed through a manual process performed on a weekly basis. However, we did not receive evidence demonstrating that the Temporary Worker Visa Exit Pilot schedule and prime contractor schedule were integrated.

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Practice	Explanation	Criterion met^a	GAO analysis
Establishing the critical path for all activities	Using scheduling software, the critical path—the longest duration path through the sequenced list of key activities—should be identified. The establishment of a program’s critical path is necessary for examining the effects of any activity slipping along this path. Potential problems that may occur on or near the critical path should also be identified and reflected in the scheduling of the time for high-risk activities.	Minimally	Officials told us they manage to the critical path, as defined by the scheduling software, on a weekly basis. However, the Temporary Worker Visa Exit Pilot schedule does not exhibit a valid critical path. A valid critical path represents the longest chain of activities through the schedule and determines the length of the component effort. By definition, the critical path must run from the first event to the last event without a break in continuity. Two activities in the schedule, “Kiosk Early Start Go Live Date” and “Removal of Equipment” are separated via a 225-day lag. Unrealistic total float calculations due to this lag are creating an invalid critical path throughout the network. Further, any critical path within the schedule—with or without lags—will be invalid due to almost half the activities missing dependencies.
Identifying float between activities	The schedule should identify float—the time that a predecessor activity can slip before the delay affects successor activities—so that schedule flexibility can be determined. As a general rule, activities along the critical path typically have the least amount of float.	Minimally	The Temporary Worker Visa Exit Pilot schedule displays an unrealistic amount of float. Specifically, 56 activities have greater than 225 days of float. Officials told us they were aware of the float and are satisfied that the float reflects reality because of unique circumstances. However, 16 of the activities with high float times (between 226 and 306 days) are missing successor activities. A missing successor link will cause excessive float because the activities can essentially slip or carry on for months without affecting the finish date. The majority of excessive float is created due to the misuse of lags. The finish milestone of the project is separated from its predecessor via a 225-day lag. Program officials told us this lag represents operations and maintenance activity. Operations and maintenance is typically a level of effort type of task and as such is not usually captured in a schedule. However, there are three activities scheduled beyond the lag, which is having an adverse effect on the schedule’s total float. This is because preceding tasks not tied directly to operations and maintenance are able to slip at least 225 days with no effect on the network. These excessive float values are responsible for the invalid critical path.

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Practice	Explanation	Criterion met^a	GAO analysis
Conducting a schedule risk analysis	A schedule risk analysis uses a good critical path method schedule and data about project schedule risks as well as Monte Carlo simulation techniques to predict the level of confidence in meeting a program's completion date, the amount of time contingency needed for a level of confidence, and the identification of high-priority risks. This analysis focuses not only on critical path activities but also on other schedule paths that may become critical. A schedule/cost risk assessment recognizes the interrelationship between schedule and cost and captures the risk that schedule durations and cost estimates may vary because of, among other things, limited data, optimistic estimating, technical challenges, and lack of qualified personnel. As a result, the baseline schedule should include a buffer or a reserve of extra time. Schedule reserve for contingencies should be calculated by performing a schedule risk analysis. As a general rule, the reserve should be held by the project manager and applied as needed to those activities that take longer than scheduled because of the identified risks. Reserves of time should not be apportioned in advance to any specific activity since the risks that will actually occur and the magnitude of their impact is not known in advance.	Not met	The program office has not performed a schedule risk analysis. Thus, it is not possible to determine a level of confidence in meeting the projected completion date or whether proper reserves have been incorporated into the schedule. A schedule risk analysis will calculate schedule reserve, which can be set aside for those activities identified as high risk. Without this reserve, the program office faces the risk of delays to the scheduled completion date if any delays were to occur on critical path activities.
Updating the schedule using logic and durations to determine the dates	The schedule should use logic and durations in order to reflect realistic start and completion dates for program activities. The schedule should be continually monitored to determine when forecasted completion dates differ from the planned dates, which can be used to determine whether schedule variances will affect downstream work. Maintaining the integrity of the schedule logic is not only necessary to reflect true status, but is also required before conducting a schedule risk analysis. The schedule should avoid logic overrides and artificial constraint dates that are chosen to create a certain result on paper. To ensure that the schedule is properly updated, individuals trained in critical path method scheduling should be responsible for updating the schedule status.	Partially	Program officials told us they use the schedule in weekly management and risk meetings. There were no anomalies in the schedule's start or finish dates, or tasks that had begun out of sequence. However, the manual process for updating the progress of contractor activities in the component schedule may lead to errors, especially without unique WBS elements assigned to the activities to assist schedulers in the process. Furthermore, program officials stated they do not routinely verify the validity of the schedule logic using scheduling software diagnostic reports. Assessing the health of the schedule after updating its status is encouraged, as actual progress typically overrides scheduled logic.

Source: GAO analysis of US-VISIT data.

^a“Met” means the program provided complete evidence that satisfies the entire criterion.

“Substantially” means the program provided evidence that satisfies a large portion of the criterion.

“Partially” means the program provided evidence that satisfies about half of the criterion. “Minimally”

means the program provided evidence that satisfies a small portion of the criterion. “Not met” means the program provided no evidence that satisfies any of the criterion.

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Table 4: US-VISIT Contractor Schedule Compared to Best Practices

Practice	Explanation	Criterion met^a	GAO analysis
Capturing all activities	The schedule should reflect all activities (e.g., steps, events, outcomes, etc.) as defined in the program's WBS, to include activities to be performed by both the government and its contractors.	Met	Officials stated that the schedule includes all prime contractor effort related to the US-VISIT Comprehensive Exit project, and that the scope captured in this schedule was reviewed and approved in the Integrated Baseline Review conducted in November 2008. The prime contractor also noted that the schedule is vertically integrated into an internal integrated master schedule that captures all prime contractor effort associated with US-VISIT.
Sequencing all activities	The schedule should be planned so that it can meet program-critical dates. To meet this objective, key activities need to be logically sequenced in the order that they are to be carried out. In particular, activities that must finish prior to the start of other activities (i.e., predecessor activities) as well as activities that cannot begin until other activities are completed (i.e., successor activities) should be identified. By doing so, interdependencies among activities that collectively lead to the accomplishment of events or milestones can be established and used as a basis for guiding work and measuring progress.	Met	The majority of remaining activities within the schedule are logically sequenced, by defining predecessor and successor activities, and containing a small amount of constraints, several of which are due to external dependencies outside of the control of the prime contractor.
Assigning resources to all activities	The schedule should reflect what resources (i.e., labor, material, and overhead) are needed to do the work, whether all required resources will be available when they are needed, and whether any funding or time constraints exist.	Met	According to officials, resources are fully loaded into the schedule until it is formally baselined. Once the schedule is baselined, the resource information is moved to software more conducive to managing and updating resource information.
Establishing the duration of all activities	The schedule should realistically reflect how long each activity will take to execute. In determining the duration of each activity, the same rationale, data, and assumptions used for cost estimating should be used for schedule estimating. Further, these durations should be as short as possible and they should have specific start and end dates. Excessively long periods needed to execute an activity should prompt further decomposition of the activity so that shorter execution durations will result.	Met	Durations of key activities in the schedule reflect scheduling best practices. Further, officials stated that activity durations are based on historical data on projects performed by the prime contractor.

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Practice	Explanation	Criterion met^a	GAO analysis
Integrating schedule activities horizontally and vertically	The schedule should be horizontally integrated, meaning that it should link the products and outcomes associated with already sequenced activities. These links are commonly referred to as handoffs and serve to verify that activities are arranged in the right order to achieve aggregated products or outcomes. The schedule should also be vertically integrated, meaning that traceability exists among varying levels of activities and supporting tasks and subtasks. Such mapping or alignment among levels enables different groups to work to the same master schedule.	Substantially	The prime contractor schedule is vertically integrated, with all major milestones and lower level tasks associated with summary tasks. In addition, the schedule is mostly horizontally integrated. Specifically, external dependencies show connections with other scheduled effort, and the majority of activities are linked to predecessors and successors with no hard constraints. However, the critical path does not span the entire project. As such, predetermined milestones and calendar dates appear to dictate the length of the schedule rather than the critical path.
Establishing the critical path for all activities	Using scheduling software the critical path—the longest duration path through the sequenced list of key activities—should be identified. The establishment of a program’s critical path is necessary for examining the effects of any activity slipping along this path. Potential problems that may occur on or near the critical path should also be identified and reflected in the scheduling of the time for high-risk activities.	Substantially	Contractor officials told us they manage to the critical path as defined by the scheduling software. However, the contractor schedule does not exhibit a valid critical path. Specifically, we found two separate critical paths in the contractor schedule: one related to the Air Exit Pilots and another related to the Temporary Worker Visa Exit Pilot. A valid critical path represents the longest chain of activities through the schedule and determines the length of the effort. By definition, the critical path must run from the first event to the last event without a break in continuity.
Identifying float between activities	The schedule should identify float—the time that a predecessor activity can slip before the delay affects successor activities—so that schedule flexibility can be determined. As a general rule, activities along the critical path typically have the least amount of float.	Met	The contractor schedule displays a realistic amount of float for its efforts.

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Practice	Explanation	Criterion met^a	GAO analysis
Conducting a schedule risk analysis	A schedule risk analysis uses a good critical path method schedule and data about project schedule risks as well as Monte Carlo simulation techniques to predict the level of confidence in meeting a program's completion date, the amount of time contingency needed for a level of confidence, and the identification of high-priority risks. This analysis focuses not only on critical path activities but also on other schedule paths that may become critical. A schedule/cost risk assessment recognizes the interrelationship between schedule and cost and captures the risk that schedule durations and cost estimates may vary because of, among other things, limited data, optimistic estimating, technical challenges, and lack of qualified personnel. As a result, the baseline schedule should include a buffer or a reserve of extra time. Schedule reserve for contingencies should be calculated by performing a schedule risk analysis. As a general rule, the reserve should be held by the project manager and applied as needed to those activities that take longer than scheduled because of the identified risks. Reserves of time should not be apportioned in advance to any specific activity since the risks that will actually occur and the magnitude of their impact is not known in advance.	Met	Contractor officials stated that they use schedule risk analysis software, and that a schedule risk analysis was performed prior to establishing its baseline schedule for Comprehensive Exit. Officials further stated that the results of the baseline risk analysis were provided to the US-VISIT program office during the initial baseline review.
Updating the schedule using logic and durations to determine the dates	The schedule should use logic and durations in order to reflect realistic start and completion dates for program activities. The schedule should be continually monitored to determine when forecasted completion dates differ from the planned dates, which can be used to determine whether schedule variances will affect downstream work. Maintaining the integrity of the schedule logic is not only necessary to reflect true status, but is also required before conducting a schedule risk analysis. The schedule should avoid logic overrides and artificial constraint dates that are chosen to create a certain result on paper. To ensure that the schedule is properly updated, individuals trained in critical path method scheduling should be responsible for updating the schedule status.	Met	Contractor officials stated that Control Account Managers are responsible for updating the status of the schedule on a weekly basis, which includes updating the progress of their tasks and ensuring actual start and actual finish dates are accurate. Officials also stated they perform diagnostic tests on the schedule periodically to ensure the schedule is sequenced logically.

Source: GAO analysis of US-VISIT data.

^a“Met” means the program provided complete evidence that satisfies the entire criterion.

“Substantially” means the program provided evidence that satisfies a large portion of the criterion.

“Partially” means the program provided evidence that satisfies about half of the criterion. “Minimally”

means the program provided evidence that satisfies a small portion of the criterion. “Not met” means the program provided no evidence that satisfies any of the criterion.

Appendix III: Comments from the Department of Homeland Security

Office of GAO/OIG Audit Liaison
U.S. Department of Homeland Security
Washington, DC 20528



**Homeland
Security**

November 12, 2009

Mr. Randolph C. Hite
Director
Information Technology Architecture
and Systems Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Subject: GAO 10-13, *Homeland Security: Key US-VISIT Initiatives at Varying Stages of Completion, but Integrated and Reliable Schedule Needed*

Dear Mr. Hite:

The Department of Homeland Security (DHS) appreciates the opportunity to review and comment on the U.S. Government Accountability Office's (GAO) draft report referenced above. GAO provided several conclusions and made one recommendation with regard to the current state of the Comprehensive Exit project. The Department concurs with the recommendation as referenced below.

Recommendation: "To better ensure the successful delivery of a comprehensive US-VISIT exit solution, we are augmenting our prior recommendations aimed at strengthening Comprehensive Exit project planning. Specifically, we recommend that the Secretary of Homeland Security direct the Undersecretary for National Protection and Programs to have the US-VISIT Program Director develop and maintain an integrated master schedule for the Comprehensive Exit project in accordance with the nine practices discussed in this report.

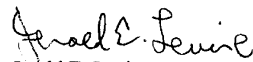
Response: Concur. The report states: "...., if and when Comprehensive Exit will be operational remains unclear, in part, because DHS still does not have an integrated master schedule...." In this context, it is important to point out that the operational date will be set once key decisions about critical details of Exit are finalized. Once key decisions are made, US-VISIT will develop and maintain an integrated master schedule according to GAO's delineated best practices that will capture the sequencing and timing of the activities and events necessary to meet the requirement of this project in a timely and cost-effective manner.

**Appendix III: Comments from the Department
of Homeland Security**

GAO acknowledges in the report that each initiative under the Comprehensive Exit project umbrella is already governed by a defined and standardized US-VISIT project execution methodology, and that each is subject to management processes, including managing project risks. Additionally, the initiatives that involve multiple organizational stakeholders are executed to ensure that stakeholders interact in an integrated and coordinated manner.

We appreciate the opportunity to comment on this Draft Report and we look forward to working with you on future homeland security issues.

Sincerely,



Jerald E. Levine
Director
Departmental GAO/OIG Liaison Office

Appendix IV: GAO Contact and Staff Acknowledgments

GAO Contact

Randolph C. Hite, (202) 512-3439, or hiter@gao.gov

Staff Acknowledgments

In addition to the individual named above, Paula Moore, Assistant Director; Justin Booth; Neil Doherty; Rebecca Eyster; Nancy Glover; Richard Hagerman; Dave Hinchman; Jason Lee; Karen Richey; and Jeanne Sung made key contributions to this report.

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