U.S. Department of Homeland Security
U.S. Customs and Border Protection

Biometric Entry-Exit Program
Capability Development Plan (CDP)
February 28, 2017

Signed by:

(b)(6) (b)(7)(c)

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DHS, Acquisition Decision Authority (ADA)   Date

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1 Revision Summary

Date	Section	Description
February 28, 2017	All	Initial Version

2 Capability Statement

Mission and Required Capability Needs

The primary mission for United States (U.S.) Customs and Border Protection (CBP) is to safeguard America's borders from dangerous people and materials while enhancing the Nation's global economic competitiveness by enabling lawful international trade and travel.

CBP needs to transform the way it identifies travelers entering and exiting the U.S. by shifting the key to unlocking a traveler's record from biographic to biometric identifiers. Fusion of biographic data with biometrics ensures traveler identification and strengthens security while facilitating lawful international travel. Furthermore, it could improve the utility and usefulness of crossing data by other areas of the U.S. government that may benefit from an awareness of border crossings in performing their missions, such as in cases where a government granted benefit may be contingent on verifying time residing in the United States.

CBP has the following mission needs to efficiently implement a biometric entry-exit approach:

- **Develop Biometric Entry and Exit Operations Policy** – Comprehensive traveler entry and exit policies and procedures governing the use of biometric data to determine their legal ability to enter and exit the U.S.
- **Establish Biometric System Access Authorities** – The authorities and pre-approved permissions to access, request, search, discover, and retrieve biometric data.
- **Utilize Existing Entry and Exit Inspection Areas** – Points of departure and entry control at each port of entry (POE).
- **Utilize Existing Entry-Exit Physical Infrastructure** – Physical facilities and infrastructure to support entry and exit control operations at each POE.
- **Build-Out Information Technology Infrastructure** – Information technology (IT) infrastructure to digitally connect CBP POE entry–exit control sites to external law enforcement and biometric databases.

These mission needs will enable CBP to develop these required capabilities:

- **Verify Traveler Identity** – The ability to capture, review, analyze, search, and match a traveler's biometric information to their biometric and biographic records when entering and exiting the U.S. for the purposes of verifying their identity.
- **Create and Manage Biometric Records** – The ability to capture, store, and disseminate biometric information and metadata collected from travelers entering and, where required, exiting the U.S.
- **Generate Metrics and Reports** – The ability to measure and report the effectiveness of the biometric entry-exit system.

Additional details on these required capabilities are detailed in the Biometric Entry-Exit Capability Analysis Report and Mission Needs Statement.

Gap Analysis

Currently there is no one single solution that can satisfy these capability needs. CBP has been engaged in a number of limited scope experiments that were established to evaluate our ability to

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capture a biometric identifier and validate a traveler's identity. Some of these projects have included field testing of CBP's ability to compare a live capture facial image with the traveler's passport photo at airports. Another experiment at a land port of entry evaluated the ability to capture a person's iris at entry for comparison when that traveler exited from the U.S. Based on the findings and analysis of these limited scope experiments, CBP is prepared to begin identifying solutions that will address each identified capability need. Table 1 summarizes the identified capability gaps aligned to the DOTmLPF-/R/G/S framework. The table details for each of the three capability gaps are available in Section 5 of the Biometric Entry-Exit Capability Analysis Report (CAR).

Capability Gaps	DOTmLPF-R/G/S Factors									
	D	O	T	m	L	P	F	R	G	S
Verify Traveler Identity	X		X	X		X	X	X		
Create and Manage Biometric Records	X			X				X		
Generate Metrics and Reports				X						

Table 1: Capability Gap Alignment with DOTMLPF/RGS Factors

3 Analyze/Select Trade Space

With the transition of the exit mission from United States Visitor and Immigrant Status Indicator Technology (US-VISIT) (now known as the Office of Biometric Identity Management (OBIM)) in 2013, CBP has been exploring various technology and operational process changes that would address the National Commission on Terrorist Attacks Upon the United States (9/11 Commission) finding related to the need for a biometric entry-exit system. As discussed in Section 2, CBP has conducted a number of limited scope experiments that would normally take place during the Analyze/Select phase.

These experiments introduced commercially available technology into CBP's operational environment at air and land POEs. The findings from these experiments provided the basis for CBP's identification of operational and technical requirements for a biometric entry-exit system and operational structure for an effective entry-exit solution. These experiments tested the ability to use various biometric modalities (i.e., fingerprints, facial images, and iris scans) in verifying the identity of passengers at airports entering from or exiting to international destinations and people as they entered and exited the U.S. at land POEs. CBP evaluated hardware and software from multiple vendors as part of this evaluation.

To document the findings from these initiatives, CBP has prepared an Analysis of Experiments (AoE). The AoE is included as a part of the Analysis of Alternatives (AoA) that will be submitted between ADE-1 and ADE-2A. The current draft of the AoA has been found to be sufficient by the Lead Business Authority (LBA) to meet the information needs necessary to write the Concept of Operations (CONOPS) and the Operational Requirements Document (ORD) and may be updated with additional results from the experiments.

As documented in the AoA, the AoE analyzed each experiment to identify key findings and produced other analysis to describe how these project results provide input and support for the

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feasibility of proposed Biometric Entry-Exit solutions. The AoE concluded that the most feasible solution to confirm the identity of travelers in the air environment is the use of facial recognition technology that compares live image capture of travelers to existing photos stored in CBP and other databases. These projects showed that CBP has access to at least one and often many more photos for departing travelers. In addition, the experiments showed that face matching accuracy can be 96% or higher with very low false match rates and false non-match rates not greater than 2%. The experiments also showed that the face image capture and matching process can be conducted with minimal impact to the airline boarding process.

These experiments further showed that fingerprint and iris technologies can have match accuracies and passenger throughput volumes that are similar to facial recognition under certain scenarios. However, only the facial modality meets the requirement to maximize the availability of biometric images for all in-scope passengers since there are few iris images for any traveler and few fingerprint images of US citizens (e.g., Global Entry). Based on these experiments and the findings documented in the AoE, CBP will rely on facial images as the primary modality for verifying a traveler's identify, but will also continue to assess other biometric modalities for potential inclusion at a later phase of the program.

4   Plan of Actions and Milestones

This section of the CDP outlines the deliverables and events that will support the ADE-2A/2B decision. It is anticipated that this will be an acquisition Level 1 or 2 program. Per the direction from the DHS Under Secretary for Management, the Biometric Entry-Exit Program must complete the ADE 2A/2B milestone by June 30, 2017. Activities and events to meet this milestone are summarized in this extraction from the Biometric Entry-Exit Integrated Master Schedule in Table 2.

Deliverable or Event	Target Date for Formal Review Process
Capability Analysis Study Plan (CASP)	Completed
Capability Analysis Report (CAR)	Completed
Mission Need Statement (MNS)	Completed
Capability Development Plan (CDP)	Completed
SELC Tailoring Plan	3/21/2017
ADE-1 Acquisition Review Board	3/21/2017
Analysis of Alternatives (AoA)	3/23/2017
Concept Of Operations (CONOPS)	3/28/2017
Acquisition Plan (AP)	4/7/2017
Program Charter	3/31/2017
Operational Requirements Document (ORD)	4/4/2017
Architecture Alignment Assessment (AAA)	4/30/2017
Risk Management Plan (RMP)	4/7/2017
Configuration Management Plan (CMP)	4/7/2017
Risk Management Plan (RMP)	4/7/2017
Cost Estimating Baseline Document (CEBD)	4/30/2017
Project Management Plan (PMP)	5/1/2017
Integrated Logistics Support Plan (ILSP)	5/5/2017
Test & Evaluation Master Plan (TEMP)	5/5/2017
Privacy Threshold Analysis (PTA)	5/8/2017

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Deliverable or Event	Target Date for Formal Review Process
Preliminary Program Schedule	5/12/2017
Solution Engineering Review (SER)	5/15/2017
Lifecycle Cost Estimate (LCCE)	5/31/2017
Acquisition Program Baseline (APB)	5/31/2017
Prepare ADE-2A/2B Package for Review	6/1/2017
Project Planning Review (PPR)	6/15/2017
ADE-2A/2B Acquisition Review Board	6/30/2017

Table 2: Analyze/Select Phase Plan of Actions and Milestones

5 Participation of Users/Operators

The LBA for the Biometric Entry-Exit Program, the OFO Deputy Executive Assistant Commissioner (DEAC), identifies operational requirements needed to meet CBP mission objectives. The Lead Technical Authority (LTA) is the Assistant Commissioner, OIT who will ensure that the technical solution is developed, deployed, and supported per existing Federal, Departmental, and Component information technology requirements and policies. The Component Acquisition Executive, is the Assistant Commissioner, Office of Acquisition. As the LBA, CBP OFO has established the Biometric Entry/Exit Program Management Office (PMO) under the direction of the Program Manager, (b)(6) (b)(7)(c) xecutive Director, Planning, Program Analysis, and Evaluation (PPAE).

Development of the program CONOPS and ORD has been led by Biometric Entry/Exit PMO and includes CBP Officers (CBPO) with prior experience at air, sea and land POEs. These CBPOs also have managed the limited scope projects that tested various biometric technologies at airports and land POEs. Additionally, CBP has reached out to other operational subject matter experts (SMEs) in documenting operational processes and procedures that have been included in the CONOPS. Biometric SMEs have also been included in the ORD development with a particular focus on developing thresholds for Measures of Effectiveness (MOE) and Measures of Performance (MOP) that will help determine the operational success of the deployed technology solutions. Leadership from the CBP Office of Information and Technology (OIT) have played in integral role in identifying hardware and software approaches that meet the operational realities at POEs while also satisfying CBP requirements that support the mission to safeguard and expedite lawful travel.

6 Analysis Approach

As discussed in Section 3, the Biometric Entry-Exit Program is developing an AoA, which includes the AoE. The AoE will document the various biometric modalities which were included in the limited scope experiments and will document why the facial image biometric modality is the recommended approach as CBP begins to develop and design technical solutions for deployment at POEs. This analysis is being performed by biometric SMEs, under the direction of a government lead associated with the Biometric Entry-Exit Program, who have significant operational experience at both air and land POEs.

The full analysis of each experiment will be included as an Appendix to the AoA.

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Ground rules and assumptions for the AoA as follows:

1. The AoA will not evaluate potential solution approaches, but rather evaluate and document the results of experiments and rationale for selecting the facial image over other biometric modalities (e.g., fingerprint, iris scan) as the biometric identifier to be used in validating traveler identity.
2. Although informed by on-going discussions with other DHS components involved in developing and delivering biometric capabilities, the AoA will focus on how these alternatives address CBP mission needs and requirements.

7 Technology Demonstrators

CBP will continue to operate a number of limited scope experiments during the Analyze/Select phase in the air environment. One on-going experiment involves a CBP-manned camera and tablet computer positioned between the airline boarding pass scanner and the aircraft. As travelers check-in for their flights, their biographic information and all previously provided photos are assembled into a downloadable file that is pushed to the tablet just prior to the start of boarding. When travelers approach the device they are prompted to present their boarding pass for scanning, which triggers the camera to capture the facial image. The live photos are then compared with the downloaded gallery of expected travelers to determine if CBP systems can accurately match live photographs with those of the same traveler that CBP had previously acquired.

During the Analyze/Select phase, CBP is planning to add new capabilities such as a real-time biometric matching service that may be hosted in a cloud environment. This will permit automated facial recognition and creation of a biometric departure record for individual travelers in systems such as Advance Passenger Information System (APIS) and Arrival and Departure Information System (ADIS). The experiment's technology solution may be deployed to a select number of additional airports during the Analyze/Select phase to further assess operational impacts across different airport environments and analyze biometric capabilities across an increased number of flights.

CBP is also assessing several options for new technology demonstrators that will take place in land or sea environments. The results of these demonstrators will help to inform potential solution approaches specific to those travel environments. These demonstrators may include new biometric capture technologies including contactless fingerprint at entry and exit locations. Other demonstators may include self-reporting of third country nationals via a mobile application upon departure by land from the United States and facial image capture and biometric matching as people approach an entry or exit location.

8 System Engineering Reviews

Systems Engineering Reviews will be conducted in accordance with the DHS Acquisition/Guidebook 102-01-001 and the CBP Office of Information and Technology Agile Governance Framework, as tailored. An AoA with information generated from the AoE analyzed the basic capability requirements and recommended the optimal solution to close the mission capability gap. A Solution Engineering Review (SER) will be conducted prior to Acquisition Decision Event (ADE-2A/2B) to evaluate the results of the AoA, confirm the recommended

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engineering solution, and to assess the completeness of related acquisition and technical documents in advance of conducting ADE-2A/2B. The exit criteria includes acceptance of a technical solution approach and confirmation of the project tailoring plan.

The SER will be chaired by the Component Acquisition Executive (CAE), with participation from the LBA, LTA, and Program Manager. Attendees include representatives from the Chief Financial Officer, Office of Field Operations, and Operational Test Agent.

9 System Engineering Strategy

The Systems Engineering Strategy will be guided by the DHS Acquisition/Guidebook 102-01-001, the CBP Office of Acquisition Program Lifecycle Process (PLP) Guide, and the CBP OIT Agile Governance Framework. Working with the Biometric Entry-Exit Program Manager, the Executive Director for Targeting and Analysis Systems Program Directorate (TASPD) will be the lead agent within OIT to provide subject matter expertise for informing program management decisions related to the technical solution. Also, as the lead OIT SME, the TASPD Executive Director will ensure that the design, development, deployment, and support for any IT created, procured, and installed solution is done in accordance with the guidance identified earlier in this section.

The high-level set of capabilities that have been identified in the AoA will eventually be further decomposed into product backlog, high-level constraints, an acquisition plan that supports the agile methodology, and will establish a program baseline that is consistent with an agile approach.

10 Homeland Security Enterprise Architecture (HLS EA)

The Biometric Entry-Exit program will align with the Homeland Security Enterprise Architecture (HLS EA) through the CBP Architecture, Alignment and Assessment (AAA) process and the DHS Enterprise Architecture Board (EAB) governance process, as applicable. The Biometric Entry-Exit Program has established an ongoing dialogue with CBP OIT EA subject matter experts to ensure the Biometric Entry-Exit Program's approach to the HLS EA is appropriate and meets all applicable requirements. The HLS EA approach and timeline identified for the Biometric Entry-Exit Program is in line with the DHS/CBP-approved Systems Engineering Life Cycle (SELC), EA, and investment processes.

The Biometric Entry-Exit Program is intended to align with the HLS EA, as follows:

I.   It is part of the People Screening segment of the HLS EA Portfolio.
II.   Supports the Quadrennial Homeland Security Review (QHSR) mission, goals and objectives as follows:
- 2.2.2--Manage risk of people/goods in transit
III. Will be measured by at least the following operational Performance Measures (which will align to Enterprise Performance Measures):
- Percent of daily travelers whose identity was verified through biometric matching
- Percent of daily travelers with a false positive biometric matching result
- Percent of daily travelers with a false negative biometric matching result
IV.   It obeys the following Business Drivers:

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Name	Driver Type	Short Name	Classified	Bibliography Reference	Year Published	Reference Originator	Segments/ Functional Areas
US Code Title 8: Aliens and Nationality	Law	Title 8	No	8 USC	2005	Congress	Situational Awareness
PL 108-458: The Intelligence Reform and Terrorism Prevention Act of 2004	Law	IRTPA	No	PL 108-458	2004	Congress	Situational Awareness, People Screening
PL 110-53: Implementing Recommendations of the 9/11 Commission Act of 2007	Law .	-	No	PL 110-53	2007	Congress	Situational Awareness, Cargo Screening
PL 107-56: Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001	Law	PATRIOT Act	No	PL 107-56	2001	Congress	Situational Awareness, People Screening

Table 3: Program Business Drivers

V.   It will be cataloged in the DHS Functional Areas, Capabilities, and Activities Catalog as a Screening service.

The Biometric Entry-Exit Program has a four pronged approach to the use of biometric technology to support and enhance our capabilities for processing travelers at entry and exit:

1. Identify and leverage existing appropriate and updated technology in use today for screening at HLS (as listed in the DHS/CBP TRM)
2. Identify and leverage existing appropriate and updated technology in use today for screening at other Federal agencies (e.g. FBI)
3. Identify and leverage new, appropriate technology available not used in DHS and is available in the market today (e.g. Technology Pull)
4. Identify and participate in the development of new and appropriate technology with partners in industry and Government (e.g. OBIM, TSA, NPPD, etc.)

The Biometric Entry-Exit Program will follow the existing CBP Agile Framework for development throughout the development lifecycle, including meeting all architecture constraints as identified in the OIT Enterprise Constraint List for Application, Data, Integration, Platform and Security architectures.

The Biometric Entry-Exit Program will use the existing CBP Enterprise Data Model (EDM) as the baseline for design to capture the data requirements and associated metadata to support the improvement of the existing biographic/biometric collection process. The CBP EDM representation of the PERSON Biometric and PERSON Biographic data has been vetted through

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the approved CBP Data Management User Group (DMUG) governance process and aligns with the current HLS Person Data Model.

Other Subjects areas (such as ENTRIES AND EXITS and LOCATIONS) of the CBP Enterprise Data Model will also be considered as a baseline to support the effort's data requirements and needs. The entire CBP EDM Document can be found in the OIT Process Asset Library (OIT PAL) referencing Asset # 10047.

11 Technology

The technology and business processes associated with using traveler biographic data for traveler identification is very mature and has been foundational to the successful completion of CBP missions for decades. Biographic data includes information specific to an individual traveler including name, date of birth, and travel document number and is typically found on that traveler's passport, visa, or lawful permanent resident document. Currently, CBP uses biometric data at entry in the form of pictures and fingerprints from certain travelers and associates that data with traveler records and manifest information in the air environment. Adding automated biometric matching (e.g., facial recognition) capabilities at entry and exit will provide a greater degree of accuracy in the traveler identification process. Existing CBP systems (e.g., TECS, ADIS) will be updated to accommodate automated biometric matching associated with traveler identification. These operational capability needs will comply with the DHS HLS EA to reduce unnecessary capability redundancy and to facilitate data sharing between existing DHS components and systems (e.g., IDENT).

During the Analyze/Select phase, the main development effort to enhance and expand the capability mentioned in Section 7 is focused on creating a biometric matching service that is hosted in an IT cloud environment. The matching service will receive two inputs: biometric data from the facial image capture equipment and biometric information that is stored in CBP holdings. Once biometric matching has occurred, the result will be returned simultaneously to the originating capture device and to the CBP system. Attendants at the capture device will use the match result to perform their business process (e.g., airline personnel will board that passenger if positive or await CBP interaction if negative). For CBP, the result will trigger changes to existing systems, such as create a border crossing record entry, and alert local CBP officers via existing CBP applications if they need to take further action (e.g., resolve a non-match, respond to an alarm/alert, etc.). Any biometric data retained will be stored in a secure government IT system.

The program will continue engagement with the CBP Biometric Center of Excellence and Expertise (BCEE) and other organizations, such as Oak Ridge National Laboratory and Carnegie Mellon, to ensure that the program remains cognizant of the latest technology advancements. These collaborative activities will inform future capability decisions related to biometric capture in the air, land, and sea environments and will help inform technology readiness and capability maturity to reduce risk to cost, schedule, and performance factors.

12 Coordination/Dependence of Other Programs/System

In 2015, CBP was jointly tasked with Coast Guard in the 2016 Resource Allocation Decision (RAD) to develop a cross-component preliminary-MNS (p-MNS) focused on biometrics needs

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across DHS. Through the development of the p-MNS and a joint Program Decision Option (PDO) a mechanism was created which supports DHS components working together to understand and prioritize biometric needs across the Department and to identify technology solutions that could meet the needs of one or more DHS components. Through the Biometric Entry-Exit Program, CBP continues to utilize this collaborative approach as it works to standup this program. CBP is currently working with OBIM to understand current biometric matching capabilities available in IDENT and how they align with CBP biometric matching requirements. CBP and OBIM are planning an operational test for later in FY2017 to test IDENT's biometric matching capabilities and to assess what additional capabilities will be required to fully support CBP's biometric matching requirements. CBP is committed to working with OBIM and IDENT, and later the Homeland Advanced Recognition Technology (HART), to fully utilize those biometric matching capabilities when available.

In addition to coordination with OBIM, CBP is engaging TSA on biometric entry-exit capabilities and potential use of CBP backend services to support traveler identify verification at the check point. TSA will include CBP in their "check point of the future" working group in order to collaborate on biometric exit requirements.

13 Acquisition Planning

The Biometric Entry-Exit Program acquisition strategy is tailored to meet the aggressive timeframe and requirements of this high priority program. In the short-term, the program will be primarily focused on deploying biometric entry and exit systems in the air environment while using field tests to assess technologies and procedures that can be used in the land and sea environments. In the longer term, the program will assess the data collected from the field tests to refine and implement nation-wide biometric entry and exit strategies in all modalities, to include pedestrians, privately owned vehicles, commercial vehicles, personal water craft, and larger commercial sea vessels, such as cruise ships.

In order to address the compressed schedule of creating an operational biometric air environment in the next 18 months, the program office is using a strategy that best streamlines the acquisition process.

The program team is conducting a survey within OFO and OIT (to include ENTS, EDME, TASPD, PSPD, and BEMS) to look at all current contracts that contain the scope and contract ceiling that can meet the requirements and performance standards of the program. Once contracts are identified, the program office will work with the Contracting Officers and Contracting Officer Representatives to understand the full scope of the Biometric Entry-Exit Program requirements and implementation schedule and to assess the feasibility of utilizing existing contracts to achieve short and mid-term milestones of the program.

The program team is also assessing the scope of GWAC and Federal/GSA Supply Schedules to identify pre-vetted and approved government contractors that can provide services and equipment that meet the operational standards of the program.

The delta between program requirements and existing contract scope will be defined and alternate acquisition strategies will be developed to cover those requirements. IDIQ contracts will be explored (e.g., DHS EAGLE II), where applicable, to meet new requirements to reduce acquisition time.

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The program team may conduct industry day sessions to outline program requirements at the onset of any new procurement to ensure all bidders have a deep understanding of program requirements. This dialog will educate potential bidders on program requirements reducing proposal risk and ensuring vendors can design and price comprehensive solutions and limit the grounds for questions, amendments and protests.

There are three primary areas of acquisition in the air environment that will be detailed in the acquisition plan: front-end biometric collection, development of the Biometric Pathway, and a cloud-based solution for biometric matching and data storage.

Biometrics in the air environment can provide benefits to multiple stakeholders throughout the departure cycle for a traveler. CBP will seek to partner with air carriers and airport authorities to procure the necessary equipment and infrastructure required to biometrically verify the identity of all travelers. Private industry (e.g., air carriers and airport authorities) will provide all front-end biometric capture devices and supply the necessary infrastructure to collect biometric images from the traveler and submit them to CBP network for biometric matching. In order to meet the performance requirements of the program, CBP will develop detailed documentation that outlines the necessary quality parameters of the program to include biometric standards, data collection/format, and system interface requirements.

CBP will develop the IT backbone for data transfer and biometric matching. CBP will use the existing TASPD contract for the overall development of the Biometric Pathway that will serve multiple functions. The biometric pathway will create galleries from existing data based on biographic information from traveler documents and passenger manifests, collect data from the front end and deliver it to the backend for processing, and receive the matching results from the backend cloud solution and deliver the results to the front end operator. This system will be based on current underlying processes and algorithms that have been developed by CBP to capture and match biometrics and vet them against biographic identities. New development will be done to create interoperable interfaces with commercial products, but are expected to be within the scope of the current TASPD contract.

The matching and storage of biometrics will be done in a secure cloud environment. Currently, this capability in a cloud environment does not exist within CBP, but is available in the commercial environment through open competition. The program office will work with OIT (ENTS and EDME) to evaluate current and planned cloud migration contracts and determine the appropriate requirements and cost structure required to meet the needs of the program. The program office will also develop an acquisition strategy to procure matching licenses from biometric vendors. The program team is assessing the cost structures and schedule risks associated with the vehicles available to procure these licenses and will present this analysis in the Acquisition Plan.

The acquisition strategy for the commercial sea environment (cruise ships) will be similar to that of air where the private sector will acquire resources necessary to complete the front-end collection of biometrics and CBP will provide the services and infrastructure to match and process passenger information. The primary strategy in addressing the sea environment will be ensuring scalability of the air environment solution to extend available biometric entry and exit procurements to cover the additional matching and storage capabilities of the sea environment.

In the land environment, there is no front-end private sector entity that controls passenger flow leaving the country. The LBI contract scope will be used to run technology demonstrators

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funded by the biometric spend plan in FY17 and FY18 (as necessary) to test various solutions and refine requirements for a fully operational solution across all borders. The program team is assessing the ability to procure front-end biometric capture devices through government schedules or current contracts for the initial deployments. It is also assessing the timeframe and requirement that CBP will need to develop an acquisition vehicle to complete a fully operational solution, to include long term O&M and technology refreshment, in the land environment.

14 Integrated Logistics Support (ILS)

In support of ADE-2A/2B, the Biometric Entry-Exit Program will develop an integrated logistics strategy and create an Integrated Logistics Support Plan (ILSP) which will outline the management approach for obtaining a highly supportable capability with an affordable and effective support structure. It will provide details on supportability considerations and requirements which will be integrated into the systems engineering process as well as insight into the development, schedule, and funding for the required sustainment products.

Logistics support must include all components of the system, whether developed (e.g., biometric matching service), procured (e.g., cloud IT infrastructure), or changed (e.g., existing applications and system interfaces). While CBP is not responsible for the procurement, installation, or direct support of the biometric capture equipment in the air environment, there will be a need to collaborate with airline technical support personnel. This will enable end-to-end troubleshooting and repair actions to be coordinated whenever problems exist between the biometric capture equipment and the matching service.

All CBP-owned/managed software and hardware associated with this program will be incorporated into existing OIT support processes. This includes help desk interaction with reported user issues, system monitoring, troubleshooting, and repair. Additional coordination will be needed between the IT cloud service providers and OIT to ensure all parts of the CBP system are able to be monitored, updated, and repaired, as needed.

The system will be monitored by various existing performance monitoring tools (e.g., Application Dynamics) to provide near real-time health and wellness status of processes, connection interfaces, data storage limits, etc. The system design for the matching service should include Built-In Test (BIT) capability wherever possible to help rapidly identify sources of system errors.

Returning the system to operational use after a performance degradation is observed will be a critical priority. The matching service reliability (e.g., >=94%) will be a critical performance characteristic. The false positive identification rate (e.g., >0.01%) and false negative identification rate (e.g., >6.0%) must be minimal. The system must meet the requirements for high availability (e.g., 99.7%). All of these requirements should be addressed in development and support contracts to ensure that capability priorities are identified and properly managed. Additional considerations associated with Performance Based Logistics (PBL) strategies should be reviewed and included in development or support contracts.

The ILSP will be developed in accordance with Appendix J of DHS Acquisition/Guidebook 102-01-001 and will be updated through the course of the acquisition lifecycle with increasing detail and fidelity as the program progresses. It will utilize information from other program documentation including the MNS, AoA, CONOPS, and the ORD.

15 Life Cycle Cost Estimation

The cost estimating team will be led by Technomics, Inc., with close coordination from the Biometric Entry/Exit team and OIT personnel supporting Biometric Entry/Exit. The team members and their respective job titles and organizational roles are shown below in Table 4.

Job Title	Name	Role / Certification Level
Project Lead	(b)(6) (b)(7)(c)	Cost Analyst, ICEAA CCEA Certified
Director	(b)(6) (b)(7)(c)	Subject Matter Expert
Lead Analyst	(b)(6) (b)(7)(c)	Cost Analyst
Senior Associate	(b)(6) (b)(7)(c)	Cost Analyst

Table 4: Cost Estimating Team Composition

Estimating Methodologies

Each element in the WBS was estimated separately using one of the methodologies shown below, as defined by the DHS Cost Estimating Handbook and the Government Accountability Office (GAO) Cost Estimating Handbook.

- Parametric
- Extrapolation from Actual Cost.
- Engineering Build-Up
- Analogy
- Subject Matter Expert (SME) Opinion

Additionally, a risk analysis will be developed to assess the uncertainties that are inherent within cost inputs and cost estimating methods. The Life Cycle Cost Estimate (LCCE) will utilize solely an input risk analysis, where a risk range or distribution is applied to cost drivers (or inputs) within the cost model, either based on a statistical analysis of the dataset used, or on an expected range defined by a SME within the PMO or cost team.

Cost Estimating Structure

The following table shows the Biometric Entry/Exit Cost Estimating Structure (CES), which has been modified from the standard Security System Work Breakdown Structure (WBS) published by the DHS Cost Analysis Division (CAD). The CES uses the standard element names and definitions down to level three, and uses customized elements specific to the Biometric Entry/Exit program at level four and below. As the LCCE is still under development, a comprehensive description of the estimating methodologies and data sources for each CES element is TBD.

Assumptions

Development of the Biometric Entry-Exit LCCE will be based on the following assumptions:

- **LCCE Timeline**: FY2015-FY2031 (10 years past Final Operating Capability (FOC))

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- **Initial Operating Capability (IOC) Criteria**: Facial camera technology installed and operational at a single gate in one airport
- **FOC Criteria**: Scale infrastructure to support 96% of international departures
- **Inflation**: Use general DHS CAD Guidance for non-pay; Follow DHS Resource Allocation Plan (RAP) Guidance for pay
- **CES**: Based on DHS CAD Security Standard Work Breakdown Structure, tailored below level 3
- **Tech Refresh**: Currently determining refresh cycle for devices, equipment, networks and storage
- **Excluded Costs**: Costs to develop and deploy front-end biometric equipment

16 Program Management Office Resources

CBP has established a PMO to manage the program including acquisition, stakeholder management, innovation and communications. Communications and stakeholder management will consist of outreach and management of both international and domestic airline carriers and cruise lines for biometric matching of travelers entering and leaving the U.S. The PMO will develop standards and manage biometric implementations to ensure biometric entry and exit solutions are integrated with existing travel processes. CBP will continue to perform technology demonstrators in the air, land and sea operational environments, which will be managed through the PMO. All PMO activities are under the direction of the Program Manager, (b)(6) (b)(7)(c) Executive Director, PPAE, CBP OFO as detailed in Figure 1.
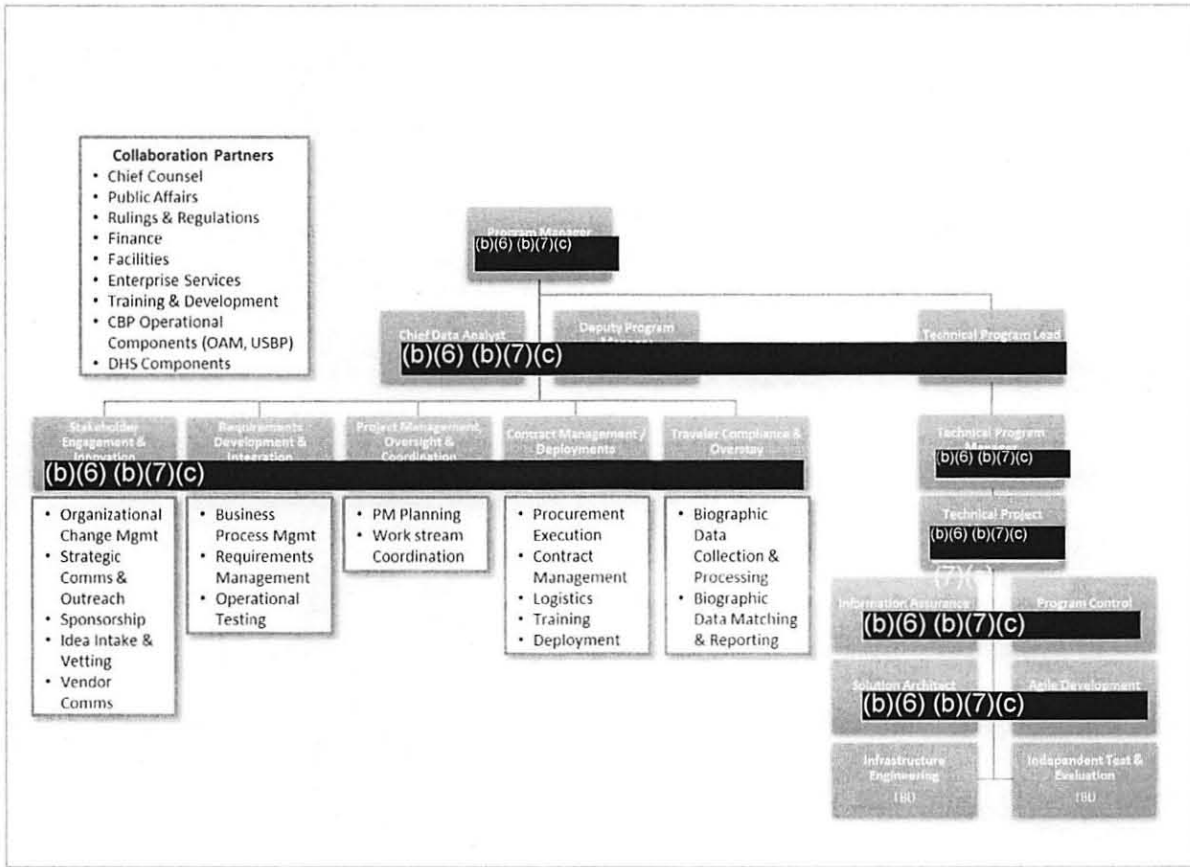
Figure 1: Biometric Entry-Exit PMO Structure

CBP prepared a spend plan that was approved by DHS and the Office of Management & Budget in January 2017. The spend plan described initial estimates to expend funds authorized by the FY 2016 Consolidated Appropriations Act (P.L. 114-113) which includes up to $1 billion over a period of 10 years for the implementation of the Biometric Entry-Exit Program. Figure 2 presents the summarized spend plan for the 10 year duration that funds for the program are authorized.

	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Estimated Fee Funding Per Year	$193.00 M	$115.00 M	$115.00 M	$115.00 M	$115.00 M	$115.00 M	$115.00 M	$115.00 M	$2.00 M	$1,000.00 M
IT Investment (Non-Recurring and O&M)	$34.73 M	$39.07 M	$35.03 M	$21.11 M	$21.97 M	$22.88 M	$23.82 M	$24.81 M	$25.85 M	$249.28 M
Phase I - Operationalize Departure Information Systems	$0.43 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.43 M
Phase II - Build Enterprise Services and End-State Biometric Exit solut	$30.31 M	$28.45 M	$19.41 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$78.16 M
Phase III - Scalable Infrastructure	$0.00 M	$4.78 M	$14.25 M	$19.72 M	$20.56 M	$21.45 M	$22.37 M	$23.34 M	$24.35 M	$150.80 M
Entry Applications	$4.00 M	$5.85 M	$1.38 M	$1.39 M	$1.41 M	$1.43 M	$1.45 M	$1.47 M	$1.50 M	$19.89 M
Programmatic and Operational Support	$18.31 M	$24.60 M	$24.76 M	$22.31 M	$16.02 M	$10.03 M	$9.28 M	$7.21 M	$6.88 M	$139.41 M
Program Management & Stakeholder Management	$13.03 M	$16.61 M	$16.35 M	$13.91 M	$11.05 M	$6.91 M	$6.92 M	$5.60 M	$5.74 M	$96.12 M
Communications	$5.28 M	$7.59 M	$8.41 M	$8.40 M	$4.97 M	$3.11 M	$2.37 M	$1.62 M	$1.14 M	$43.29 M
Technology Innovation Costs	$10.20 M	$17.22 M	$17.25 M	$17.27 M	$12.51 M	$12.53 M	$9.37 M	$9.39 M	$9.40 M	$115.14 M
Site Deployments: Top 20 airports	$9.37 M	$9.65 M	$7.75 M	$2.31 M	$2.31 M	$2.31 M	$2.31 M	$2.38 M	$2.45 M	$40.83 M
Entry Infrastructure Upgrades	$8.98 M	$8.09 M	$6.41 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$23.48 M
Exit Network Upgrades - terminal + gates (w/O&M)	$0.39 M	$0.89 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$1.27 M
Exit Gate Equipment - (Public/Private Partnership)	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M	$0.00 M
Site Operations and Maintenance - 15% of total value	$0.00 M	$0.67 M	$1.35 M	$2.31 M	$2.31 M	$2.31 M	$2.31 M	$2.38 M	$2.45 M	$16.08 M
Total Programmatic and IT Investment	$72.61 M	$90.55 M	$84.80 M	$62.99 M	$52.81 M	$47.75 M	$44.78 M	$43.79 M	$44.58 M	$544.66 M
Funding Remaining	$120.39 M	$144.84 M	$175.05 M	$227.05 M	$289.25 M	$356.50 M	$426.71 M	$497.93 M	$455.34 M	$455.34 M
Outbound Enforcement Support	$0.00 M	$3.92 M	$12.43 M	$36.58 M	$63.42 M	$74.90 M	$83.08 M	$88.85 M	$92.17 M	$455.34 M
Total Officers on-Site (Enforcement)	0	35	68	193	363	441	441	441	441	441
Departure Coverage	0.00%	6.34%	24.46%	76.63%	95.78%	95.78%	95.78%	95.78%	95.78%	95.78%
Total Investment with Officers	$72.61 M	$94.47 M	$97.22 M	$99.57 M	$116.23 M	$122.85 M	$127.86 M	$132.64 M	$136.75 M	$1,000.00 M
Funding Remaining after Officer Salaries	$120.39 M	$140.92 M	$158.70 M	$174.13 M	$172.90 M	$165.25 M	$152.39 M	$134.75 M	$0.00 M	$0.00 M
Estimated Top 20 Airport Deployments	0	1	3	6	10	0	0	0	0	

Figure 2: 10-Year Biometric Entry/Exit Spend Plan

To enable CBP to begin spending these funds prior to becoming a program of record, the DHS Management Directorate authorized the Biometric Entry-Exit Program to utilize $71.61 million for the initial phases of the program. Activities that occur during the period between ADE-1 and ADE-2A will be covered under these funds.

17 References

- 2014 Joint Preliminary Mission Needs Statement on Biometrics
- DHS Biometric Strategic Framework: 2015-2025, June 9, 2015
- DHS Biometric Winter Study, March 2016
- Biometric Exit Vision White Paper (Final), December 1, 2016
- Biometric Exit Spend Plan (Final), January 3, 2017
- Biometric Entry-Exit Mission Needs Statement (v1.0), February 1, 2017
- Biometric Entry-Exit Capability Analysis Report (v1.0), February 2, 2017
- Fiscal Year 2017 Biometric Entry-Exit Staffing Plan (v1.0), February 21, 2017
- Acquisition Decision Memorandum, February 16, 2017