TSA Office of Requirements and Capabilities Analysis (ORCA)

Office of Requirements and Capabilities Analysis

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IABSC

January 2018

Transportation Security Administration

TSA Operations

TSA faces challenges in detecting explosive threats across all platforms. To combat this, the Agency has established a System of Systems view to close the gap in detection.

1,200,000
Checked bags a day.

2,000,000
Passengers a day.

5,000,000
Carry-on items a day.

We face an intelligent and adaptive adversary.

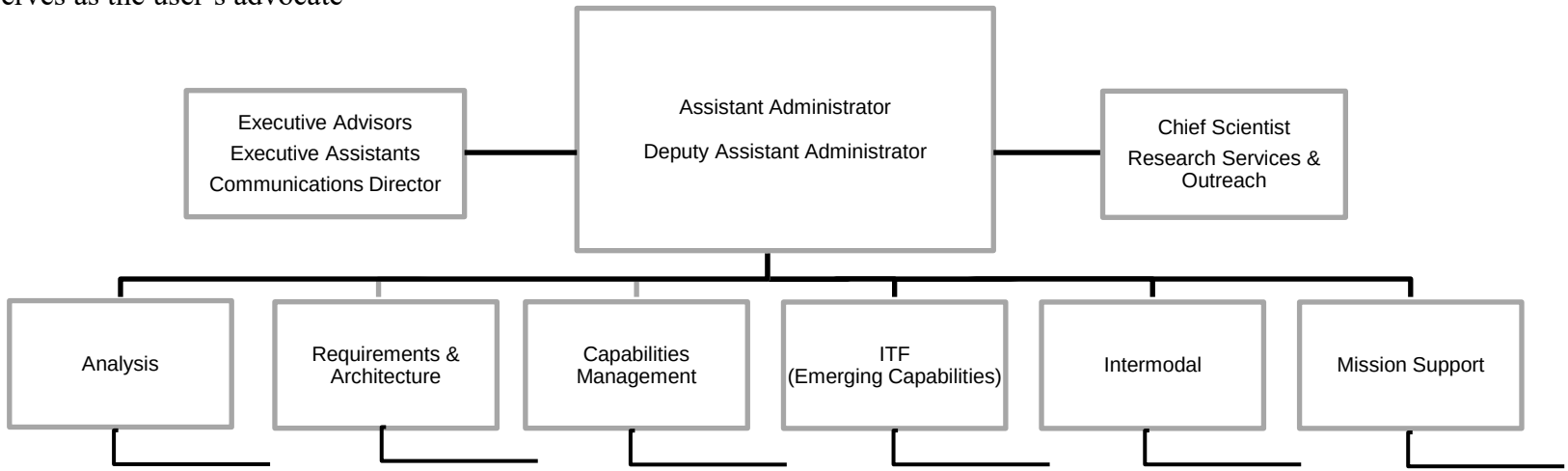
With threats evolving constantly, we must think outside the box to enhance the future of aviation security for years to come.

ORCA Vision

Vision: *ORCA is responsible for driving the strategy and development of the Transportation Security Administration's security architecture and operational capabilities to enhance security and optimize mission performance through analysis and innovation.*

Purpose of ORCA:

- Identifies and prioritizes capability gaps
- Conducts analytical trades to better define and document operational requirements
- Drives and documents mission needs
- Serves as TSA's hub of innovation
- Serves as the user's advocate



ORCA Requirements and Capability Process

The roadmap below outlines the steps in the SELC process that ORCA follows and the Division responsible for completing tasks at each step.

SELC Process Steps

SOLUTION ENGINEERING

PLANNING

REQUIREMENTS

DESIGN

DEVELOP

INTEGRATE AND TEST

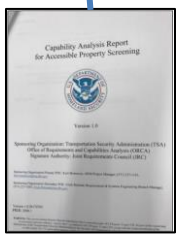
IMPLEMENT

DEPLOYMENT

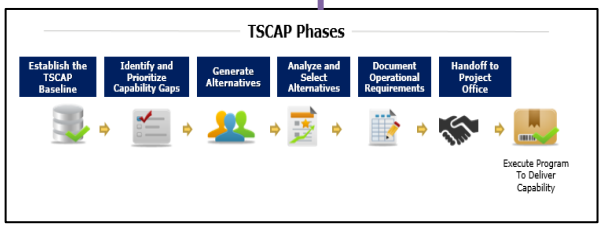
Transition to Program

Products

Example Product:
- OVI

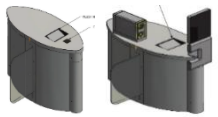


Example Products:
- CASP
- CDP
- CAR



Example Product:
- Mission Needs Statement

ITF Biometric Authentication

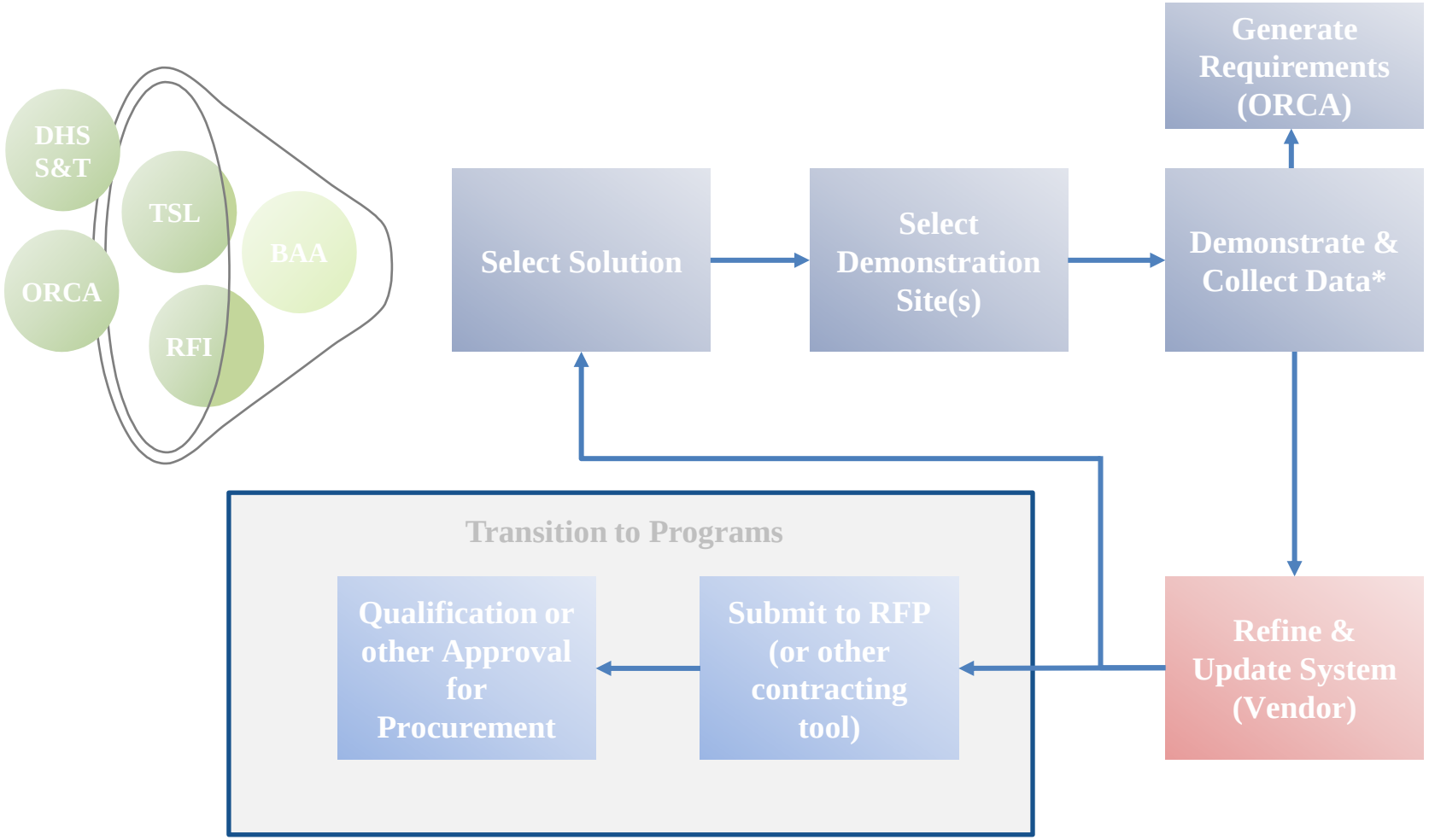


IMD Detection at Range Screening

Example Product:
- Operational Requirements Document (ORD)

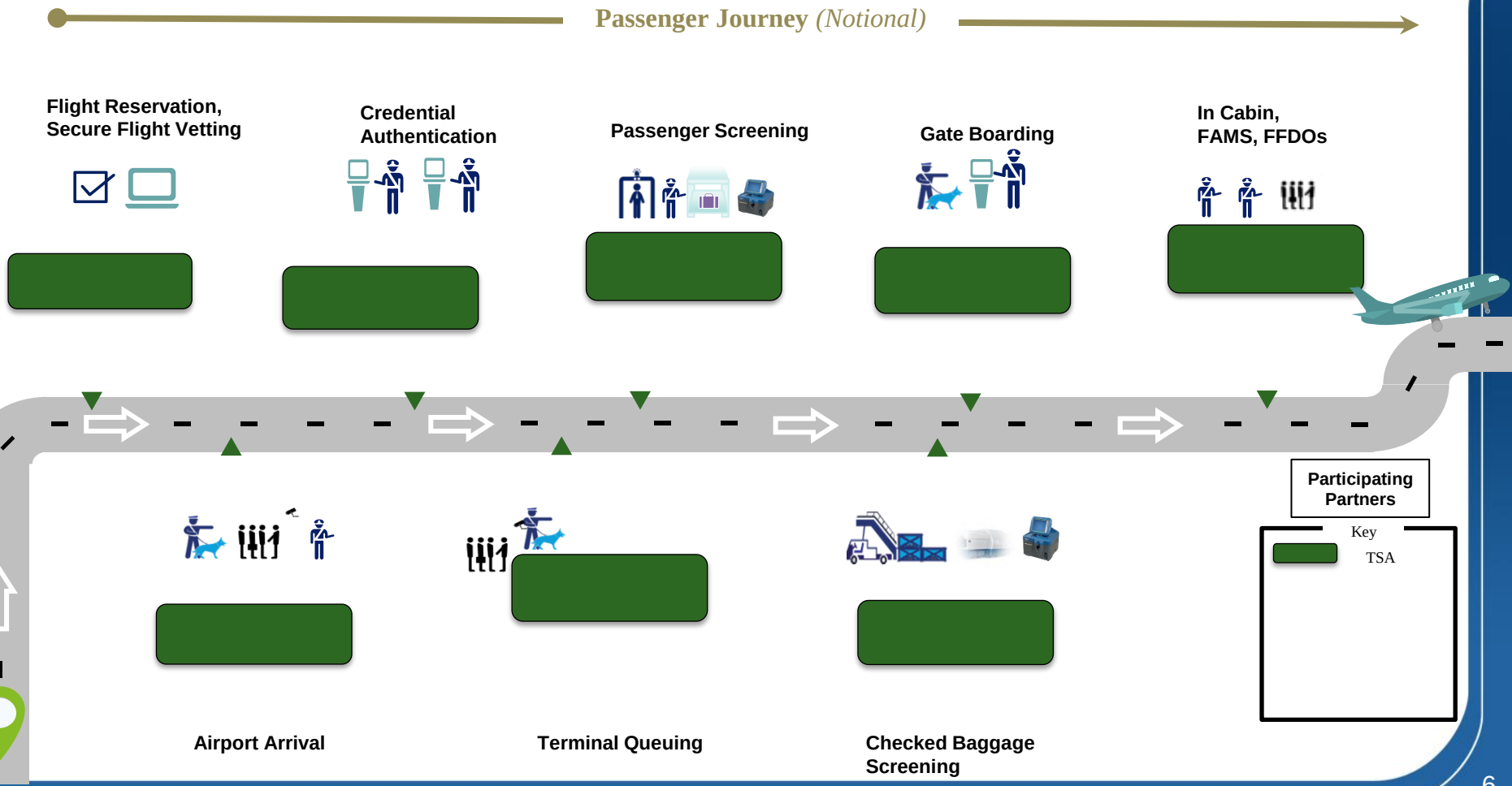
Capabilities Management/User Representative

How Can You Help…Broad Agency Announcements



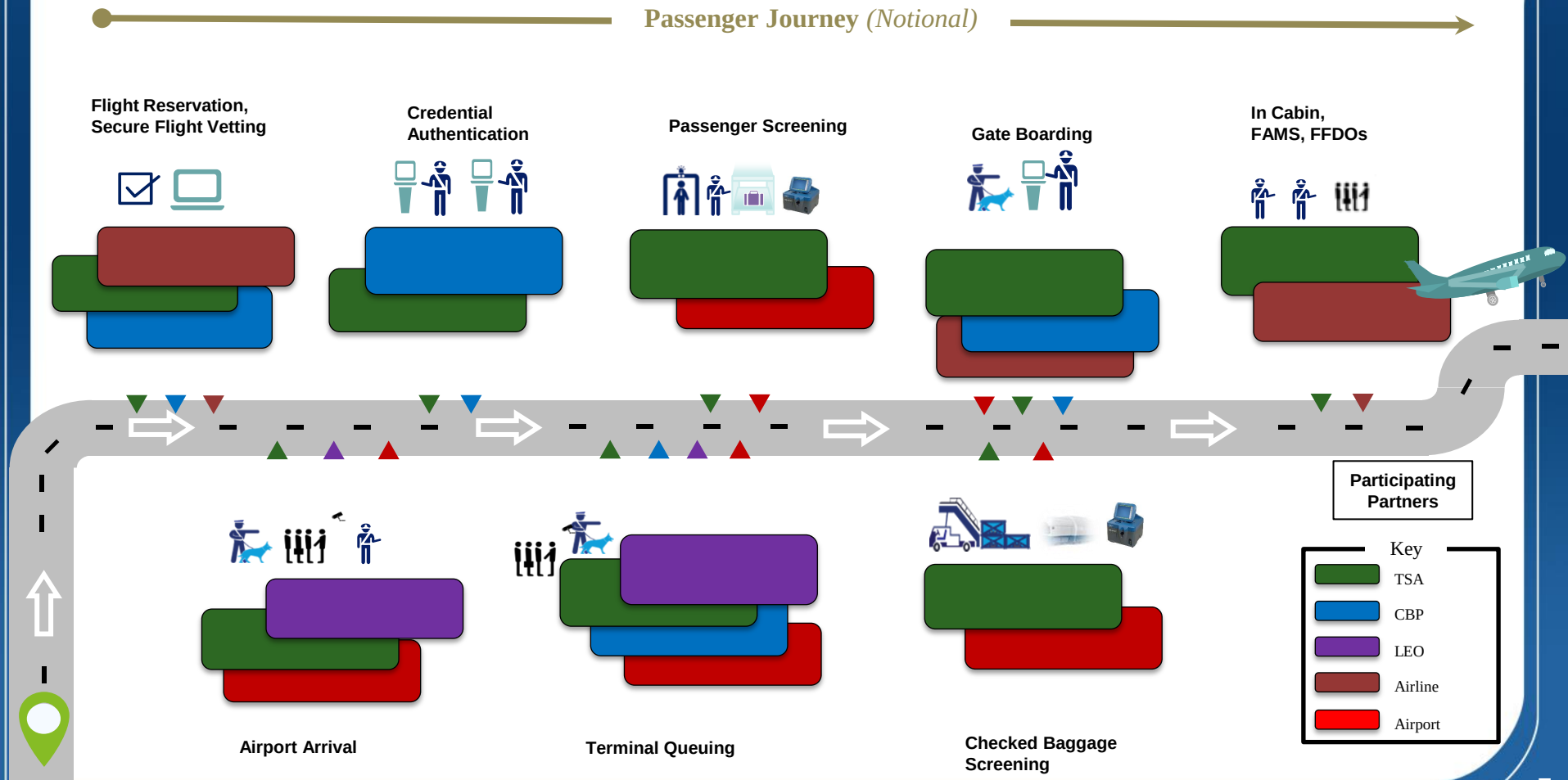
Aviation Security as a System

This visual looks at the Aviation Security System through a lens of Aviation Security as a System, specifically for the passenger journey.



Aviation Security as a System of Systems

This visual looks at the Aviation Security System through a lens of Aviation Security as a System of Systems, specifically for the passenger journey.



TSA System Architecture Program Overview

The System Architecture (SA) allows TSA to proactively define targeted screening capabilities at a **system level** and ultimately enable an **integrated, interoperable,** and **modularized aviation security screening system**.

Current Challenges

The current state TSA security capability development/acquisition approach poses several challenges such as:

- Long systems/solutions development lead times
- Unique/proprietary systems designs
- Competition and innovation barriers
- Costly security suite upgrades
- Limited ability to share threat, passenger, and risk information

Proposed Solutions

TSA System Architecture enables:

- **Transportation Security Equipment (TSE) disaggregation** that provides the flexibility to implement new sensor components and algorithms for greater security screening.
- **Real-Time Threat Information Sharing** that allows threat information to be gathered, analyzed, and shared with enterprise systems and between TSE.

Benefits to TSA and Industry

Enables Modularity

Introduces modular components by **defining system infrastructure and interfaces** enabling **plug-&-play functionality** and increasing **system flexibility**

Advances Risk-based Screening

Enables RBS by developing a **common data model** and the **infrastructure** required for the **masking of sensitive information and use of threat data** to expedite the screening process

Reduces Costs

Promotes interoperability and incremental upgrades to reduce **duplicative development** and **testing requirements**

Enhances Innovation

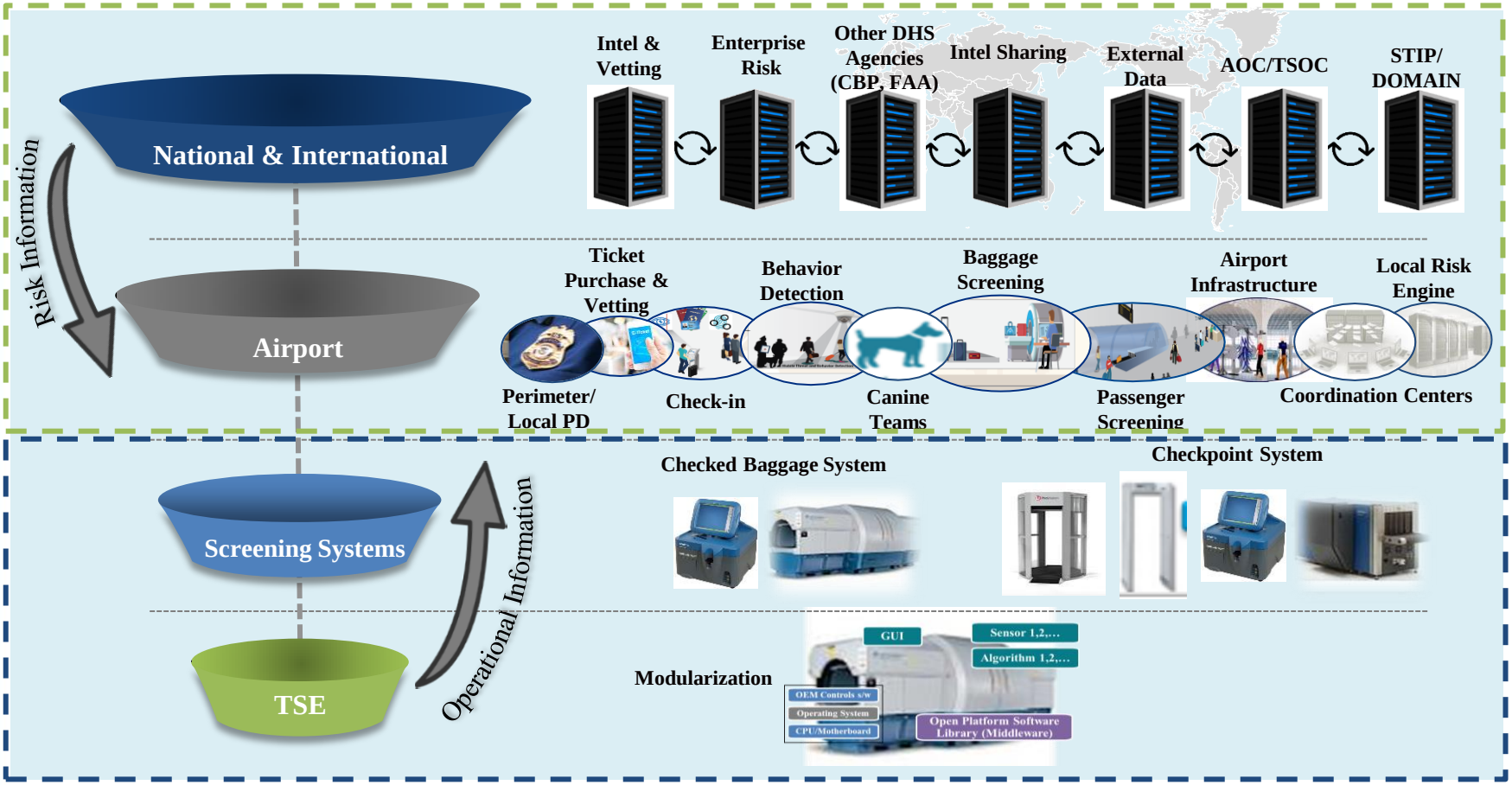
Drives standardization and modularity **to foster greater competition** at sub-system levels**, expand industry base,** and **reward modular implementation** via incentive-based procurement

Expedites Delivery of Capabilities

Reduces the timespan between the **inception and delivery of a capability** by providing vendors with **well-defined open standards**

ASA Information and Function Hierarchy

The ASA Information and Function Hierarchy illustrates the capabilities, elements, and information flow within the aviation security ecosystem



How does System Architecture change future technology?

TSA is looking to standardize the GUI on TSE such as EDS and AT which currently varies by OEM.

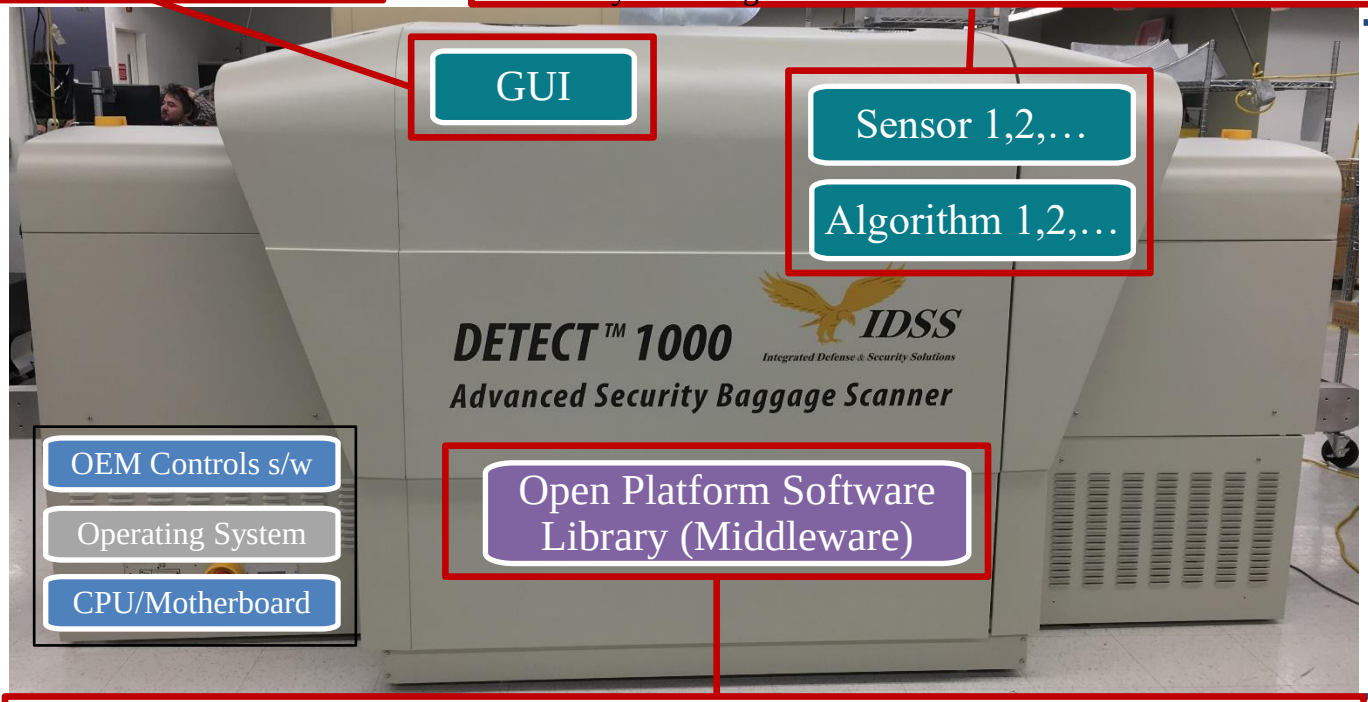
Benefit:

- Enhance TSO performance
- Reduce operations training

TSE disaggregation allows 3rd party to develop new sensors or algorithms that can be plugged into TSE.

Benefits:

- foster greater vendor competition, enhance innovation, and expedite capability delivery by expanding market/vendor base.
- Provides the flexibility to implement new sensor components and algorithms for greater security screening.



TSE (AT-2, EDS, CAT, AIT, ETD, etc.)

Key

- TSA-Developed
- OEM-Developed
- OEM or 3rd Party

A set of open, commonly available, and standardized data interfaces and formats developed by TSA.

Benefits:

OPSL will serve as an interface to enable engineering of 3rd party components

Image of IDSS Detect 1000 provided by IDSS

Innovation Task Force (ITF)

ITF is pursuing innovation and informing emerging people, process, and technology solutions to establish the future state of transportation security in the United States.

Innovation Task Force

Mission

- **Foster innovation** by integrating key stakeholders to **identify and demonstrate emerging solutions** that increase security effectiveness, improve passenger experience and the flow of commerce, and deliver solutions that secure the freedom of movement throughout the transportation security system

Responsibilities

- **Demonstrate emerging capabilities** across the transportation security ecosystem in partnership with industry, airports, and airlines, and support TSA's broader goal to pursue advanced capabilities through continuous innovation and adaptation
- **Diversify the industrial base and provide industry increased access to operational data**, which allows solution providers to better integrate and quickly develop or mature solutions that will meet TSA's needs

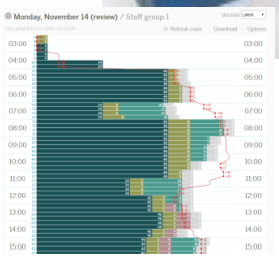
ITF success depends on the support of multiple stakeholders in the transportation security ecosystem for solution identification and demonstration.

Innovation Task Force (ITF) Demonstrations

Automated Screening Lanes

CT Systems

BAA Cohort 1 Solutions



BAT

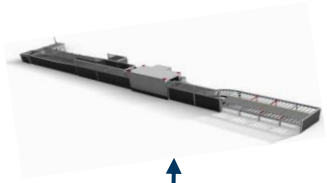
Passenger Communications

Note: Representative Sample Only, not all solutions or vendors presented

Automated Screening Lanes (ASL)

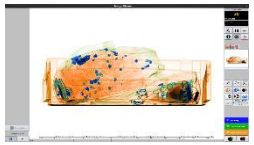
Automated Screening Lanes (ASL) automate elements of the checkpoint accessible property (i.e. carry-on) screening system to increase throughput, improve bag search handoff, and maximize efficiency in carry-on screening by reducing the time and effort required by officers to manually conduct certain activities.

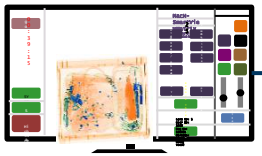
Advanced Technology (AT) X-ray



PC, VGA, RAW, Server

Image Viewing Software (IVS)





Network

Electronics, Bins, Keyboards

Open Architecture

Detection System (AT X-Ray)	Rapiscan systems	Or	smiths	
ASL Hardware (Programmable Logic Controller)	SCARABEE / VANDERLANDE	MH Automation	Rapiscan systems	smiths
ASL Software (IVS)	@Velocity	MH Automation	Rapiscan systems	smiths

Checkpoint Computed Tomography (CT)

Computed Tomography (CT) for Accessible Property Screening System (APSS) utilizes 3D-imaging and detection software to help operators automatically identify threats and may eliminate the need for divestiture of electronics for carry-on passenger baggage screening.

L3
Clear Scan

AT Tier II Certified

IDSS
Detect 1000

AT Tier II Certified

Analogic
ConneCT

AT Tier II Certified

Smiths
CTix

Pending AT Tier II Certification at TSL

Desired Future State BHS Capabilities

A BHS that is dynamic in its ability to integrate, communicate and assist the baggage screening process through use of technology and reporting (RFID or ATR systems)

Able to communicate between systems (BHS, EDS, BSM) the passenger segmentation to allow for dynamic switching of algorithms within the EDS, to apply varying levels of security and accurately route the bag based on the passenger designations.

- This information would contain passenger designation associated with each passenger/bag: Selectee (High Risk), Standard (unknown), TSA Pre✓® , (Low Risk).
- Based on the passenger designation (Selectee, TSA Pre✓®, Standard), route specified categories of bags (Selectee) to the CBRA regardless of the EDS or OSARP decision.
- A BHS that is capable of delivering these bags, would mitigate the impacts for stakeholders and TSA while improving security effectiveness.

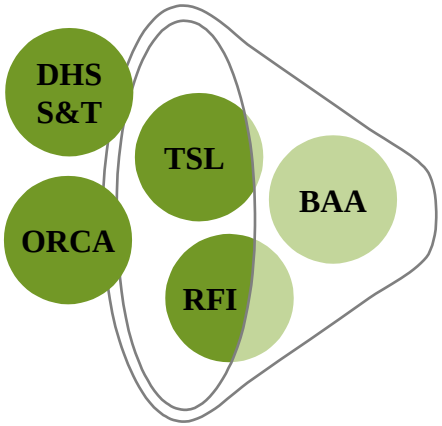
Current Initiatives within Checked Baggage

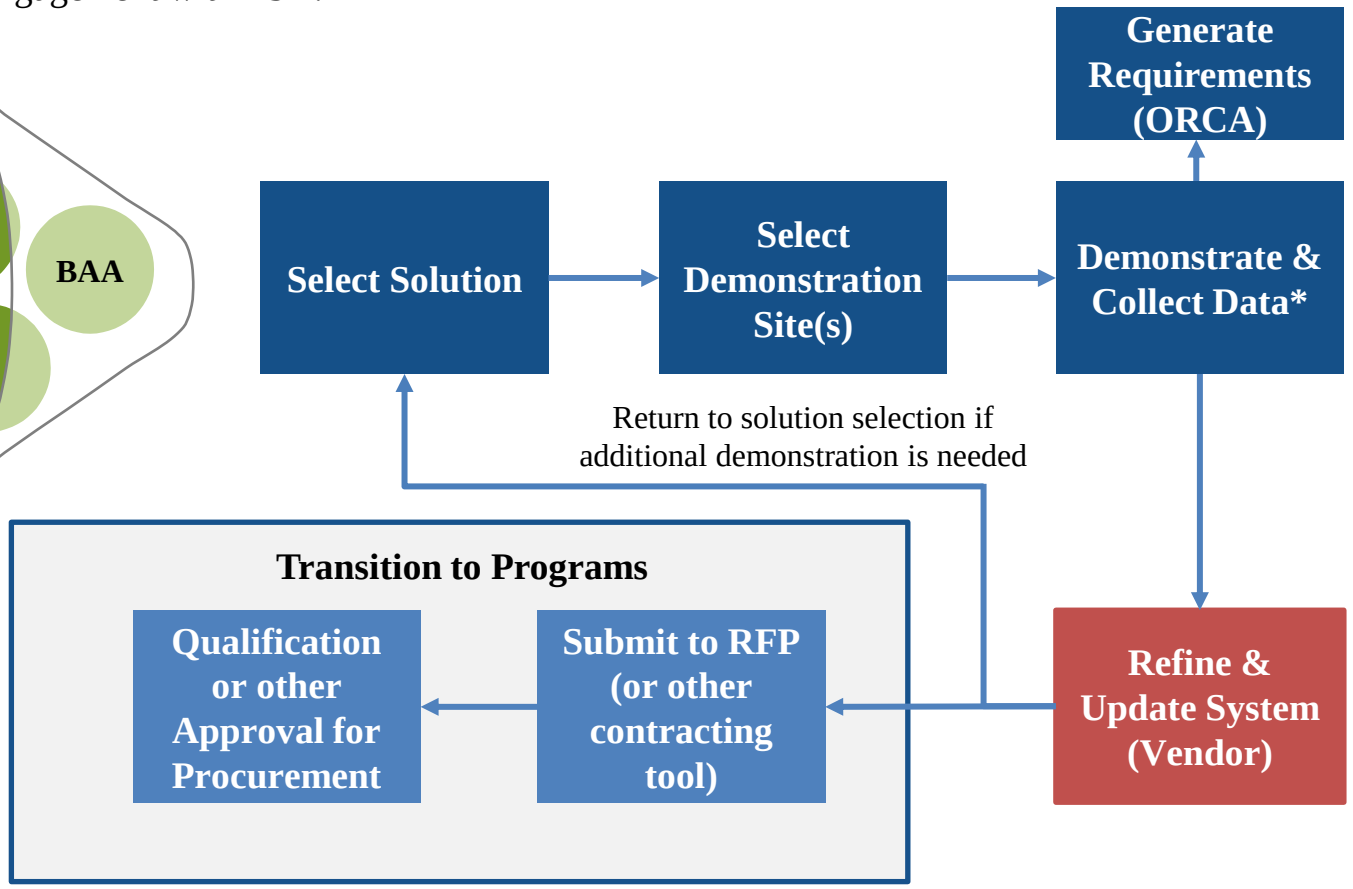
TSA currently has implemented manual processes to support software upgrades and enhanced screening:

- HME algorithm upgrades to deliver capability to Detection Standard 7.2
- Selectee Initiative – Enhanced screening procedures are manually applied to baggage based on passenger designation

How Can You Help…Through the BAA Process

Once a solution is selected, ITF follows a specified solution demonstration lifecycle. This lifecycle allows vendors to demonstrate their solutions in the field, capture operational data, and then refine their solution for potential future engagement with TSA.

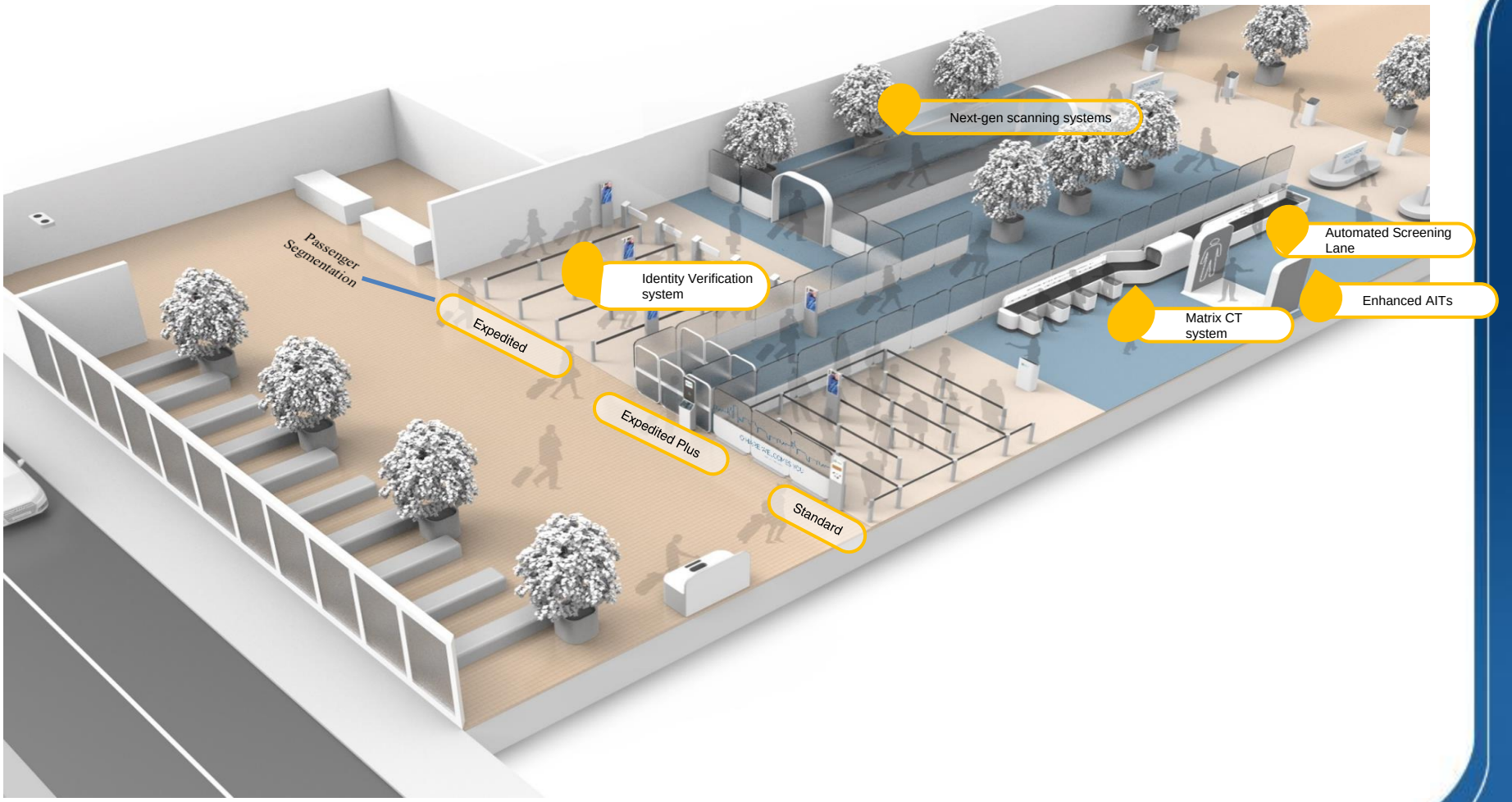




***Note:** Solution is mature enough for operational deployment, but not necessarily "perfect."*

Notional Future State of a Checkpoint

A suite of checkpoint scanning capability upgrades will enable enhanced detection and greater efficiency.



As of 6 Dec 2017

Solution Solicitation (BAA Responses)

What's Next for ITF?

ITF has received over 100 proposals for more solutions from the IDEA Broad Agency Announcement

Questions?