Transportation Security Administration

Office of Security Capabilities Overview

May 2012

TSA Evolving Requirements

| Emerging Threats	Balancing Security & Privacy	Technology Landscape
Constantly evolving **Informed adversary** **Alternative concealment methods (simple to complex)** **Home-made explosives** **Platform to support future capability** **Modular design**	**Compliant with health and safety regulations** **Sensitive to passenger privacy concerns** **Managing public perception** **Reducing inconvenience to passengers**	**Approximately 13,000 screening devices** **Mixed life cycle** **Stand-alone systems** **Limited checkpoint footprint** **Uncommon interfaces and platforms**
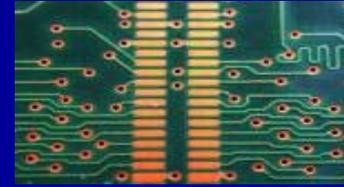
Aviation Security Technology Layers

Passenger Screening →

Advanced Imaging Technology (AIT)

Enhanced Metal Detector (EMD)

Hand-held Metal Detector (HHMD)

Cast and Prosthesis Imager (CPI)

Shoe Scanner Detection (SSD)

Advanced Technology X-ray (AT)

Bottled Liquid Scanner s(BLS)

Explosives Trace Detector (ETD)

Chemical Analysis Device (CAD)

Threat Image Projection Ready X-ray (TRX)

← **Carry-On Baggage Screening**

Layered Security →

Credential Authentication Technology /Boarding Pass Scanning System (CAT/BPSS)

Closed Circuit Television (CCTV)

Checked Baggage Screening →

Explosives Detection System (EDS)

Explosives Trace Detector (ETD)

Air Cargo Security Technology Program

← **Air Cargo Screening**

Checked Baggage Screening

Genesis of Electronic Baggage Screening Program (EBSP):

- Lockerbie – December 21, 1988 – a bomb concealed in checked baggage destroyed Pan Am 103, killing all 243 passengers, 16 crew members, and 11 people on the ground

- Aviation and Transportation Security Act of 2001 requires 100% screening of checked baggage

- Key Initiatives:
  - Recapitalize legacy equipment
  - Procure next generation Explosives Detection Systems (EDS)
    - Evolving threats
  - Partner with airports to install or enhance in-line checked baggage inspection systems

Checkpoint Screening

- **Checkpoint screening is intended to detect threats concealed on people and in their carry-on items**

- **Objectives**
  - Create optimized, integrated, and layered networked security system
  - Simplify passenger screening process
  - Use technology to improve the overall passenger experience

- **Known and emerging threats drive checkpoint screening**

Security Screening Checkpoint
- Private Secondary Screening
- Walk-Through Metal Detector
- Bag Check Station
- Advanced Imaging Technology
- Secondary Screening
- Travel Document Checker Station
- Bag X-ray
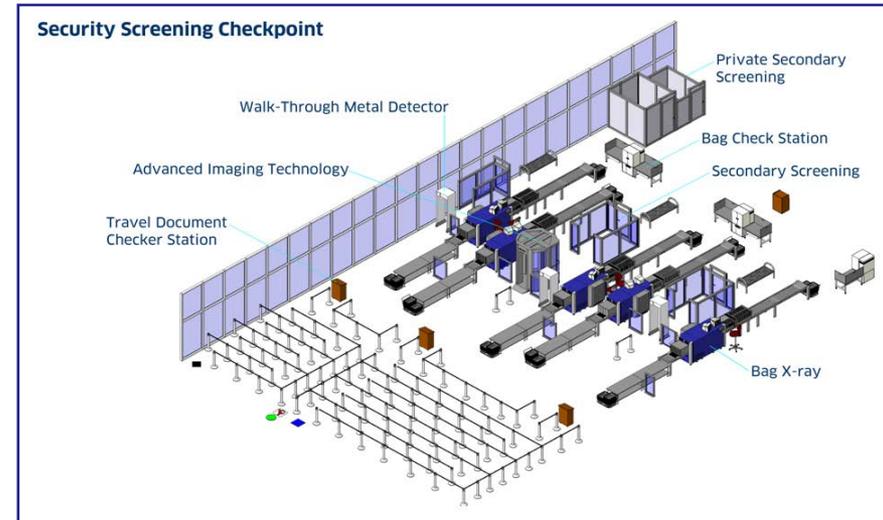
- **Key Initiatives:**
  - Advanced Imaging Technology (AIT)
    - National deployment
    - Automated Target Recognition
  - Advanced Technology X-ray (AT)
  - Passenger Process Improvement
    - Credential Authentication Technology /Boarding Pass Scanning System
    - Shoe Scanning Technology
    - Automated Wait Time Technology

Automated Target Recognition (ATR)

ATR algorithms utilize raw images from AIT to automatically identify anomalies based on contour, pattern, and shape recognition software to uncover potential hidden weapons, explosives, and other contraband.

Benefits	Impact
Consistency in operator performance	Increase in throughput
Image Operator station is no longer required	Reduction of installation and maintenance costs; footprint
Operators do not view detailed images of passengers	Resolution of privacy concerns
Operator interpretation is limited	Reduction in training costs and resources
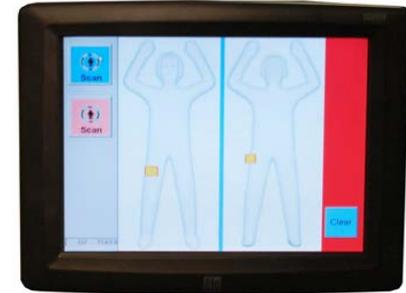
Operators are presented with an "objects detected screen" signifying specific location(s) on the passenger when anomalies ARE detected.

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Multimodal Security Technology

TSA works with its partners in the transportation community to develop security technologies that enhance transportation security in a variety of modes:

- Port security

- Mass transit

- Freight rail

- Highway and trucking

Intermodal security technology of all types is used to detect and prevent attacks using:

- Explosives

- Chem/Bio Threats

- Radiation/Nuclear Threats

- Toxic Inhalation Chemicals (TIH)

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Opportunities for Harmonization

- HMEs – TSA is working with its partners to continually enhance the understanding of the characteristics of homemade explosive devices and their capabilities

  - Different countries have unique capabilities for testing explosive materials that can be leveraged

- TSA strives to develop technologies that can be upgraded as threats evolve and to develop global consistency

- Testing & Evaluation methodology - Harmonization of testing protocols will enable sharing of results and prevent duplication of effort

- Technology development – Opportunities to harmonize technology development effectiveness for next generation security systems

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