

The Transportation Security Laboratory (TSL): A Test & Evaluation Perspective

NDIA 29th Annual Test and Evaluation
Conference
DHS Test and Evaluation Panel

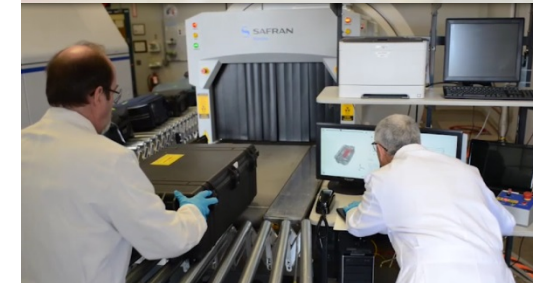
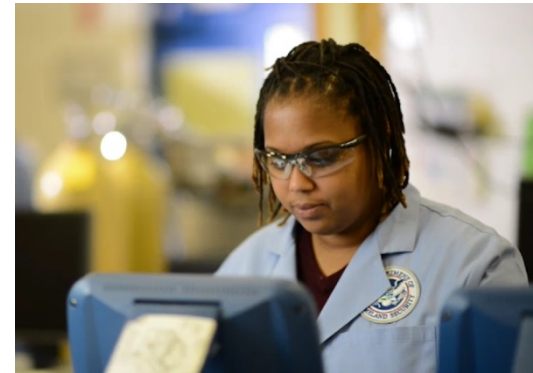
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Homeland Security

Science and Technology



Transportation Security Laboratory



The mission of the TSL is to apply our scientific and technical acumen to advance explosives and contraband detection technologies for the field.



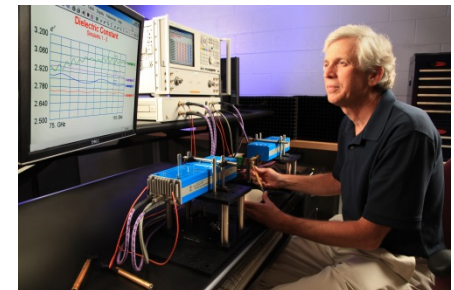
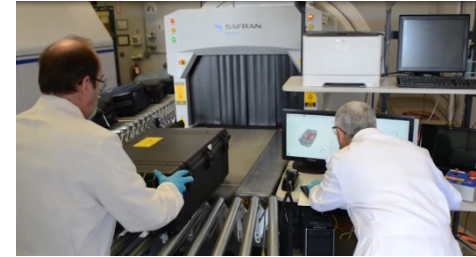
TSL's Unique Facilities

- Located at the William J. Hughes Center in Atlantic City, New Jersey
- 12-acre secure campus
- Specialized explosive storage and handling areas
- Extensive inventory of domestic, foreign, and homemade explosives
- Blast-resistant laboratories equipped to evaluate explosives detection equipment
- Multi-laboratory infrastructure designed for applied research, test, and evaluation.



TSL's Specialized Expertise

- More than 100 employees includes physicists, chemists, engineers, and mathematicians
- A2LA 17025 and ISO 9001 accreditation
- Public-Private Partnerships that expedite transportation security solutions: More than 30 Cooperative Research and Development Agreements (CRADAs) with industry
- Expertise in testing, explosives handling, physics and chemistry of detection, and blast mitigation support HSARPA/EXD and TSA programs.
- Rapid response team capabilities





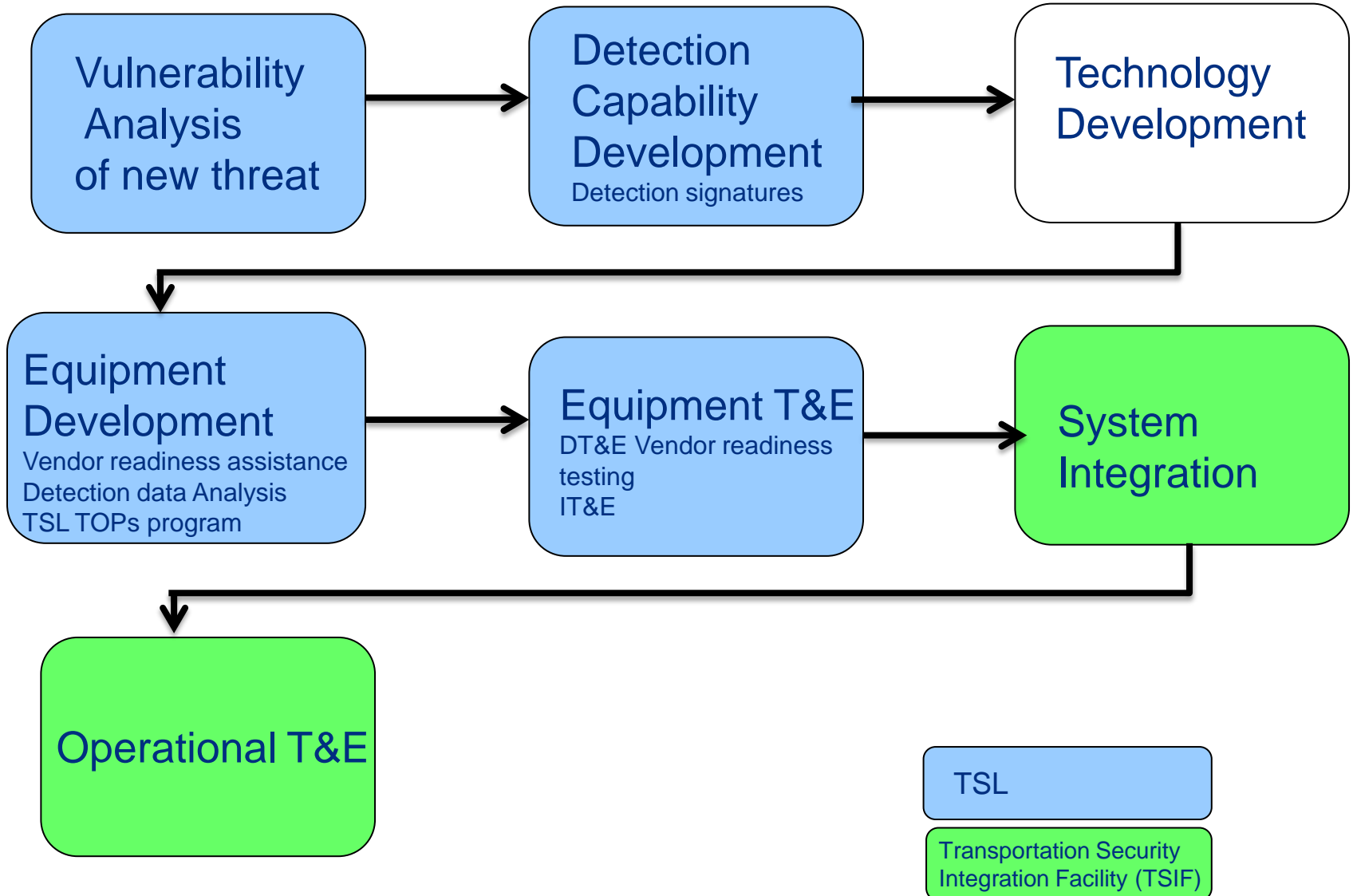
The Explosives Detection Challenge

- Terrorist IED fabrication vs. detection is a game of cat and mouse: The threat is changing
 - More artful concealment of explosives
 - Attempted use of “transparent” explosives
 - Changing stream of commerce (e.g. luggage: smaller but with more electronics.)
- DHS responds
 - Vulnerability analysis of potential threats
 - Evolving standards of technical performance
 - Spiral R&D programs to address more stringent standards
 - Different kinds of detection technologies introduced
 - T&E updates with new test articles and T&E protocols that are technology blind





RDT&E for Explosives Detection Solutions





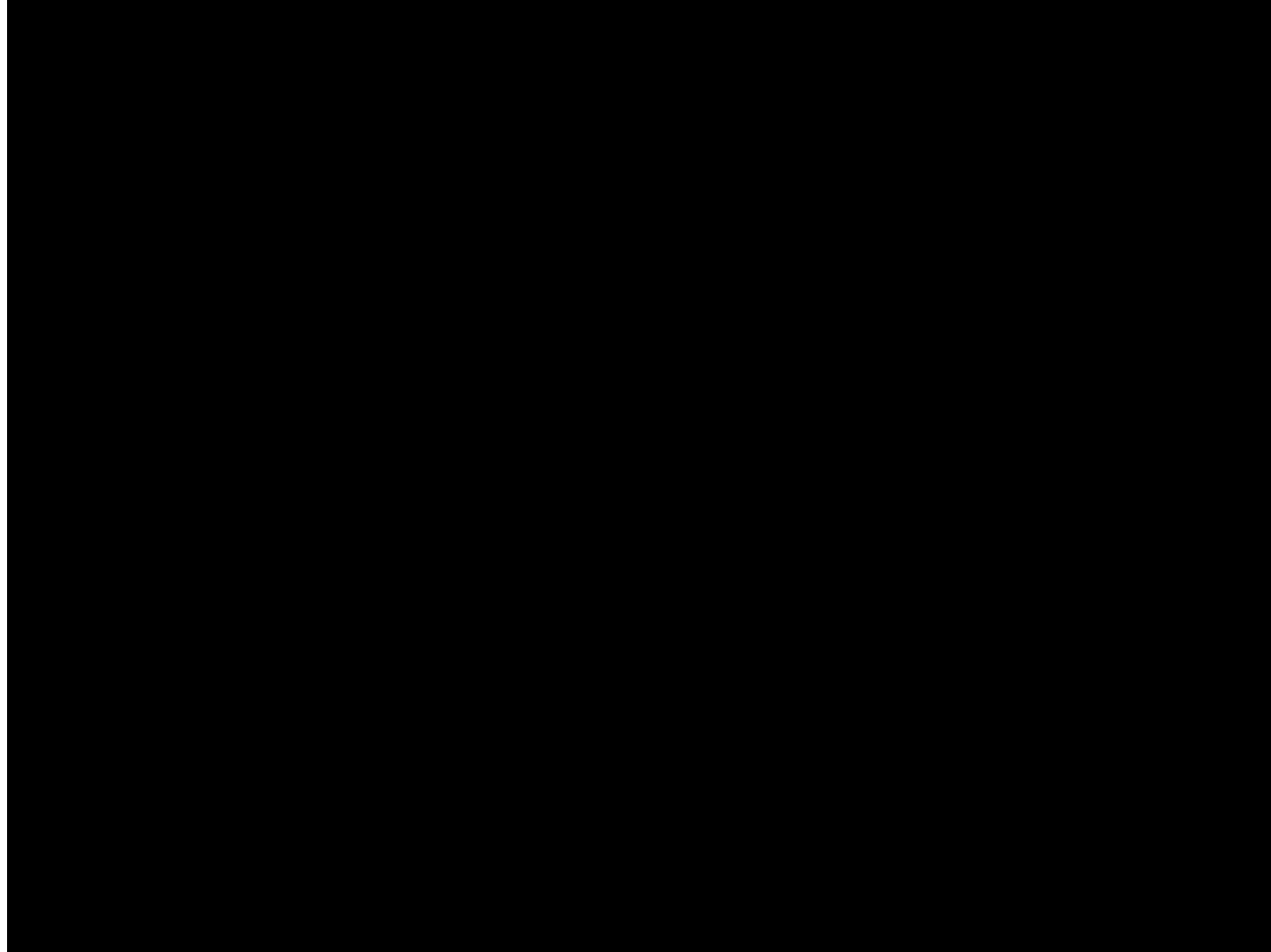
Transportation Security Laboratory

- Commercial Aircraft Vulnerability and Mitigation Program (CAV&M)
- Development and T&E of explosive detection and anomaly detection systems used at checkpoints and for screening of cargo and checked luggage.
 - Developmental Test, Evaluation and Assistance allows industry/academia and others to mature systems so they meet technical requirements that DHS needs
 - Independent Test & Evaluation provides certification/qualification services to validate the ability of explosive detection systems to find concealed explosives supporting the TSA acquisition program
- Supportive applied research to develop test articles and test methods
- Rapid response team capabilities





Commercial Aircraft Vulnerability Test



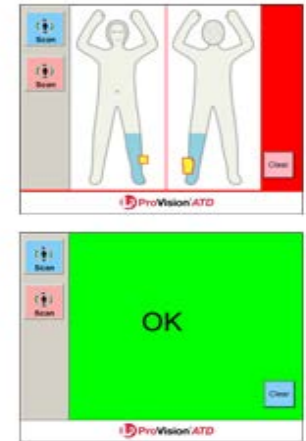
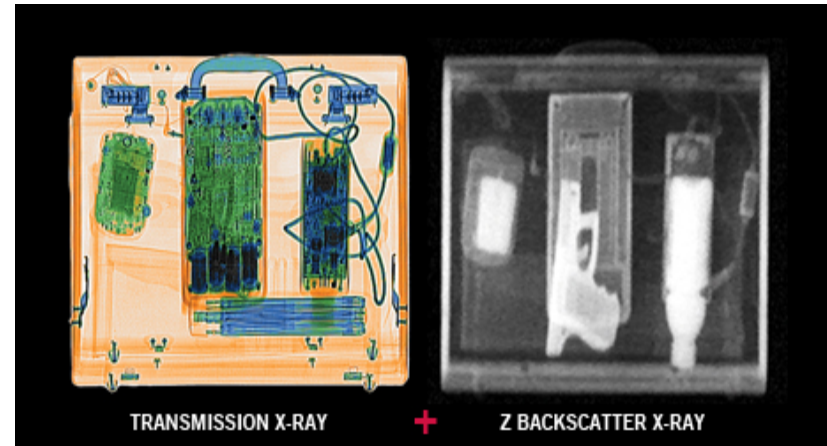
TSL's Certification and Qualification Tests

- Defined by PL 101 – 604 in 1990: Recognized as world standard for Explosives Detection Systems (EDSs)
- Formation of Test Director's Office as independent of R&D: William Petracci, Test Director
- Original EDS certification criteria established in 1992, revised and updated since
- Requires independent evaluation of EDS
- Process defined by EDS certification management test protocols developed by panel of experts: National Academy of Sciences (NAS)
- Test Oversight by independent 3rd party
- Detection: specific types and masses of explosives
- False alarm rate
- Throughput Rate: Automated Rate of Device
- Other requirements: safety, bag/content damage



How TSL helps HSARPA and TSA

- TSL maintains a proven track record of helping explosive detection technologies across “The Valley of Death.”
 - Core understanding of the basic properties of explosive detection technologies
 - Assistance in developing new technologies
 - Developmental Testing
 - Certification / Qualification Testing
 - Support to fielded instruments
 - False alarm analysis
 - Configuration management
 - Test article development for field use
- Rapid Response capability
- Over 80 presently deployed explosive detection systems have been tested at TSL.



TSL/TSIF Testing Responsibilities



Effectiveness

- Detection
- Throughput
- False Alarm rates

Suitability

- Human systems integration
- Safety
- Alarms, indicators
- Modes of operation
- Privacy
- Data access
- Data storage
- Data transmission
- Systems integration

Operations

- Operational throughput
- Availability
- Reliability
- Maintainability
- Survivability
- Personnel Training



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