

DHS SCIENCE AND TECHNOLOGY

Apex Screening at Speed

ALERT ADSA17 Workshop



**Homeland
Security**

Science and Technology

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So What? Who Cares?

The Apex SaS Program is pursuing transformative R&D activities that support a future vision for increasing security effectiveness while dramatically reducing wait times and improving the passenger experience.

What we're doing: Enlisting traditional and new performers to promote innovation, solve tough problems, and improve security and the passenger experience over the next 5, 10, 20 years.

Why it matters: Resources are limited and threats continue to evolve. Addressing the threat requires agile and innovative solutions as well as creative R&D strategies.

What we need: How else can we engage the community? How can we use our budget more efficiently? Where are our blind spots?

Where we are and where we're heading....

INNOVATIVE

Engage the community and industry to enable R&D in an **innovative** and **creative** way.

- ✓ DHS S&T Silicon Valley Innovation Program (SVIP)
- ✓ SBIR
- ✓ AIT Prize Competition (Kaggle)
- ✓ Hacking for Defense (H4D)

COLLABORATIVE

Collaborate with current and new partners – internally and externally – to determine the future of aviation security.

- ✓ 2017 Futures Workshop
- ✓ UK Future Aviation Security Solutions (FASS)
- ✓ ALERT, ADSA

Program Overview

Passenger Analysis

- Video Analysis and Passenger Tracking
- Passenger and Bag Correlation

Passenger Screening

- Walk-by Millimeter Wave
- AIT Automatic Threat Recognition
- MMW Shoe Scanner

Carry-on Screening

- Computed Tomography, CT Automatic Threat Recognition
- Gratings-based Phase Contrast Imaging
- X-ray Diffraction

Future Capabilities

- Standoff Trace Detection
- Adaptive Threat Detection
- Augmented Reality Human Systems Integration

Overarching Architecture

- Open Threat Assessment Platform
- Airport Risk Assessment Model

Test & Evaluation

- Test & Evaluation: baggage, passenger, secondary screening
- Testbed development

Future State

- Passenger analysis from “curb-to-gate”
- Passengers do not divest outerwear, shoes, liquids, gels, aerosols and electronics
- Flexible CONOPS, algorithms to adapt to passenger risks and threat environments
- Low rate of false alarms enable efficient TSO assignments



INNOVATIVE: Engaging Industry

How do we maximize our return on R&D investment?

Who can help us develop capabilities that are not currently identified?

- Many suggestions from Futures Workshop (e.g., Medical, Computer Vision, Disney, etc.)

How can we lower barriers to entry for companies to develop solutions?

- How can we accomplish more before we need to provide SSI/Classified Data?

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COLLABORATIVE: Solving problems together

How can we make developing solutions more profitable?

- Do high-throughput solutions create a larger market? (e.g., stadiums, shopping malls, courthouses, mass transit)
- Can we create families of products to trade off capability and cost? Leverage design reuse?

How do we facilitate demonstrations and operational tests outside the airport?

- Can we create representative problems with other stakeholders that have more flexibility?

What does technology response to emerging threats look like in 20 years?

- How do you add and deploy detection capabilities for a new threat in 24 hours?



Questions?



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