Science and Technology

AIRPORT SAFETY, CURB TO GATE

Updating airport screening technology is crucial for increasing efficiency, improving threat detection, and enhancing the passenger experience while maintaining high levels of security. By interconnecting standalone sensors, reducing false alarms to decrease pat-downs and manual searches, and developing new concepts of operations, the Department of Homeland Security (DHS) aims to streamline the screening process. Offering more convenience and autonomy to passengers would also allow Transportation Screening Officers (TSOs) to focus on more critical tasks and optimize resources.

The current screening process will become untenable as the number of people being screened continues to rise and new threats continue to emerge. The Transportation Security Administration (TSA) requires detection technologies that effectively and efficiently screen for threats using an integrated system-of-systems that uses layered screening technologies.

AVIATION SECURITY REIMAGINED

Imagine walking through an airport checkpoint without removing your shoes, outerwear, or personal belongings to be screened, confident in your safety and security. The DHS Science and Technology Directorate's (S&T) Screening at Speed Program is pursuing transformative research and development focused on delivering the checkpoint of the future to TSA by increasing security effectiveness from curb to gate, while dramatically reducing wait times, improving the passenger experience, and lowering update costs to address emerging threats.

DELIVERING SOLUTIONS TO THE FIELD

The Screening at Speed Program is laying the groundwork for this long-term vision by developing passenger self-screening concepts and prototypes that allow passengers to complete the entire screening process without relying on a Transportation Security Officer. The project is also developing advanced algorithms that use artificial intelligence to improve detection and reduce false alarms, smaller screening systems to accommodate self-screening concepts, and innovative screening systems such as real-time screening panels to enable a curb-to-gate screening system.

RECENT ACCOMPLISHMENTS

- Demonstrated a self-service screening checkpoint system in a non-operational environment to optimize TSA resources and the passenger experience. (FY23 Q3)
- Kicked off two contracts to produce synthetic images to train algorithms to detect prohibited items. (FY23 Q1)
- Demonstrated a secure checkpoint computing environment using advanced algorithms and improving passenger throughput while reducing overall system costs. (FY23 Q4)
- Kicked off two contracts to develop video analytic that enable self-service screening operations. (FY24 Q1).

UPCOMING MILESTONES

- Pilot an integrated self-service screening checkpoint system to optimize TSA resources and enhance the passenger experience. (FY24 Q2)
- Publish a fully synthetic, non-sensitive dataset to support third-party algorithm development. (FY24 Q2)
- Demonstrate a pod-based passenger self-service screening system that enables checkpoint screening with limited TSA intervention. (FY25 Q2)
- Demonstrate interconnected sensor systems that improve overall detection performance while reducing false alarm rates. (FY25 Q4)

SCREENING AT SPEED PARTNERS

- Micro-X Inc., Federal Way, WA
- Pacific Northwest National Laboratory, Richland, WA
- Sandia National Laboratories, Albuquerque, NM
- Vanderlande Industries Inc., Marietta, GA
- Voxel Radar, San Francisco, CA