

PASSENGER SCREENING FOR THE FUTURE

The Department of Homeland Security (DHS) understands the importance of updating airport passenger screening systems to stay ahead of security risks, but also to accommodate the growing number of passengers who are traveling each year.

The DHS Science and Technology Directorate (S&T) is developing systems for the Transportation Security Administration (TSA) to increase efficiency and effectiveness, while improving the passenger experience. One of these development efforts is High Definition-Advanced Imaging Technology (HD-AIT), designed to enhance threat detection and reduce false alarms.



High Definition-Advanced Imaging Technology retrofit kit (left) and the passenger screening portal (right). Photo Credit: PNNL

HIGH-DEFINITION SCREENING

The S&T Screening at Speed Program is developing the next generation of passenger screening for TSA and is partnering with the Department of Energy Pacific Northwest National Laboratory (PNNL) to develop millimeter-wave, HD-AIT to advance the capabilities of passenger screening systems with higher-quality data that lead to multiple benefits. With HD-AIT, the program created a screening portal and retrofit kits.

The new, HD-AIT stand-alone passenger screening portal was created to replace existing checkpoint systems and HD-AIT retrofit kits were created to allow TSA to quickly update older passenger screening systems already in airports with this improved screening technology.

The HD-AIT systems are also built on an open architecture. This enables rapid software updates and the use of third-party

algorithms, which will allow TSA to solicit cutting-edge detection algorithms from the broader community.

BENEFITS OF HIGH-DEFINITION SCREENING

The higher resolution data of HD-AIT allow for better threat detection, reduced false alarms, fewer pat downs, and decreased secondary screenings. Additionally, the higher resolution data could also allow passengers to keep on their light outerwear in the passenger screening portal without having to remove them. While security is always the focus, these benefits would also improve the passenger experience.

Developing HD-AIT also enabled the creation of two additional systems: a shoe scanner that allows passengers to keep their shoes on at the airport and Real-Time AIT screening panels that could lead to walk-by screening versus current pause and pose systems.

WHERE IS DEVELOPMENT NOW?

The S&T Transportation Security Laboratory has been conducting technical evaluations of both the HD-AIT retrofit kits and the passenger screening portal to revise and enhance their performance, while also informing the development of a prototype detection algorithm.

Liberty Defense Holdings, Ltd., obtained a license to commercialize both the retrofit kit and the screening portal to produce the systems for operational use in airports.

RECENT ACCOMPLISHMENTS

- HD-AIT systems win Research and Development 100 award (FY21)

UPCOMING MILESTONES

- Complete certification testing of the HD-AIT retrofit kits with algorithms (FY26Q1)
- Conduct an airport demonstration of the HD-AIT retrofit kits at a checkpoint (FY26Q3)

HD-AIT DEVELOPMENT PARTNERS

- PNNL, Richland, WA
- Liberty Defense Holdings, Ltd., Wilmington, MA
- TSA Requirements and Capabilities Analysis, Springfield, VA