The next generation of airport security screening is now being commercialized, thanks to an innovative collaboration that involved three federal agencies, an industry partner, and a $1.5-million crowdsourcing competition.

In March 2021, Liberty Defense Holdings Ltd. of Atlanta, Georgia, licensed the High Definition-Advanced Imaging Technology (HD-AIT) platform—including an on-person screening system and a shoe scanner—that was jointly developed by the Department of Homeland Security (DHS) and the Department of Energy (DOE).

Liberty Defense intends to manufacture the platform in a way that seamlessly upgrades the HD-AIT platform, to not disrupt the current airport security footprint.

Development of the HD-AIT and shoe scanner was initiated in 2011 by the Screenning at Speed Program within the DHS Science and Technology Directorate (S&T). This program develops and improves aviation security solutions in alignment with Transportation Security Administration (TSA) goals and requirements, and forges partnerships that enable the commercialization, transition, and deployment of those solutions.

Spurred by TSA's evolving security needs, Screening at Speed partnered with DOE's Pacific Northwest National Laboratory (PNNL) to fund and develop technology that would improve on-person screening and shoe scanning processes for the 2.5 million travelers who pass through TSA checkpoints each day. The PNNL team, which developed the original holographic millimeter wave system currently used at airports worldwide, funded the preliminary research and development of the new HD-AIT screening system.

The HD-AIT system provides higher resolution images, improves detection, reduces false alarms, and is built on a flexible, open architecture that aids rapid updates while enabling third party participation. The shoe scanner system is built on the same technology but is specifically configured to scan upward through a passenger's shoes. Both systems will reduce the need for people screened at airports and large public events to remove outerwear and shoes, which will make screening more accurate and more efficient while remaining aligned with TSA requirements.

Development of the new screening system was a collaborative process that included:

• Hardware and software maturation by PNNL
• Development of open-software standards for third-party algorithm integration by Sandia National Labs
• Algorithms crowdsourced through a $1.5-million prize competition, which was funded by TSA and screening at Speed and administered by the National Aeronautics and Space Administration's Center of Excellence for Collaborative Innovation
• Prototype testing and evaluation by the DHS S&T Transportation Security Laboratory

In January 2021 TSA, DOE, and S&T collaborated to create a licensing agreement framework that was implemented by Battelle Memorial Institute, which manages PNNL and other DOE labs, for the license with Liberty Defense. The milestone-driven agreement grants exclusivity for three years and requires that licensees build systems compliant with government-owned detection algorithms.