



Homeland Security
Science and Technology

S&T IMPACT: AVIATION SECURITY

The **Department of Homeland Security (DHS) Science and Technology Directorate (S&T)** is the primary research and development arm for DHS operational components and the nation's first responders. S&T helps improve the safety and effectiveness of homeland security professionals by developing innovative solutions with public and private sector partners. Our approach involves:



1. IDENTIFYING NEEDS

by discussing operational challenges with DHS components and first responders



2. DEVELOPING PROTOTYPES

or leveraging existing technologies to quickly find solutions



3. TESTING AND EVALUATING

potential solutions to ensure they meet end-user needs



4. DEPLOYING SOLUTIONS

to the field within a short timeframe

S&T helps strengthen aviation security through technology and tools that support everything from improved passenger and baggage screening to more resilient aircraft construction. We develop solutions in close collaboration with first responders, industry and all levels of government to ensure cost effectiveness, usability and efficiency.

DETECTION

S&T researches more effective and efficient ways to screen luggage and air cargo

- The **Checked Baggage** program addresses ways to automate threat detection in next generation checked baggage screening equipment.
- The **Secondary Screening** program focuses on detecting trace amounts of explosives and providing training and technology to secure aviation from explosives threats.
- The **Air Cargo** program develops powerful imaging software to help detect any potential threats hidden in cargo before it is loaded onto commercial passenger flights.

S&T collaborates with the agencies charged with protecting the homeland

- The **Detection Canine** program partners with Transportation Security Administration (TSA), other agencies and law enforcement to improve the proficiency of explosives detection canine teams in soft target and large crowd environments.
- The **Transportation Security Laboratory** brings together physicists, chemists, engineers and mathematicians to conduct applied research and test and evaluation to detect improvised explosive devices.

S&T works with industry to develop innovative techniques and solutions

- The **Biometric Technology Rally** challenges industry to develop high-throughput biometric systems that quickly and accurately recognize users within identity verification operations, such as security checkpoints.
- The **Silicon Valley Innovation Program** works with the startup community to develop solutions to the hardest problems facing DHS and the Homeland Security Enterprise.
- **S&T Aviation Futures Workshops** provide a forum to help guide strategies and support investment decisions focused on advancing the future of aviation security.



MITIGATION

S&T improves training technology

- The **Pat-Down Accuracy Training Tool (PATT)** is a unique tool equipped with thousands of pressure sensors that helps teach Transportation Security Officers (TSOs) the most effective, efficient and appropriate way to conduct pat-down inspections of air passengers.
- **ScreenADAPT** is an advanced training system that uses eye-tracking technology to better train TSOs to analyze X-ray images at the checkpoint.

S&T conducts testing to address the effects of explosives

- The **Homemade Explosives Identification, Detection and Mitigation** program conducts large-scale explosives testing to discover new ways of combating emerging trends in explosives.
- The **Threat Mitigation Unit** is a unique tool designed to mitigate the damage caused by improvised explosive devices.
- The **Commercial Aircraft Vulnerability and Mitigation** program researches and tests a variety of explosive-resistant materials for use on commercial aircraft.

PREVENTION

S&T strengthens protections by turning data into tactical security enhancements for aviation

- The **Tyndall Reactive Materials Group** team in Panama City, Florida, is a highly capable team of chemists, imaging experts and explosives detection technicians providing solutions to prevent a wide range of emerging threats from becoming successful attacks.
- The **Detection Technology Center** in Huntsville, Alabama, is a collaboration between S&T and the FBI Terrorist Explosive Device Analytical Center studying explosives threats and developing countermeasures in an aviation security environment.

S&T is looking to the future of aviation screening technology

- The **Apex Screening at Speed** program is working to create an almost-invisible checkpoint by integrating imaging, trace detection, X-ray technologies and software systems.

S&T relies on partnerships with industry, academia and technology developers to continue providing next-generation solutions to improve responder safety and effectiveness. If you're interested in helping strengthen the nation's homeland security, visit our Business Opportunities page to discover the many ways to work with S&T. Then, check out the rest of our website and follow S&T on Facebook, Twitter, YouTube and LinkedIn for the latest updates on our work.



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