



WE DO THE SCIENCE.

The Science and Technology Directorate (S&T) was established within the Department of Homeland Security (DHS) in 2003 as the science advisor to the Secretary and the research and development (R&D) arm for DHS. S&T provides sound, evidence-based scientific and technical expertise to inform policies and directly address a broad spectrum of current and emerging threats. S&T solutions meet both today's challenges and tomorrow's opportunities.

The S&T workforce consists of dedicated federal and contractor staff with advanced training in everything from engineering and biodefense to accounting and information technology. This work is also supported by two [Federally Funded Research and Development Centers](#), five [National Laboratories](#), seven [Technology Centers](#), and 12 [Centers of Excellence](#).

WE PLAN FOR EVERYTHING.

S&T takes an end-to-end approach, from concept to reality, to support national security via several workstreams: We apply science and technology solutions to meet near-term component needs; we execute foundational science to advance DHS knowledge of emerging threats; and we harness the latest innovations to get ahead of future mission challenges and requirements. S&T does not shy away from multifaceted challenges like climate change or domestic violent extremism.

At its core, S&T is committed to keeping Americans safe in an ever-changing world. S&T builds up our nation's preparedness by supporting interagency emergency exercises, developing knowledge products to guide decision-makers, establishing testing standards, directly evaluating devices designed to boost situational awareness, and much more.



OUR WORK HAS FAR-REACHING IMPLICATIONS.

The impact of S&T R&D efforts spans key mission areas that are critical to the safety of our nation:

- Border Security
- Chemical, Biological and Explosive Defense
- Counterterrorism
- Cybersecurity and Information Analysis
- First Responder Support and Disaster Resilience
- Physical Security and Critical Infrastructure Resilience
- Tests, Evaluations, Standards, and Systems Engineering

COLLABORATION IS KEY.

S&T serves as a conduit to a well-established, worldwide network of public and private partners. S&T innovations happen in partnership with DHS components like the Transportation Security Administration (TSA) and Federal Emergency Management Agency (FEMA); other federal agencies; public safety personnel at the state, local, and tribal level; first responders such as firefighters, paramedics, and police officers; distinguished research universities; citizen entrepreneurs and private industry; and national security counterparts around the world.

Our [international partnerships](#) are just as valued as our domestic ones. The United States, United Kingdom, Canada, Australia, and New Zealand comprise the 5RD network, which plays a crucial role in sharing information and best practices related to global issues of concern like pandemic response.





WE FUND INNOVATION.

Technology experts at S&T will conduct technology scouting, crowdsourcing for existing technologies that have applications for national security challenges. S&T also regularly releases solicitations and funds the most promising proposals through the Small Business Innovation Program, Silicon Valley Innovation Program, Long Range Broad Agency Announcements, and various prize competitions.

S&T [prize competitions](#) directly engage citizen inventors to find interesting solutions to some of the toughest homeland security challenges. The [detection of illegal opioids](#) sent into our country through the mail, an easy-to-use interface for [digital wallet-based credentials](#), and a compact [escape respirator](#) for safe exit from smoke-filled, hazardous environments have all been made possible through prize competitions.

WE DELIVER SCIENTIFIC SOLUTIONS.

S&T innovations make a very real difference in the lives of our end users. They enhance effectiveness and efficiency, cut costs, and boost safety.

For instance, S&T is currently working with the NASA Jet Propulsion Laboratory to develop [Precision Outdoor and Indoor Navigation and Tracking for Emergency Responders \(POINTER\)](#), which is poised to be a major gamechanger for first responders. POINTER uses magnetoquasistatic fields to accurately pinpoint a firefighter's location in 3D space to within one centimeter, from 70 meters away. It can also tell if the person wearing the device is upright or down, alerting the team if a firefighter becomes incapacitated and unable to call for help. This capability was identified by S&T's [First Responder Resource Group](#) as their top priority mission need.



Flooding is the nation's leading natural disaster, accounting for the greatest loss of life, property damage, and economic impact. S&T, in support of FEMA, is pursuing multiple projects aimed at building infrastructure and community resilience in this area. One such initiative is [Low-Cost Inundation Flood Sensors](#), which provide the advanced notice necessary when a flood event is unfolding to mitigate the potentially catastrophic consequences. This deployable Internet of Things (IoT) technology rapidly measures rising water levels and triggers alerts of dangerous conditions. These innovative devices are currently in operational use, with over 1,000 units deployed by state and local emergency management organizations.



The R&D 100 Award-winning [shoe scanner](#) is another cutting-edge S&T technology that has already been licensed for commercialization. The high definition – advanced imaging technology system allows travelers to leave their footwear on, improving screening speed without compromising security. The device was developed in partnership with Pacific Northwest National Laboratory and TSA.

S&T also produces knowledge products that enhance scientific understanding. A Master Question List (MQL) consolidates important information for decision makers and serves as a research repository, detailing what is known and highlighting what remains to be learned. It helps guide research priorities and prevent duplication of efforts. S&T has maintained a [COVID-19 MQL](#) since March 2020 and has developed similar products for [African Swine Fever](#) and [synthetic opioids](#). S&T MQLs have been accessed over 100,000 times.

Check out scitech.dhs.gov for the latest updates and to learn more about how S&T is bolstering the strength and resilience of our homeland.

