

Technology Engines Context

The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) launched a series of high-profile, high-impact Apex programs to look strategically at the nation's security and address future challenges while supporting today's operational needs. S&T Engines were created to meet cross-cutting needs for all Apex programs.

Impact and Vision

Through the S&T Situational Awareness and Decision Support Engine (SANDS-E) the most critical and relevant information will be made available to decision makers in the Apex technology frameworks. The key focus for SANDS-E will be to ensure the right information is received by decision makers in time to make a difference.

Description and Approach

SANDS-E identifies, prioritizes and executes initiatives in technology and information required by Apex programs in the area of situational awareness and decision support. The Engine provides Apex programs with assured, secure access to essential elements of information, visualization tools and shared situational awareness that enhance the operational effectiveness of first responders. In addition to visualization tools, SANDS-E supports Apex programs with open data standards and exchange, geospatial analytics tools, alerts, warnings and notifications and other information required for first responders to make effective decisions.

Key Activities

- Provide integrated solutions to enable first responders to exchange useful, actionable information in time to make a difference.
- Lead the integration of Internet of Things (IoT) sensor open standards with Smart Cities for incident management.
- Provide leadership in the advance of wireless emergency alert technology and communications.
- Demonstrate Identity Credential and Access Management interoperable solutions and guidance for secure access of first responder information and services with FirstNet.

Key Successes

- Developed low-cost flood inundation sensors for alerts, warnings and notifications to responders, industry and citizens (*Commercialization Value*: less than \$1,000 per sensor vs. \$20,000 per sensor)
- Developed Unmanned Aerial System collision avoidance and Wi-Fi search and discovery system (*First Responder Value*: seven minute vs. 21 minute manual search [in a test environment])
- Developed prototype building Exit Signs and Smoke Alarms, adding imagery, thermal and Wi-Fi sensors (*Industry End user*: Real estate and insurance communities to reduce liability exposure)
- Developed advanced cellular geo-targeting technology to improve Wireless Emergency Alerts (*Citizen Value*: 28,149 weather and AMBER alerts sent since 2012)

