DHS Science and Technology Directorate
Ground Based Technologies

Problem: Multiple Department of Homeland Security (DHS) components are in need of new or improved border surveillance capabilities, especially for difficult terrains, harsh weather and remote locations that provide effective use of resources, improve investigations and enhance agent safety. Additionally, visibility and situational awareness of activity on both sides of a border wall infrastructure is critical to agent safety and to the protection of U.S. assets and infrastructure.

Solution: Ground Based Technologies is a collection of border surveillance projects focusing on: enhancing situational awareness, providing automated detections and alerts, improving target classification, while minimizing false alarms, and enhancing agent safety. This project also enables capabilities to provide situational awareness above and below ground with the construction and deployment of a border wall. An integrated and layered approach will prevent adversaries from exploiting other pathways such as mover water, in the air, and using other ports of entry (POEs).
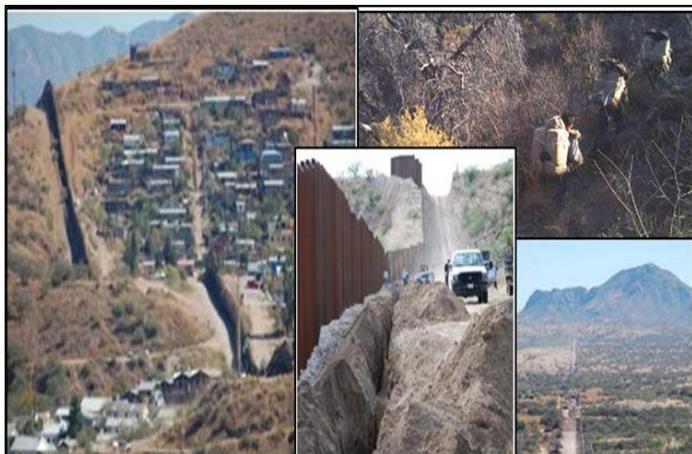
Impact: Improved situational awareness of U.S. terrestrial borders between the POEs will result in higher interdiction and conviction rates of illegal activity and immigration through higher detection rates, fewer false alarms, more prosecutions and more efficient and safer use of officers, agents, and assets.

U.S.-Mexico border fence

Current and Future Investments

- **Border Research in Instrumented Construction.** The U.S. Customs and Border Protection is interested in cameras, sensors, and other technology that can be applied on or near a smart wall via ground, surface/air, subsurface, and in a maritime environment to contribute to border security and agent safety.

- **NexGen Unattended Ground Sensors.** Enhances the capability to detect, track and classify illegal activity in remote areas of the U.S. border using unattended, covert, relocatable surveillance sensors. Enhances situational awareness in difficult-to-monitor areas, increasing the probability of detection/interdiction, and enabling automated alerting, and decreasing bandwidth requirements.

- **Land Automated Scene Understanding.** Pursues the capability to facilitate target identification from surveillance sensors through leveraging technology, which ingests data in a standard format and automates detection of possible illicit behavior.

- **Officer Tools and Safety.** Enhances the personal protection of DHS officers/agents by providing improved protective equipment and improved tools to more effectively execute their duties

- **Video Data Bandwidth Reduction.** Identifies methods to reduce the volume of video being recorded, transmitted, viewed, and archived for investigations by the U.S. Immigration and Customs Enforcement.

U.S.-Mexico border environments

Homeland Security
Science and Technology