

### CHALLENGE: LACK OF GUNSHOT DETECTION SYSTEMS IN THE FIELD

Active shooter events have become an almost weekly threat in the United States. In an active shooter event, real-time accurate information has been proven to save the lives of citizens and first responders, reduce casualties, and speed law enforcement's (LE) ability to respond to and neutralize the threat.

First responders need a simple technology that will alert them to shooting incidents nearly instantaneously; provide critical information ahead of their on-scene arrival (e.g., multiple types of gunshots suggesting multiple shooters); and record evidence that is useable in court. These three capabilities would improve the safety and effectiveness of responders to gun violence incidents.

Gunshot detection systems are available at LE operations centers but are not portable for easy deployment in the field. What is needed are systems that are portable and can be easily moved from location to location with minimal resources or technical experience.

### SOLUTION: PORTABLE TECHNOLOGY

First responders require a gunshot detection technology that works indoors and outdoors and can be easily installed. Another requirement is that the technology be portable/mobile and easily moved as necessary by no more than two officers without the need for technicians to do the set up or transportation. The solution also must have a quick alert system that shares critical information with appropriate responders in an intuitive and helpful manner.

The goal of the Department of Homeland Security Science and Technology Directorate (S&T) Gunshot Detection technology development effort will be to explore enhancements to the current commercial off-the-shelf Guardian Indoor Active Shooter Detection System to enable it to operate in indoor/outdoor environments and be easily moved and "installed" by one officer in either environment. The existing Guardian hardware suite and processing algorithms are the starting point and from there, this baseline system will be reviewed and enhanced to include mechanical and software alterations to meet the ultimate goal of the effort: a portable prototype.

The resulting prototype technology will be portable and operate in both indoor and outdoor environments, requiring only a single officer to relocate it, and will provide easy-to-use supporting software applications including file formats, active shooter event presentation, and communication channels and protocols aligned with the stated requirements.



### IMPACT IN THE FIELD

The first capability, real-time alerting, will enable LE to adjust coverage of gun-related incidents and shorten response times. The second, pre-arrival information, will enable responders to approach a gun-related incident more safely and with greater awareness. The third capability, availability of recorded data, will provide better evidence and lead to the apprehension and conviction of more criminals.

Having the capability to deploy mobile gunshot detection systems will enhance the ability of LE to combat violent events in different locations as they occur, when and where they develop.

### UPCOMING MILESTONES

Near-term improvements include: mechanical design features, ingress protection against moisture and dust/contaminates, National Information Exchange Model compatibility, and additional channels allowing for 360-degree coverage as well as extended detection ranges. The schedule calls for:

- Fall 2021: Range test initial prototype (completed)
- Spring 2022: Prototype demonstration (completed)
- Summer 2022: Final prototype delivery