First Responders Technologies

Science and Technology

ADDRESSING EVOLVING CHALLENGES TO FIRST RESPONDERS

First responders at federal, state, local, and tribal levels are crucial in managing a variety of emergencies, ranging from pandemics and natural disasters to civil disturbances, terror attacks, and routine criminal activities. They need a wide array of capabilities to effectively respond to these challenges, which are constantly evolving due to new threats and environmental changes.

RAPID TECHNOLOGY DEVELOPMENT: INNOVATING FOR EMERGENCY RESPONSE

To support these first responders, the First Responder Technologies (FRT) project, under the guidance of Department of Homeland Security (DHS) Science & Technology Directorate (S&T), focuses on rapid technology development. This includes identifying high priority needs, developing prototype solutions, and conducting field assessments of next-generation technologies. The aim is to quickly develop (within 12-18 months) and transition (in an additional 12 months) technologies that fulfill at least 80% of operational requirements. These research and development (R&D) activities are responsive to current operational demands, emerging threats, new environmental conditions, and recent technological advancements. The process begins at Technology Readiness Level (TRS)-3 (proof of concept stage) and concludes at TRL-7 (ready for transition and commercialization), ensuring technologies are thoroughly tested and validated at various stages.

CURRENT INITIATIVES IN FRT FOSTERING FUTURE CAPABILITIES:

- **Real-Time Visualization for Indoor Firefighting:** Enhancing situational awareness in firefighting in low-visibility scenarios
- **Multi Spectrum Laser Detection System:** Advance detection and alert capabilities when encountering dangerous laser pointers
- **Aerial Communications Platform:** Drone communications platform for effective crowd control operations
- **Contactless Vehicle Stoppage:** Non-lethal, kinetic method to terminate law enforcement vehicle pursuits without physical contact. Thus, dramatically reducing property damage
- **Detect Presence of Life:** Through-wall radar detection technologies for tactical operations
- **Through-Walls Mobile Sensing:** Advancing through-wall radar technologies research to address motion challenges to improve capability for tactical operations
- **POINTER Phase II:** Continuing development in Precise Indoor Tracking and Navigation technologies

IMPACT: TRANSFORMING CAPABILITIES OF EMERGENCY RESPONSE

By rapidly developing, commercializing, and deploying advanced technological solutions, FRT's initiatives significantly enhance the capabilities of first responders at all levels. This enables them to effectively address an ever-evolving spectrum of emergencies, thus safeguarding communities and improving emergency management outcomes.

FRT R&D solutions are transitioned to commercial partners who leverage responder feedback to create affordable commercial products that truly meet first responders' operational needs.

PERFORMERS/PARTNERS

- Massachusetts Institute of Technology, Lincoln Laboratories, Lexington, MA
- MaXentric Technologies, Fort Lee, NJ
- Teledyne Scientific Imaging, Thousand Oaks, CA
- Qwake Technologies, San Diego, CA
- Cornerstone Research Group, Miamisburg, OH
- NASA Jet Propulsion Laboratory, Pasadena, CA