DHS Science and Technology Directorate

Geospatial Location Accountability and Navigation System for Emergency Responders

Know WHERE they are...

Precision Indoor Location and Tracking

The Geospatial Location Accountability and Navigation System for Emergency Responders (GLANSER) project is a part of the First Responder Technology Program within DHS S&T Directorate, Infrastructure Protection Disaster Management Division (IDD). The GLANSER project satisfies the Incident Management Integrated Projects Team's high-priority technological need for personnel monitoring. The project builds on previous efforts from S&T concept exploration of Advance 3-D Location System effort (RTAP BAA05-01 EH4) and the 3-D Visualization System to show First Responders and Assets within Building Structures in Urban Areas for Situational Awareness effort (SBIR06.02-005). The primary objectives of GLANSER are:

- Improve the precision of locating first responders during an incident in complex environments and in non-GPS environments (i.e. subterranean structures, collapsed buildings, sky-scrapers)
- Provide incident commanders the ability to accurately locate and track hundreds of personnel in real-time to rapidly and effectively re-deploy and save at-risk responders during an incident
- Increase situational awareness of the incident by providing a 2D/3D view of the building superimposed with the locations of the first responders and their status through a 2-way alarm/status communication feature.

Operational concept for GLANSER

This project saves the lives of first responders by allowing the Incident Command Post to track, locate, and direct teams to rescue at-risk/down personnel during emergency events. GLANSER increases responder survivability by allowing for quicker egress of an incident using logged track information. In addition, the system will provide HSPD-8 compliance through adoption of appropriate first responder equipment standards that support nationwide interoperability and other capabilities consistent with the national preparedness goals.

Key Contributions and Deliverables from Science and Technology

GLANSER will provide position information, alarms, communications, and visual presentations to incident commanders. Advances in science and technology from this project include developing technology to increase 3-D positional accuracy to within 3 meters in non-GPS environments, increase communication range in complex indoor non-line-of-sight environments, provide device operational life up to 6 hours, and to decrease overall package weight to less than 2 lb. Project deliverables include: wearable 3-D Locator Pack(s) for Responders; robust wireless mesh data network with 2-way alarm/status communications; and 3-D Visualization user interface product for responder's geo-referenced location and tracks for the Incident Command Post.

Customers, Users, Partnerships, and Stakeholders

The primary customer for this project is the Federal Emergency Management Agency (FEMA). When delivered, the system supports a multitude of State/Local Emergency Managers and First Responders, who are the ultimate end-users of the product. In addition, S&T is working to leverage existing efforts being done in the Department of Defense (DOD) and other agencies.

Transitioning technology to the Emergency Responder

The GLANSER system is being field-tested with numerous fire departments across the country to assess performance, reliability, ease of deployment and use, interoperability, and consistency with first responder procedures and equipment. Feedback from these field trials will be used to further improve the technology and packaging to make it feasible for commercialization. The initial strategy consists of FEMA endorsement of the product for use by end-users through Authorized Equipment List (AEL) and the Interagency Board (IAB) Standardized Equipment List (SEL). Also being discussed is procurement of the system through Commercial Equipment Direct Assistance Program (CEDAP) in FEMA.

Homeland Security

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To learn more about GLANSER, contact Jalal Mapar, Director RSD, at jalal.mapar@hq.dhs.gov

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