Data Upload Mechanism for First Responders

Homeland Security
Science and Technology

LACK OF SITUATIONAL AWARENESS

First responders lack the ability to quickly assess the layout of a building upon entry for rapid situational awareness. This prevents them from taking necessary precautions, potentially leaving them without necessary equipment and tools, and at a significant disadvantage when they arrive at a response scene.

Most North American municipalities have an outdoor Geospatial Informational System (e.g., ArcGIS) used for, among other things, coordinating dispatch of FRs to incidents. While such GIS applications do have the capability to import existing building floorplans as feature layers, they are almost impossible to implement at scale in a city. This is because the indoor environment changes far more frequently than the outdoors, requiring constant updates, and because indoor data is heavily fragmented. As such, a user-friendly indoor geospatial information system (GIS) for first responders does not currently exist.

SOLUTION: DATA UPLOAD MECHANISM

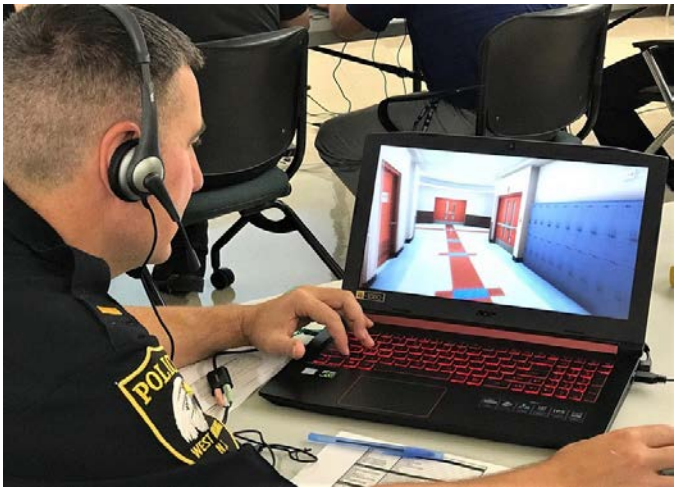
The Department of Homeland Security Science and Technology Directorate (S&T)'s Data Upload Mechanism project will deliver a cloud-based software prototype being developed by MappedIn Inc. that allows first responders to digitize, maintain, and access pre-incident floor plans from anywhere.

This technology will provide baseline floor plans and site safety information to provide operational context for tracking systems, HAZMAT response, augmented reality, and many other response applications. It will also complement S&T location and tracking technologies currently in development (e.g., POINTER) that use floor plans as inputs so commanders can keep tabs on responders when visibility is low or unavailable.

The prototype will also support incident planning, which is an essential element of effective response by any first responder agency.

SAFER RESPONSES, POLICY IMPLICATIONS

First responders will have the ability to know the layout and critical safety data of buildings. Ultimately, this will provide



safer environments for responders and more effective responses, resulting in lives saved (both civilian and responder) and reduced damage.

S&T will work with stakeholders at the state and local level, as well as insurance companies, to determine appropriate policies and procedures necessary for adoption of this life-saving technology.

UPCOMING MILESTONES

- API and SDKs: An application programming interface and software development kits that transmit applications providing situational awareness (Q4, FY21)
- Indoor GIS: An indoor GIS that automatically digitizes and simplifies raw floor plan files (Q1, FY 2022)
- Mobile Map Annotator: A mobile map annotator for surveys and data upkeep (Q1, FY22)
- Stand-alone Situational Awareness Dashboard: A stand-alone iPad and mobile web application that offers an off-the-shelf situational awareness dashboard for first responders (Q1, FY22)

PERFORMERS, PARTNERS, STAKEHOLDERS

MappedIn Inc., Waterloo, Ontario; University of Waterloo; San Bernardino (CA) County Fire and Police departments.