emesent

Decision support for CBRNe and hazmat incident management

Real-time situational understanding

Chemical, Biological, Radiological, Nuclear, and explosive (CBRNe) incidents and threats with the potential to cause mass disruption and casualties are increasing. Hovermap capability delivers immediate visibility that supports and accelerates decision-making whilst reducing risk to personnel - from mission planning to building rapid situational awareness at an active scene, through to change detection and post-mission analysis.

Hovermap is a smart mobile payload that combines simultaneous localization and mapping (SLAM) techniques using light detection and ranging (LiDAR) to provide both mapping and autonomy functions. Highly accurate, easy to use and uniquely versatile, Hovermap can be attached to a drone, robot, vehicle or pole, as well as used as a handheld scanner. Every scenario is unique, so this offers the flexibility to immediately deploy the one device in different ways depending on on-scene requirements.

- → Detailed, accurate 3D model of a geospatial environment for analysis and planning
- → A 360° representation of the scene captured and visualized in minutes
- → Exact measurements and actionable insights
- → Real time visibility of routes and risks
- → Works in zero-light environments

Vital scene information in minutes

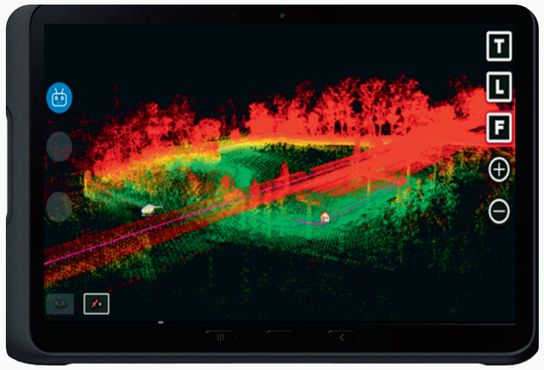
Hovermap can be used handheld or body worn by operators to enrich understanding of potential, perceived, and actual risks and aid task planning. An automated scan can deliver a 2D floor plan within minutes and a fullresolution 3D representation of the scene soon after, accelerating analysis, enabling better definition of operator tasks, and improving risk assessment. The plan can then be used to visually brief teams on the ground and remotely, ensuring common understanding and optimizing workflow efficiency.

Emesent Hovermap can operate in complete darkness without impacting scan quality. The accuracy of the geospatial data captured uncovers additional insights, such as whether an entire scene has been accurately scanned or areas that have been purposefully hidden, for example a false wall. Additionally, areas with different reflectivity can be highlighted, such as areas of contamination from an oil or chemical spill that otherwise may not be clearly visible.

Extended capabilities

World-leading SLAM (simultaneous localization and mapping) techniques, with Emesent's advanced algorithms, further extend Hovermap's capabilities to provide autonomous data capture using unmanned systems, while keeping a safe distance from hazards and allowing accurate mapping even when GPS is not available.

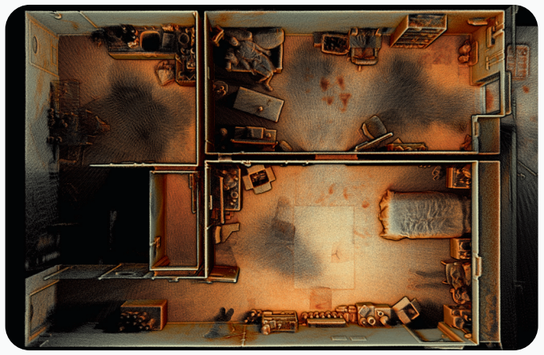
Applications for CBRNE incident management



Real-time situational awareness

Real-time visibility of personnel or asset location and routes taken in 3D representation to increase situational awareness in unknown or complex environments.

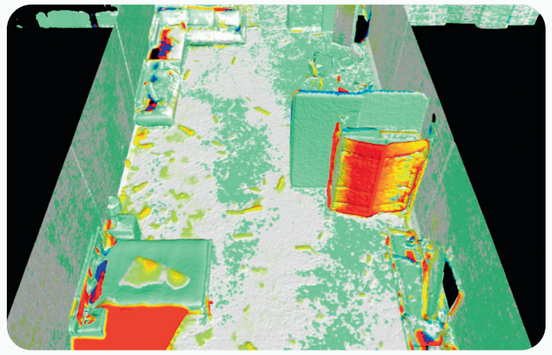
- → Visualize live 3D geospatial environment
- → Overlay the route taken by personnel/asset whilst tasks are carried out
- → Gain immediate intelligence to help determine mission priorities and approaches to apply to the scene
- → Map the safe route for subsequent teams to follow
- → Enable teams to retrace their steps safely in complex environments
- → Accelerate understanding of the complete geospatial environment, including entire layout and rooms, as well as highlighting missed areas



Rapid scene analysis and quantified decision making

Accelerated workflow efficiency and enhanced visibility that drives improved, quantifiable decision-making and safer missions, including CBRNe Forensic scenes.

- → Immediate access to vital scene information for fast, informed mission planning decisions:
  - → 2D floor plan within a couple of minutes of scanning
  - → Full-resolution 3D geospatial environment (point cloud) available immediately.
- → Higher accuracy point cloud within 10-30 minutes.
- → Hands-free data collection, with body-worn payload that can be remotely configured and managed
- → Overlay information or add annotation to present a comprehensive visual picture to teams on the ground, as well as remote stakeholders
- → Gain exact measurements to aid assessment, such as distances and widths, as well as volumetrics
- → Identify areas that may have been missed, such as hidden spaces or areas that don't align with plans



Change detection

Easily identify changes to the environment over time, from the scene on arrival to post-collection of evidence.

- → Compare scans to see what's changed and how.
- → Capture potential cross-contamination events.
- → Automatically record changes during examination of highly complex scenes where various materials and objects are commingled.
- → Time-stamp to preserve chain of evidence.
- → EOD/Bomb response can easily see where evidence is located post-blast or disruption.

Roadmap to autonomous applications

As capabilities advance, multi-sensor integration into autonomous robots such as Spot will be refined, further improving response while keeping personnel safe.

- → Utilize Spot as a sniffer dog, actively searching for stronger readings until it identifies the source of contamination
- → Deploy a team of robots working collaboratively to take sensor readings and use thresholds to identify unsafe areas, enabling the establishment of a virtual cordon

"Hovermap's 3D LiDAR technology can be incorporated into 7 of the 12-step CBRN crime scene process: approaching the scene, securing and protecting the scene, the reconnaissance survey; photographing the scene; scene diagram; searching; and the final survey."

— Christina M. Baxter, Ph.D. | Emergency Response TIPS, LLC

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About Emesent

Building on a decade of pioneering research at the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Emesent offers state-of-the-art autonomous SLAM-based LiDAR mapping and data analytics solutions specifically designed for challenging and GPS-denied environments.

Providing fast, accurate and long-range scanning, Emesent Hovermap helps businesses map the unknown, minimizing operational downtime while improving worker safety.

To find out more, visit us at:
www.emesent.com/industry/public-safety/

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