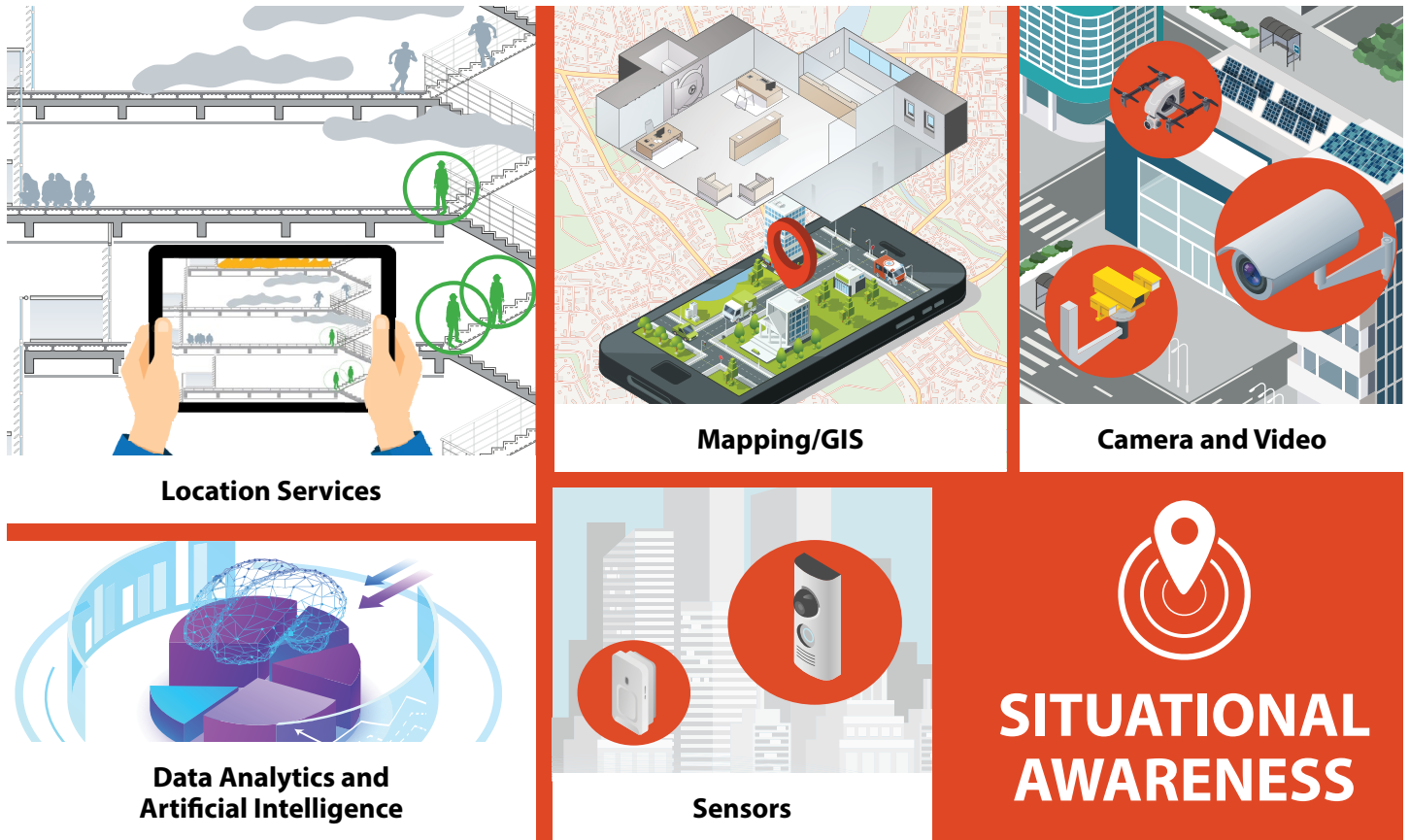


ROADMAP DOMAIN: SITUATIONAL AWARENESS



The Vision

The FirstNet Authority envisions real-time access, collection, and distribution of information concerning personnel, threats, hazards, and conditions in a manner tailored to public safety operations.

Domain Overview

Public safety agencies across the nation have access to an unprecedented amount of ever-increasing information as technologies evolve and sensors proliferate. Situational awareness refers to the ability to aggregate and synthesize that information in real time from multiple sources (e.g., humans, machines, sensors) and derive and present actionable insights to public safety professionals. The FirstNet network provides access to technology capabilities that can automatically collect and analyze data, provide operationally relevant insights, and enable quick decision-making under a variety of challenging or difficult circumstances.

The FirstNet Authority approaches situational awareness with both a near- and long-term technology evolution perspective. Various capabilities are expected to emerge in the coming years associated with situational awareness that may have a significant impact on the effectiveness, safety, and health of the first responder community. The Internet of Things, cameras, data from other applications and networks, and sensors continue to produce increasing amounts of data. Artificial intelligence and data analytics are envisioned to be increasingly important mechanisms to assist public safety in making timely and more informed decisions. The ability to distill useful information from massive amounts of data, prioritized and effectively presented to first responders, helps ensure the right people receive the correct information, when they need it.

Roadmap Priorities for Situational Awareness

The FirstNet Authority will prioritize the following areas in alignment with stakeholder contributions and the prioritized needs of other Roadmap domains.

- **Locate and Present Personnel Location:** Promote technology solutions that provide accurate locations of first responders and the ability to display that information through effective mapping and visualization.
- **Location Services Integration:** Promote the integration of x-, y-, and z-axis data with 3D mapping solutions and with public safety's existing technology platforms.

Key Technologies and Solutions that Impact Situational Awareness

- **Location Services:** Solutions using geographic and position data to provide information to users, such as the physical whereabouts and tracking of personnel, vehicles, and other assets.
- **Mapping/Geographic Information Systems (GIS):** Maps can be two-dimensional or three-dimensional and represent a particular physical area of outdoor or indoor topology. They provide context to the location of a specific object, person, or place for situational awareness and are often annotated with specific data, such as responder/asset location, potential hazards, and relational information between personnel or assets.
- **Cameras and Video:** Devices that capture still images and/or video (e.g., fixed, temporary, portable, vehicle-mounted, worn, airborne) and present that data in nearly real time or through access to archived/historical data.
- **Data Analytics and Artificial Intelligence:** Automated processes to inspect, cleanse, transform, and model data with the goal of discovering useful information and supporting public safety's decision-making, as well as perform or assist tasks that normally require human intelligence (e.g., object recognition, speech recognition).
- **Sensors:** Devices that collect, process, and transmit data from various sources (e.g., smart buildings, weather sensors, traffic sensors, environmental sensors, biometric sensors) to provide insight into existing conditions and monitor personnel health and safety.

Public Safety's Take on Situational Awareness

- Location services, including vertical location (z-axis), is a priority for public safety and must be presented in a way that is easily consumable.
- The public safety community needs tools to process large volumes of data and turn that data into useful, actionable information that can inform decision-making processes and combat information overload for first responders.

Key Takeaways from the FirstNet Authority's Analysis of Learnings from Stakeholders

- Today's market offers many solutions for tracking first responder vehicles but does not adequately address the public safety community's requirements for locating individual personnel in a three-dimensional environment.
- Indoor mapping technologies that include z-axis (vertical location) are not widely available to meet the community's needs. As indoor 3D location becomes available, situational awareness/mapping platforms must effectively integrate and present this information.
- Cameras and sensors are becoming increasingly ubiquitous; there is a need to focus on integrating the location data from these various sources into existing data visualization platforms that reduce information overload and facilitate effective decision-making.
- Actionable information will need to be presented to first responders or decision makers in easily digestible, non-intrusive formats that fit the given situation.



*Public safety engagements that addressed Situational Awareness
(October 1, 2019 – September 30, 2020)*