

# PSTA Situational Awareness Technical Subcommittee Initial Report

## Background

With the availability of broadband wireless networks to public safety on a nationwide basis, we are seeing multiple new and different platforms coming to market to enable improved situational awareness across public safety disciplines. In an effort to ensure continued innovation and promote interoperable solutions, the Situational Awareness (SA) Subcommittee was formed to focus on defining and recommending a common set of standard APIs and interface structures to make the situational awareness construct for public safety users easy to implement and integrate into existing systems. Because SA, by definition, encompasses multiple functionalities and operational disciplines, the SA Subcommittee has coordinated with other relevant PSTA subcommittees in developing its recommendations.

## Situational Awareness

Effective situational awareness allows public safety to communicate, collaborate and coordinate in dynamic, unknown response scenarios across multi-disciplinary and operational functional roles. The key to the success in the use of situational awareness tools is enabling public safety to leverage those tools best suited to their needs without concern that such choices will undermine their ability to interoperate across tools and platforms both within and across agencies. It is thus incumbent upon industry to bring to market new tools, platforms and technologies that can work together and interoperate so public safety is not forced to make compromises that may put their mission at risk. The PSTA Situational Awareness Subcommittee has thus established a series of initial recommendations regarding key parameters and terminology that all Situational Awareness platforms should incorporate along with those common use cases considered in establishing its proposals.

## Initial Recommendations

The SA Subcommittee submits the following initial recommendations:

1. Symbology
  - a. Recommending industry and public safety follow the symbology as set forth in the National Alliance for Public Safety GIS (NAPSG) - <https://www.napsgfoundation.org/all-resources/symbology-library/>.
  - b. A common language and symbology are essential to ensure that all public safety users are able to consistently identify key landmarks and information across platforms. The NAPSG Foundation has been working with the US Department of Homeland Security (DHS) to bridge gaps in existing incident symbology by developing a consistent incident symbology framework, guideline, and symbol set for use at the incident level on maps and in GIS applications.
  - c. NAPSG equips public safety with the key geospatial tools and knowledge. NAPSG is a 501C3 non-profit organization actively building the capacity of emergency responders

and public safety leaders to use geospatial tools and technology that enhance mission critical decision making. All of their programs are led by local, state and tribal practitioners. The NAPSG Foundation was established as a supporting organization (though independent) to the National Alliance for Public Safety GIS (Alliance), with whom they share a common mission and objectives. The Alliance is a consortium of national organizations which represent local government, public safety, and health professionals with a shared vision of advancing the effective use of GIS for public safety. It is guided by a steering committee comprised of one member from each of the eleven partner organizations. The partner organizations in the Alliance are as follows:

- Center for Public Safety Excellence
- International Association of Emergency Managers
- International Association of Fire Chiefs
- International Association of Fire Fighters
- International City Managers Association
- Environmental Systems Research Institute
- National Association of City and County Health Officers
- National Association of State Fire Marshals
- National Emergency Number Association
- National Fire Protection Association
- Major Cities Chiefs of Police Association

## 2. Data Formats

- a. Recommend use of the National Emergency Number Association (NENA) standards where they apply.
  - i. The NENA Detailed Functional and Interface Standards consider all wireline, wireless, and other types of networks with IP interfaces, including IP Multimedia Subsystem (IMS) networks, and addresses the common interface to the ESInet/Next Generation Core Services, to be used by all types of origination networks or devices.
  - ii. NENA is an ANSI-accredited standards developer that has been working for years to support standards development for public safety communications. NENA's mission includes research, standards development, training, education, outreach and advocacy for 911 systems and 911 professionals. As a non-profit formed in 1982 to help drive interoperability and standards around emergency calling.
- b. Recommending use of Open Geospatial data standards
  - i. <http://www.opengeospatial.org/standards/geopackage>
  - ii. A GeoPackage, by the Open Geospatial Consortium (OGC) is an open, standards-based, platform-independent, portable, self-describing, compact format for transferring geospatial information. The GeoPackage standard defines the schema for a GeoPackage, including table definitions, integrity assertions, format limitations, and content constraints. The required and supported content of a GeoPackage is entirely defined in the standard and we believe to be a comprehensive approach to the sharing of mapping data.
  - iii. The Open Geospatial Consortium (OGC) created the GeoPackage to solve the needs of industry to meet the needs of public safety and other high intensity

- users of GIS information.
  - iv. OGC is an international consortium of more than 526 businesses, public safety and government agencies, research organizations, and universities driven to make location information and services FAIR – Findable, Accessible, Interoperable, and Reusable. They are widely respected as the global forum on location.
- c. Naming Conventions
- i. Recommend use of the National Information Exchange Model (NIEM) in establishing a common naming convention schema across public safety.
  - ii. NIEM is a common vocabulary that enables efficient information exchange across diverse public and private organizations. NIEM connects communities of people who share a common need to exchange information in order to advance their mission - <https://www.niem.gov/>
  - iii. NIEM is an outgrowth of the US Department of Justices Global Justice XML Data Model project. Many public safety agencies at the local, state, and federal level have adopted the Global Justice XML as well as the NIEM.
  - iv. NIEM is designed to facilitate the creation of automated enterprise-wide information exchanges which can be uniformly developed, centrally maintained, quickly identified and discovered and efficiently used.
- d. Standard Data Vocabulary
- i. Recommend use of Project Open Data to address a common set of open standard metadata data sets and APIs for use by both federal and state agencies- <https://project-open-data.cio.gov/v1.1/schema/>
  - ii. There are a significant number of open standard data tools available to public safety and industry at <https://project-open-data.cio.gov>.
  - iii. Many of these are ready to use solutions or that that will help agencies leverage open data and use a uniform data vocabulary.
  - iv. If agencies and vendors supporting public safety leverage the standard metadata sets, we will be building and supporting solutions that are inherently operable.

## Use Cases

Through SA Subcommittee discussion, it was determined that given the significant breadth of the concept of Situational Awareness, the most pragmatic way to provide useful and implementable recommendations for Situational Awareness was to consider certain specific use cases for fire, law enforcement and EMS.

In each case, it was agreed that addressing the needs of routine use cases that would occur daily would provide useful direction and highlight the need and impact of situational awareness tools and capabilities for most of the day to day situations. This is not intended to exclude other critical incidents, but instead to provide a manageable and rational focus in an area that is very broad in scope.

Below is a series of questions for public safety that were used to identify these relevant use cases:

Introduction: For your particular public safety discipline, please respond to the following questions by considering a real-life scenario in which you were involved where situational awareness was important to the outcome.

- Please write a short narrative of the scenario to help the Subcommittee fully understand the situation and how situational awareness tools would enhance your effectiveness.
- In this scenario, what are the key pieces of information that were not available to you, but if available, would have potentially assisted with the outcome?
- What information in particular would have helped prior to your arrival at the incident?
- What information, tool or capability may have helped during the incident?
- In this scenario, what are the common technology tools you have access to and typically use?
- What other tools would be useful to have at your disposal in order to effectively prosecute your duties to effectuate the desired outcome?

## Discipline Specific Results

Below are specific use cases / scenarios in each of the three major public safety disciplines where situational awareness has the greatest operational impact.

### I. Fire

- Calls for service including wildland and structural fires, motor vehicle and other accidents, hazmat, fire alarms, etc.
- SA Considerations
  - Location of Personnel, including (x, y and z measurements)
  - Identification of the skills and equipment personnel possess on scene?
  - Measurement of biometrics, including heart rate, and other vitals
  - Structural building blueprints and other information
  - Hazardous material information
  - Location of victim(s)
  - Location of bystanders
  - Location of other public safety personnel
  - Geospatial location of relevant calls for service

### II. Law Enforcement

- Calls for service including domestic violence, traffic accidents, patrol traffic stops, active shooter, special units (gang, vice, narcotics, task forces, special events, detectives), multi-agency (city/county/state/federal), rapid updates for evolving situations, warrant service, etc.
- SA Considerations
  - Location of personnel, including (x, y and z measurements)
  - Identification of the skills and equipment personnel possess on scene?
  - Measurement of biometrics, including heart rate, and other vitals
  - Location of victim(s)
  - Location of bystanders

- Suspect identification (including criminal history)
- Vehicle identification/history
- Neighborhood/home/structure information and background
- Known criminal associates
- Location of other public safety personnel / back-up
- Geospatial location of relevant calls for service
- Other situational awareness data desirable on calls for service

### III. Emergency Medical Services

- Calls for service including 911 medical calls (with and without law enforcement and fire support), community paramedicine, ET3, interhospital transports, etc.
- SA Considerations
  - Intelligent Routing
    - How to determine where to transport the victim based on medical condition.
    - Ensuring sending of the right resources and capabilities
  - Multi-Jurisdictional Call coordination – who is responding, with what capabilities, and ETA
  - Real time ambulance to Hospital ETAs
  - Real time patient status (ability to transmit/receive real time patient data; telemedicine, etc.)
  - Patient histories
  - Hazardous material information
  - Victim numbers and status
  - Command post/triage status

### Conclusion

Above we covered recommendations on symbology and data formats for situational awareness solutions for public safety with our initial recommendations from the PSTA technical subcommittee. This is a good start on a very complex subject.

We are seeking feedback on the recommendations and plan to take this subcommittee to the next level based upon feedback on the specific use cases / scenarios in each of the three major public safety disciplines where situational awareness has the greatest operational impact. We will also be looking at open standard APIs that would be of the most value to improve situational awareness for real time public safety operations.