5 Ways GIS Empowers Next Generation 911

with Location Intelligence Modernizing Computer-Aided Dispatch

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PSAPs Facing Rapidly Changing Demands

Public Safety Answering Point (PSAP) workflows and personnel determine both the reliability of location information used by first responders and the speed at which it is delivered to ensure an appropriate response to calls for service.

Around the world, emergency dispatch centers are grappling with how to migrate outdated analog systems that are not capable of processing today's complex mobile technology. Next Generation 911 (NG911) call taking embraces text messaging, video, phone calls, and sensor data for better location awareness and information sharing. Whether indoors or outdoors, migrating existing systems to digital solutions will provide more accurate location data and improve the transfer of critical information to first responders, even inside a high-rise building.

Recently, in the United States, the Federal Communications Commission (FCC) reported that during the days following Hurricane Irma, 29 of Florida's emergency 911 centers were unable to provide adequate service—such as timely response and adequate resources. This breakdown sparked a response by Senator Bill Nelson of Florida and Senator Amy Klobuchar of Minnesota, who have sponsored legislation designed to enhance and upgrade—through expedited funding—NG911 systems across the United States.

Five Challenges of Current Computer-Aided Dispatch Systems and Strategies

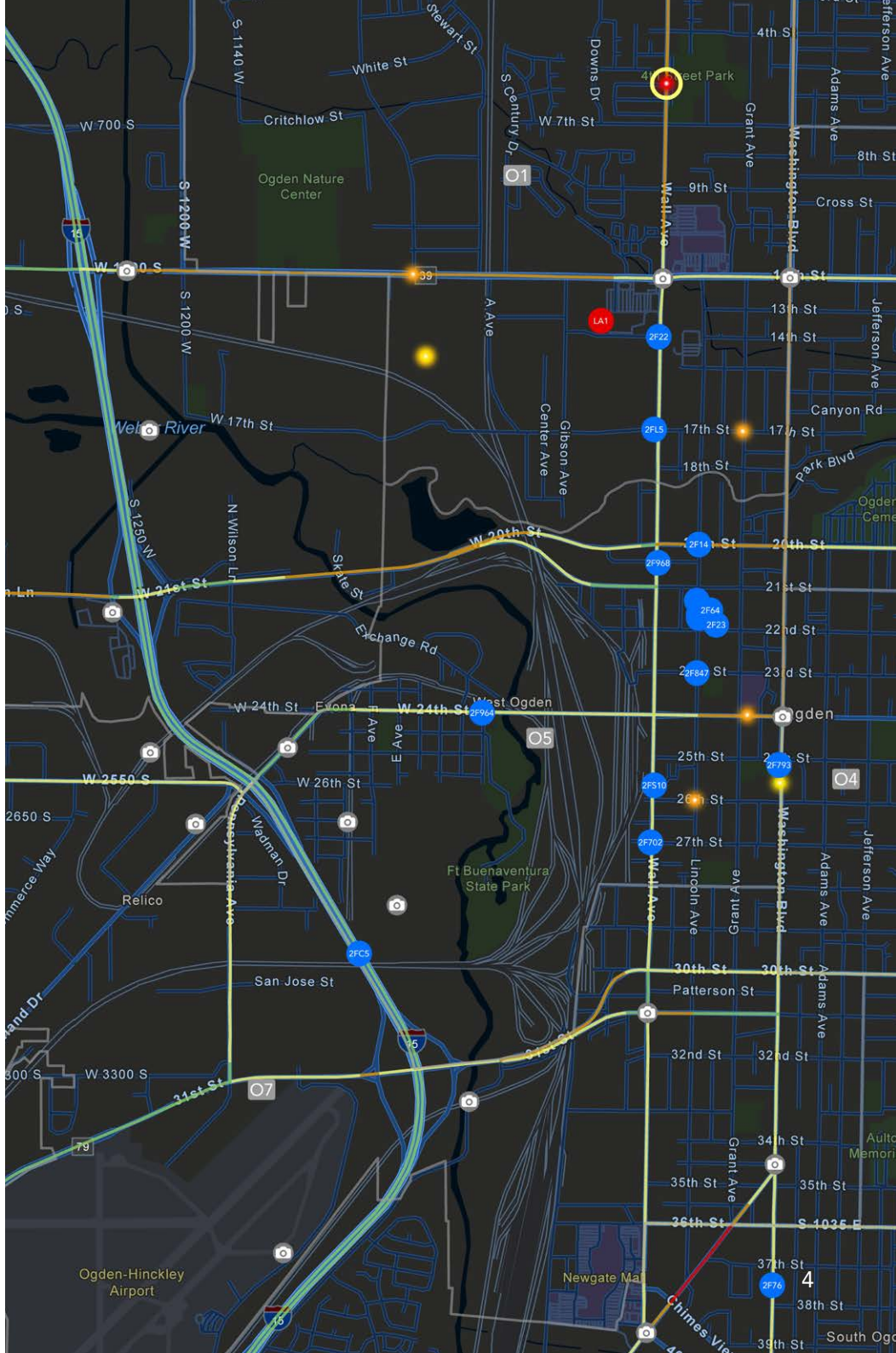
Manage Address Data–Most PSAPs rely on hierarchal datasets, manually uploaded into the CAD system with information like addresses, service districts, or jurisdictional boundaries. Parcel property data changes daily (in some locations, dozens of times each day). Esri has created the Address Data Management solution, which embraces next generation call-taking requirements and shares best practices for real-time digital transference of data, keeping decision-makers up-to-date.

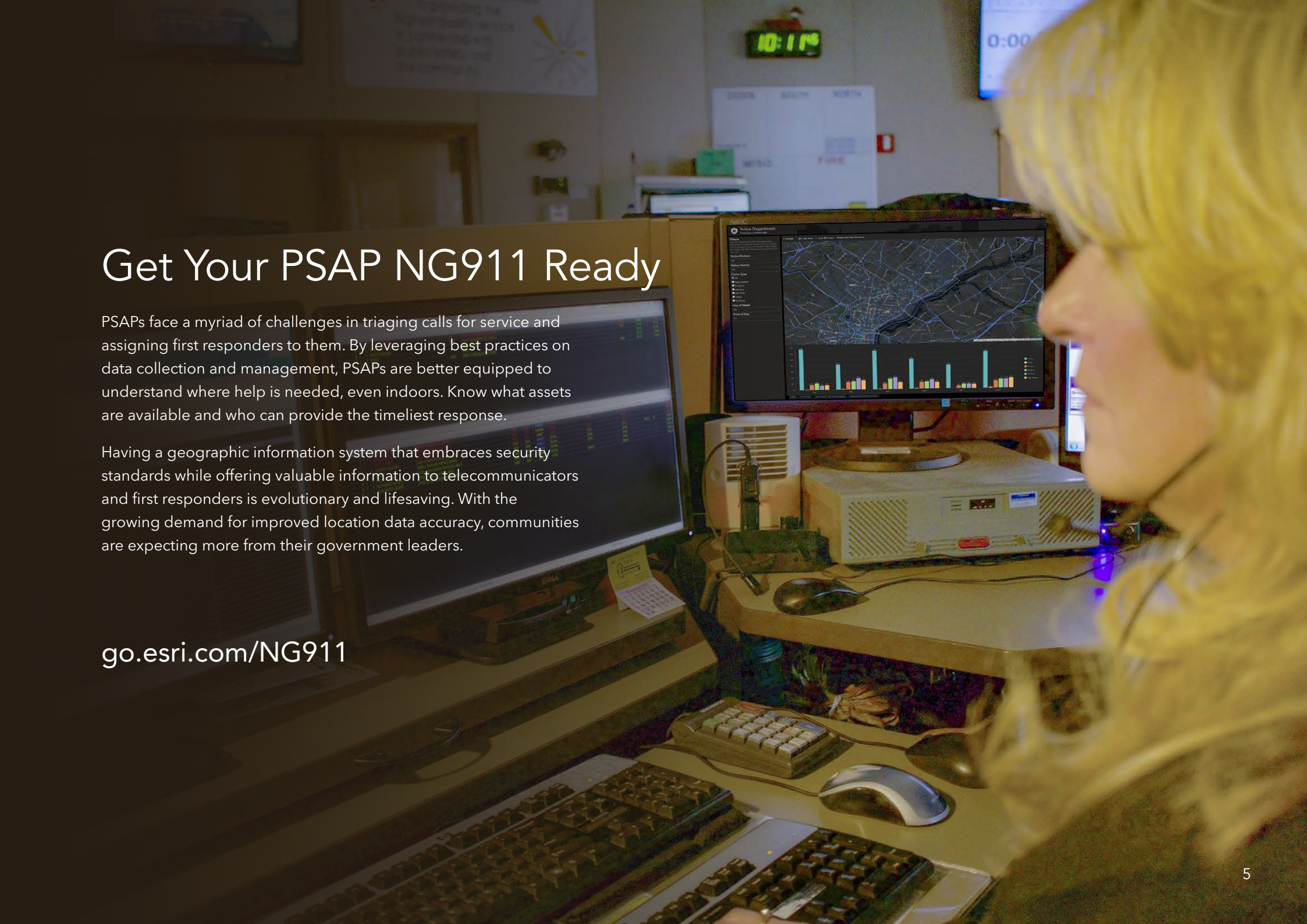
Secure Management and Data Sharing–Sharing address and other types of geographic information system (GIS) databases can be tricky. ArcGIS Hub provides a framework where PSAPs can create, maintain, store, and share important information securely. Data integrity can be maintained by the owner and shared with appropriate stakeholders. ArcGIS Hub can serve as a communications portal for PSAP personnel and provide real-time updates as they happen.

Migrate 2D and 3D Data to Be NG911 Ready–With the introduction of z-axis (elevation) information in the 911 call, PSAPs must now be able to understand location information in 2D and 3D. Additionally, the FCC ruling on location accuracy and indoor routing requires the ability to build, maintain, and understand indoor networks. ArcGIS brings analytics and visualization into the PSAP, allowing your data to be NG911 ready.

Empower First Responders with Mobile Capabilities–PSAPs, public safety commanders, and first responders need tools that make communication and collaboration possible in traditional and preemptive broadband networks. Easy-to-configure apps like ArcGIS Field Maps and ArcGIS Dashboards are changing how information flows into and out of the field.

Analyze PSAP Data for Better Decision-Making–Having visual insight into your data makes command decisions easier. Examine your data in real time with charts and graphs and on interactive maps with ArcGIS Insights.





Get Your PSAP NG911 Ready

PSAPs face a myriad of challenges in triaging calls for service and assigning first responders to them. By leveraging best practices on data collection and management, PSAPs are better equipped to understand where help is needed, even indoors. Know what assets are available and who can provide the timeliest response.

Having a geographic information system that embraces security standards while offering valuable information to telecommunicators and first responders is evolutionary and lifesaving. With the growing demand for improved location data accuracy, communities are expecting more from their government leaders.

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Ensure that First Responders Arrive at the Right Location

Build, Maintain, and Share an Authoritative Address Database

The foundational component of any successful computer-aided dispatch system is the address database. With the Address Data Management solution, building, managing, and accessing an accurate address database has never been easier. Most CAD solution providers rely on static data that is periodically updated for address validation, resource availability, and routing, but this approach is not ideal for first responders, who need up-to-date information to respond when needed. Communities evolve quickly; location information like addresses, new neighborhoods, and infrastructure changes impacts the way first responders react. Having direct connections to the data source eliminates the shortfall created by static data, resulting in authoritative updates that are immediately available to telecommunicators and first responders. With ArcGIS, agencies can choose from a multitude of up-to-date, informative, and interactive basemaps—including topographic, street, terrain, and aerial imagery—or use customizable maps for nighttime viewing.

> *"From a 911 standpoint, [the address database] allows us to locate people in need much quicker than what we did [previously]. When a person dials 911, it actually comes up on our map so that we can pinpoint [their location], which makes it much easier for us."*
>
> —Joseph L. Thomas
> Director
> Emergency Operations Center
> Sussex County, Delaware

Routing Emergency Calls to the Correct PSAP

Safely Share Authoritative Data to Communicate with Dispatchers

Each year, thousands of calls for emergency service need to be redirected to the appropriate call center for assignment. Next generation call taking (911, 112, etc.) is designed to reduce and eliminate this negative by-product of outdated call-taking infrastructures. While this migration occurs, agencies can immediately benefit from improved strategies and automated processes to manage and expand street centerline data and gain insight into national PSAP locations and service districts.

PSAPs around the world are using location intelligence to manage service districts and seamlessly share authoritative data without exposing it to corruption. This means that PSAPs that receive a 911 call outside their jurisdictional boundary can quickly identify where the caller is located, which PSAP is appropriate, and how to contact it to forward the call. As NG911 evolves, these automated services will lean on the geographic data that can be built today so that telecommunicator interaction is minimized in the transfer.

Providing Location Awareness and Indoor Routing

Utilize Location Data from Wireless Service Providers

Migrating your existing 2D data to 3D can be intimidating. Esri provides solutions to streamline this process and help you prepare for z-axis information being released by wireless service providers as part of the FCC ruling on location accuracy and indoor routing. This ruling will drive future development and adoption of 3D location strategies in PSAPs for improved location accuracy. Three-dimensional data opens the door to interior routing with improved location accuracy through Wi-Fi, Bluetooth, and emerging communications technologies. When coupled with 3D maps and floor plans, PSAPs will be able to route first responders more reliably, even indoors.

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Consuming Real-Time Information for Situational Awareness

Monitor, Track, and Access Key Operational Factors

Shifting your analytical approach from reactive to proactive helps maximize resources and expedite response times. Analyzing real-time data like live weather or traffic feeds from sensors and Internet of Things (IoT) systems can help you anticipate potential issues, reducing risk and improving services. For example, analyzing current traffic and weather data can improve first responder travel routing and reduce response times. Using proactive analytics results in more effective resource allocation, saving you time and money. Integrating new technologies like drones to collect data or leveraging smartphones and tablets to transform your field communications can help first responders answer critical questions. In effect, you'll be providing more services and doing it more efficiently.

"Using an integrated platform for data sharing has really allowed us to create a common operating picture so that all of our responders from police, fire, emergency medical services, and state and federal agencies have the same situational awareness."

—Tony McDowell
Fire Chief
Henrico County, Virginia

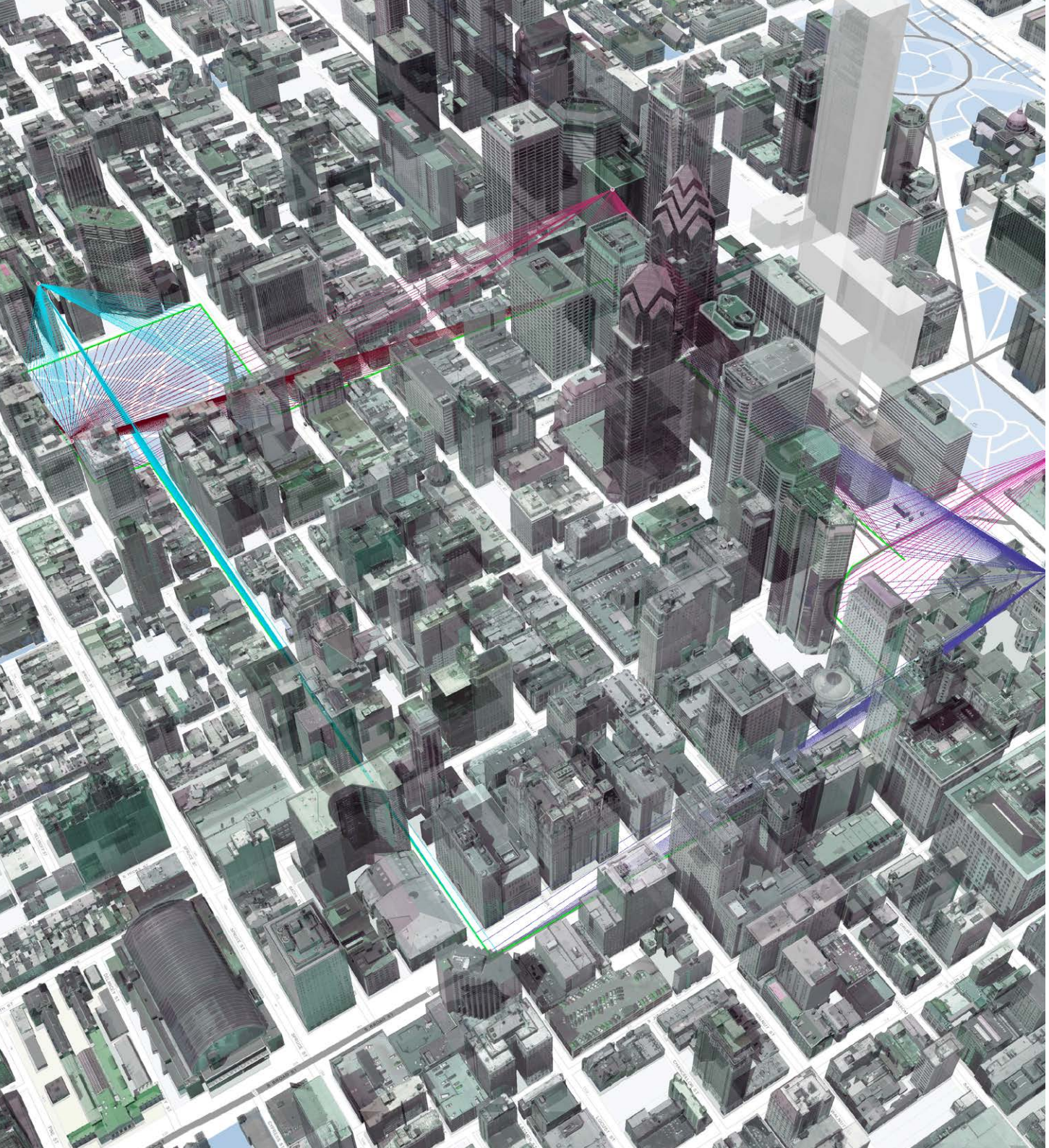
Embracing Location Intelligence in the PSAP

Web Applications for Field Interaction and Reliability

Generally, CAD solutions do not provide operational views with included content such as weather reports, live traffic conditions, or internal services such as road closures and major event plans. With Esri's configurable templates, PSAPs can develop viewers for specific events, overall operational understanding, or public information–gaining greater insights by using contextual tools to analyze and visualize data. It is then possible to share insights and collaborate with others via apps, maps, and reports, and ArcGIS will help you overcome any geospatial challenge that comes your way. You can host an application in ArcGIS Online, or it can reside on your own organization's server, even using third-party resources like Amazon Web Services or Microsoft Azure.

"When we have actionable data available to first responders and officers, they often better engage with the community. This, in turn, encourages residents to become more involved within their own communities."

—Kimberly Richards
Senior Crime Analyst
Fayetteville (NC) Police Department



Improving NG911 with Location Intelligence

The emergence of increasingly connected and powerful geospatial capabilities helps PSAPs tackle the challenging landscape of Next Generation 911.

Making location intelligence a key part of workflows in the PSAP will improve location data management and accuracy, resulting in better decision-making in the field or the command center.

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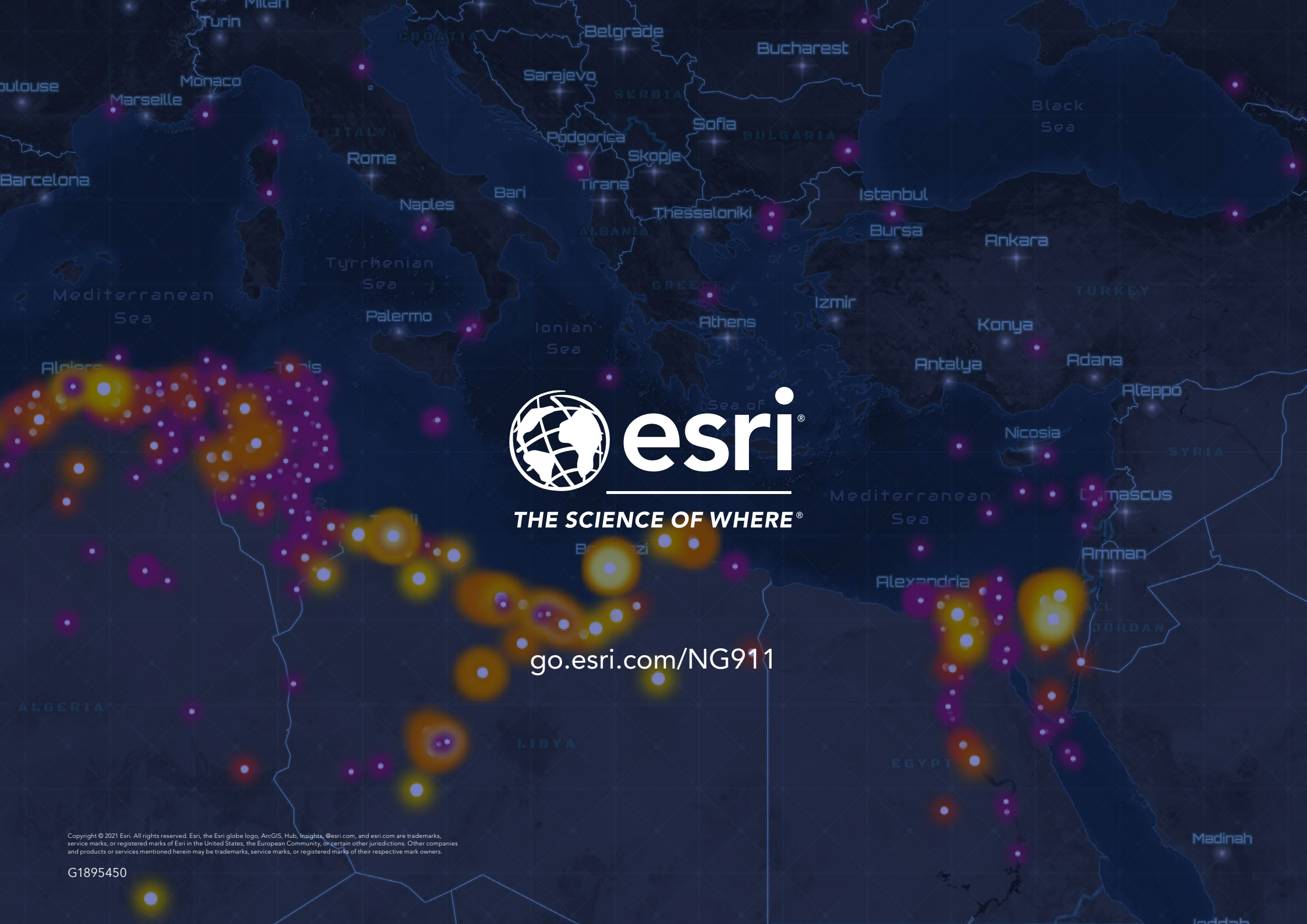

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