

## January 2020 Newsletter

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### Defining the Z Axis for Indoor Location

Fire fighters, medics and police officers often struggle to locate 9-1-1 callers inside multi-story and high-rise buildings unless the caller provides detailed information including a floor number, a room number, a suite number or some other relevant location information. This may lead to delays in locating and assisting the caller with their emergency. Wireless Phase II systems, which are widely deployed across the country, provide accurate X-Y coordinates to locate a 9-1-1 caller on a map. However, this location information has limited utility inside a multi-story building, especially one that has many floors. In these situations, the vertical component of the caller's location, or Z axis, is crucial to finding the caller quickly. The Z axis, expressed as height above ground or elevation above sea level, is not currently provided with most 911 calls.

The availability of more accurate location fixes for 911 calls, which include the Z axis is expected to increase significantly thanks to recent action by the Federal Communications Commission (FCC). On November 22, 2019, the FCC adopted rules requiring wireless carriers to deliver 9-1-1 calls with a Z-axis metric that is accurate within three meters (or approximately 10 feet) for 80% of the indoor (wireless) 9-1-1 calls. Carriers must meet this requirement in the top 25% of the US markets by April 3, 2021, and in the top 50% of the US markets by April 3, 2023 (<https://ecfsapi.fcc.gov/file/11250618222682/FCC-19-124A1.pdf>). The FCC also adopted a Further Notice of Proposed Rulemaking ("Further Notice") in which it asks if the Commission should adopt a more stringent longer term requirement and if the FCC's rules should be changed to provide carriers with alternative options for demonstrating how they satisfy the 3 meter requirement.



The Public Safety industry has largely been supportive of the FCC's ruling.

**NENA** has stated: "The Z-axis metric put in place by today's vote – the same metric agreed upon by industry and public safety – is both technically feasible and necessary for 9-1-1.

These rules lay a rock-solid foundation for innovations in location accuracy, mapping, and addressing. Just as important, the questions posed by the FNPRM [Further Notice

of Proposed Rule Making] are thoughtful and important; they raise critical-path issues that public safety, industry, and government will tackle collaboratively during the coming months. This extensive collaboration will be absolutely necessary to develop a comprehensive, interoperable, future-proof system for accurate, actionable, seamless three-dimensional location accuracy for 9-1-1."

The International Association of Fire Chiefs agreed, stating that a three meter Z axis metric not only provides emergency responders with actionable location information, but it also gives the public greater assurance that when they dial 9-

**Winbourne Consulting** offers a full range of public safety services, including strategic planning, systems integration, specifications development, solution acquisition, and implementation project management and quality assurance.

**Our Areas of Expertise encompass all segments of Public Safety, including:**

- PSAP Consolidation
- NG911 Strategic Planning and Implementation
- Public Safety Communications and Telephony
- Public Safety Applications and Systems Requirements and Implementation Support
- Mission Critical Facilities Design and Fit-Out
- 311 Call Centers and Implementation
- PSAP Staffing and Operations Analysis

1-1 from their cell phones, emergency responders can find them more quickly.” It added that the Order “represents the culmination of many years of dedicated work to achieve a three meter z-axis metric.”

However, **APCO** does not agree, stating that “The new 911 location regulations fail the citizens of the United States. The Commission delivered a major win for wireless carriers and the one or two companies that can be used to fulfill these new regulatory requirements. The Commission had the responsibility to do the right thing for our citizens’ safety. Instead, the Commission is giving the carriers a pass, failing the American public, and leaving many issues unresolved that will ultimately cause its plan to fail. Lives will be lost as a result.” APCO had advocated that any Z-axis rules require wireless carriers to provide at least floor-level location information, and it believes that a three meter standard does not meet that requirement.

The Public Safety industry broadly agrees that there is a need for a Z-axis or elevation component to the X & Y coordinates being provided today, and they agree that the Z-axis needs to be actionable. However, there are differences of opinion on how this information should be displayed for use by first responders.

In order for the Z-axis or elevation information to have real value for Public Safety X, Y & Z coordinates must be available from the carriers and the coordinates then need to be plotted onto a building’s electronic layout or architectural drawings in order to be useful. This objective will be best achieved by the business owners, city permits departments, and the fire departments working together in order to capture all of the relevant information about a structure including elevation of each floor and sub-floor, as well as the layout of each floor and sub-floor. Having this information in an electronic format that is readily available to PSAPs is critical in making the Z-axis/elevation information actionable and useful for dispatchers, first responders and citizens.

Following are some of the issues that need to be overcome to make the Z-axis or elevation functional for PSAPs and Public Safety in general:

- PSAPs today generally cannot take the raw Z-axis numbers in height above ellipsoid and translate them into actionable dispatchable-location information.
- Once PSAPs obtain the ability to translate the Z-axis into a vertical location, that vertical location must then be applied to the architectural drawings of the multi-story or high-rise building in order to be useful to first responders.
- The building’s architectural drawings or electronic building layouts must be augmented to include X, Y & Z for offices, hallways, elevators, exits, escape steps, storage/utility rooms and bath rooms, and this information must be made available to PSAPs and first responders.
- Extensive mapping is necessary to translate Z-axis coordinates into floor levels, as floor height and numbering systems can vary—for instance, many hotels and other buildings do not have a 13<sup>th</sup> floor.
- There are other factors that need to be considered, such as if the floor from which the 9-1-1 call came from has collapsed during a fire or earthquake, or if the electricity is out.

A unique approach to obtaining the Z-axis metric is being rolled out by NextNav, in conjunction with a \$120M funding round that will accelerate its deployment of barometric and weather sensors in the top 50 markets across the US. This technology has proven to be highly accurate in delivering vertical location in tests conducted in 2018. <https://urgentcomm.com/2020/01/21/nextnav-plans-to-make-vertical-location-capability-available-in-top-50-markets-this-year/> (We also reference this article in “Articles of Interest”, below.)

It will take cooperation between the private and public sector to accomplish the

task of delivering the Z-axis metric nationwide, and agencies that take a proactive approach in planning for the delivery of this information into their PSAPs will be better prepared to improve first responder's ability to find callers in multi-level and high-rise buildings/structures. This information is also one of the cornerstones for the Smart City initiatives being contemplated by cities around the country and the world, as they seek to improve the safety and emergency response services in densely populated areas. **Winbourne Consulting** has extensive experience in all areas of location information, smart city initiatives and how to implement technologies that improve response time to incidents. For additional information, contact Winbourne Consulting at [info@w-llc.com](mailto:info@w-llc.com).

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## Winbourne Happenings



**Jeff Winbourne published an article titled "Global Smart Cities - Local Governments Crunch Data To Solve Practical Problems For Growing Populations"** and appears in the current issue of Public Safety Communications magazine. This article describes how cities around the globe are utilizing Smart City concepts to help tackle various public safety issues. **To view this article visit:** [https://www.pscmagazine-digital.com/pscs/0120\\_january\\_february\\_2020/MobilePagedArticle.action?articleId=1545020#articleId1545020](https://www.pscmagazine-digital.com/pscs/0120_january_february_2020/MobilePagedArticle.action?articleId=1545020#articleId1545020)

**Winbourne Consulting will be attending next month's 9-1-1 Goes to Washington event in Washington DC on February 12-15th.** For additional information on this event, visit: <https://www.nena.org/page/gtw>



**Jeff Winbourne recently published another article titled "Global Lessons on Emergency Services"**. This article was published in the 4th Quarter 2019 Issue of Radio Resource International. **To view this article visit:** <http://digital.olivesoftware.com/Olive/ODN/RadioResourceArchive/default.aspx> then select issue Quarter 4, 2019 and go to page 14.



**Winbourne Consulting will be attending the NG9-1-1 Honor Awards Banquet on February 12th.** For additional information on the NG9-1-1 Institute, visit: <https://www.ng911institute.org/about-us>

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## Industry Events



**February 12-15, 2020  
Grand Hyatt, Washington DC**

**Our Clients** include city, county, state, and federal agencies located throughout the United States and the world, as well as countries in Europe, the Middle East, Asia, the Caribbean, and South America.

### About #NENAGTW

9-1-1 Goes to Washington brings together hundreds of 9-1-1 professionals from around the country with policy leaders in our nation's capital to explore and discuss today's most pressing 9-1-1 and emergency communications issues. 9-1-1 Goes to Washington is the only event where you can learn about the policy challenges facing public safety and take immediate action to address them through dialog with your elected and appointed officials.

For more info visit: <https://www.nena.org/page/gtw>



Every year during the second week of April, the telecommunications personnel in the public safety community, are honored.

For more information, visit: <https://www.npstw.org/>

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### Articles of Interest



#### NextNav Plans To Make Vertical-Location Capability Available In Top 50 Markets This Year

NextNav this year plans to deploy sensors that will let cellular devices determine their vertical—or Z-axis—location for 911 purposes in at least the top 50 markets after securing \$120 million in a funding to pay for the installation of the needed infrastructure, according to a company official.

NextNav last week announced the \$120 million funding round, which was completed in December, according to Chris Gates, NextNav's vice president of strategy and development.

"What we intend to use it for primarily is to deploy our 3D-location solutions, with a special focus in 2020 on our Z-axis service—our altitude-determination service," Gates said during an interview with IWCE's Urgent Communications.

"We have a very accurate altitude-determination capability that is backward-compatible with most of the smartphones that are in service today. If you run our software in an application on your device, then you can add that vertical dimension for situational awareness or ... potentially to meet 911 obligations."

To read the complete article visit: <https://urgentcomm.com/2020/01/21/nextnav-plans-to-make-vertical-location-capability-available-in-top-50-markets-this-year/>



#### FirstNet On Track, But Could Use More Transparency, GAO Says

AT&T is on track to meet the build-out schedule for FirstNet, the nationwide wireless public-safety broadband network, according to a new report from the

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Government Accountability Office.

The Commerce Department's First Responder Network (FirstNet) awarded the 25-year contract to AT&T in 2017 to deploy, operate and maintain the network and is tasked with tracking progress and performance of the massive contract.

To read the full article visit: <https://gcn.com/articles/2020/01/28/gao-firstnet.aspx>



### **DHS Information Sharing Assessment Tool Updated and Expanded**

The Department of Homeland Security (DHS) Science & Technology Directorate's (S&T) updated its Information Sharing Assessment Tool (ISAT). Updates include optional scenarios and expanded question sets.

ISAT is a web-based self-assessment tool that helps public-safety agencies understand their information sharing capabilities and gaps. The tool is voluntary, free and easy to use. ISAT, first introduced last year, takes about 15 to 20 minutes to complete.

The full article can be viewed at:

<https://www.rrmediagroup.com/News/NewsDetails/NewsID/19200>



### **Keeping Pace With The Future of Public Safety Technology**

Over the past decade, emerging technology has undeniably transformed public safety within our cities. Advanced software and hardware, artificial intelligence (AI), robotics, drones and increasingly sophisticated communications networks are enabling a new era of emergency planning, preparation and prevention that will continue to have a profound effect on the practice of public safety and emergency response at every level.

Body cameras, facial recognition software and in-car computers are just some of the tools officers in the line of duty already rely on. Beyond facial recognition, AI is being used to automate the process of scanning surveillance video for patterns and anomalies. Drones are flown into disaster areas to assist in search and rescue, as well as provide better network coverage to law enforcement on the scene. Similarly, sophisticated robots now deploy in situations considered too dangerous for officers, like detonating bombs or entering into contaminated environments.

To read the full article visit:

<https://www.americancityandcounty.com/2020/01/15/keeping-pace-with-the-future-of-public-safety-technology/>

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**We Are Interested in Your Thoughts on the Above Topics.  
To share them with us, please:**

Email us at: [info@w-llc.com](mailto:info@w-llc.com)

Or

Twitter us at <https://twitter.com/winbournellc>

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