CLOSING THE GAP:

How Next-Gen 911 Connects Citizens and Responders for Proactive Public Safety

The Paradigm Shift in Public Safety

For decades, the foundation of emergency response has been rooted in a reactive model. A citizen places a 911 call, a dispatcher gathers information, and first responders are deployed. This system, while life-saving for generations, was built for a world of landlines and limited data. Today, we live in a world defined by a constant deluge of real-time information—from smartphones and IoT devices to public cameras and social media. This technological shift, coupled with a national crisis of labor shortages in emergency services, has created a "perfect storm" for change. The public safety sector is no longer just responding; it is moving toward a proactive, preemptive paradigm, driven by the power of data and artificial intelligence.

Carbyne is at the forefront of this evolution. Our mission is to bridge the technological gap between the public and emergency services, transforming the 911 experience from a simple phone call into a dynamic, data-rich collaboration that saves lives. We believe that the next era of public safety will not be defined by a single technology, but by a unified, intelligent platform that seamlessly connects every stakeholder.

This white paper will explore how our cloud-native Next-Gen 911 platform, with its AI-powered features, addresses the critical challenges facing Public Safety Answering Points (PSAPs) today. We will detail how Carbyne empowers agencies to become more efficient, resilient, and, most importantly, more effective in serving their communities.

The Problem: A Stretched System and a Data Deficit

Public safety agencies are facing a perfect storm of challenges that threaten their ability to serve.

1. The Labor Crisis and Burnout

Emergency telecommunicators are the true first responders, and their profession is one of the most demanding. Faced with high call volumes, non-stop stress, and an increasing number of non-emergency calls, many PSAPs are struggling with severe staffing shortages and high turnover. This crisis poses a direct threat to public safety, as understaffed centers lead to longer hold times and delayed responses. While technology is often seen as a solution, simply adding new, complex systems can increase the training burden and contribute to burnout. The solution must be a technology that simplifies workflows, automates routine tasks, and empowers the human operator, not a technology that complicates their lives.

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2. Legacy Infrastructure

The majority of 911 infrastructure in the United States remains a patchwork of aging, on-premises systems built for landlines. These legacy systems are expensive to maintain, lack the flexibility to handle modern data streams (like video and text), and are vulnerable to service outages. When a major incident or natural disaster occurs, a single point of failure can render an entire PSAP inoperable, as seen in numerous past events. Modern-day threats and call volumes demand an infrastructure that is not just functional, but resilient, redundant, and scalable.

3. The Data Deficit

Today, over 80% of emergency calls originate from a mobile device, yet the data available to dispatchers is often limited to a voice call and a basic, often inaccurate, location. This leaves a significant "data deficit" between the caller and the PSAP. Dispatchers are forced to rely solely on verbal descriptions, which can be challenging in high-stress situations, with language barriers, or when a caller is unable to speak. The ability to "see" what is happening on the scene, to receive real-time updates from IoT devices, and to instantly communicate with a caller who is deaf or hard of hearing is a critical, yet often missing, component of the emergency response workflow.

The Carbyne Solution: A Unified, Cloud-Native Platform

Carbyne's platform is a cloud-native, all-in-one solution that addresses these challenges head-on by moving beyond the traditional voice-centric model. Built on a foundation of secure, resilient, and scalable cloud infrastructure (in the U.S., AWS GovCloud), our technology seamlessly integrates rich data, advanced AI, and intuitive tools into a single pane of glass for the dispatcher.

Bridging the Data Deficit: Rich Media and Precise Location

Carbyne empowers dispatchers to gain unparalleled situational awareness even before a first responder arrives on scene. This is achieved through:

App-Free Live Video and Location

A dispatcher can send an SMS-delivered link to any smartphone caller, which, with a single tap, the caller can consent to automatically activate a live video feed and share their precise GPS location. This app-free approach removes the barrier of having to download a separate application. This capability is a game-changer, allowing a dispatcher to see the scene, assess the severity of an incident, and provide immediate, life-saving instructions to the caller.

Real-Time Text and Translation

Carbyne's platform includes integrated, real-time text and AI-powered translation capabilities. For callers who are deaf, hard of hearing, or unable to speak, this feature provides a critical lifeline. Furthermore, instant translation breaks down language barriers, reducing call times and connecting every citizen, regardless of their native language, to effective assistance.

IoT and Data Integrations

Our open API architecture allows for seamless integration with a variety of data sources, including smart city sensors, surveillance camera feeds, and public safety databases. This creates a holistic view of an incident, from the call itself to the surrounding environment.

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Empowering the Human-in-the-Loop: AI That Works for You

Carbyne's AI is designed not to replace the human dispatcher but to augment their capabilities. It automates repetitive tasks and provides critical insights, freeing up operators to focus on the human interaction and decision-making that matters most.

Emergency Call Triage

In a major incident, a single event can generate hundreds of redundant calls. Carbyne's AI automatically detects these call surges and can provide a pre-recorded message to callers, informing them that a PSAP is aware of the situation thus allowing bystander callers to hang up while enabling operators to focus on the emergency calls with unique or more critical needs.

Admin Assist

Routine administrative calls can overwhelm a dispatcher's workload. AI can handle these calls, automating data entry, providing answers to common questions, and creating a more efficient workflow for the entire team.

Automated Transcription

During a high-stress call, a dispatcher may miss a detail. The platform can automatically transcribe the call, providing an immediate record for review and keeping a record of critical information. This not only improves efficiency but also serves as a valuable tool for post-incident review and training.

Building a Resilient, Scalable Infrastructure

Unlike legacy systems, which are prone to single points of failure, Carbyne's platform is built to be resilient.

Cloud-Native Architecture

Our cloud-native solution removes the dependency on on-premises hardware, allowing for rapid deployment and providing access from anywhere with an internet connection. This provides service continuity during natural disasters, infrastructure failures, or major power outages.

Automatic Failover and Redundancy

The platform is built with automatic failover mechanisms, meaning if one region or data center goes down, a PSAP's operations can be automatically rerouted to another, providing for minimal disruption to life-saving services.

Scalability on Demand

The cloud architecture allows the platform to scale up instantly to handle call volume spikes during major emergencies, so that calls don't go unanswered due to a lack of human or system capacity.

The ROI of Modernization

The shift to a cloud-native, AI-powered solution is not just about technology; it's about a measurable return on investment. PSAPs that have adopted Carbyne have seen tangible results, including:

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Reduced Call Handling Times

With a more comprehensive understanding of the situation, dispatchers can process calls faster and more efficiently. Our customers have reported up to a 20% reduction in call handling times.

Improved Caller Location Accuracy

With advanced geolocation capabilities, we have helped agencies improve caller location accuracy from miles to within 10 meters on over 85% of emergency calls. This saves precious seconds that can mean the difference between life and death.

Enhanced Situational Awareness for First Responders

By sharing real-time video, text, and location data directly with first responders en route, Carbyne prepares them for what they will face on the scene, allowing for more strategic and safer operations.

Conclusion: The Future is Here

The "Roadmap to Public Safety AI" is not a distant vision—it is an immediate reality. The public safety sector is at a crossroads, with an urgent need to modernize its infrastructure to meet the demands of the modern world. Carbyne provides a comprehensive, unified, and future-proof solution that empowers PSAPs to become more proactive, efficient, and resilient. Our technology is not a temporary fix but a foundational shift that will redefine emergency response for generations to come.

By closing the data gap and empowering the human operator with intelligent tools, we are not just helping to save lives—we are helping to build safer, more connected communities.

Experience the future of emergency response.
Book a demo at carbyne.com/request-a-demo/

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