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Leveraging 5G to Transform Public Safety: the Next Frontier In Crisis Management

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Global public safety is increasingly in the spotlight, as incidents of civil unrest, violent protests, and widespread disorder become more frequent. In the U.K. alone, crime statistics show a significant 49 percent increase in violence with injury incidents between June 2023 and June 2024, with the number of cases reaching 562,000. However, the rise in public unrest is not isolated to one region – it is part of a global shift, with major protests erupting across up to 150 countries according to the latest statistics from the Global Protest Tracker.

The increased frequency and severity of these events are straining public safety organizations many of which rely on outdated systems to handle modern emergencies. In this environment, the need for technological evolution in public safety is more critical than ever. Enter 5G technology, which is positioned to revolutionize how emergency services respond to crises, enhance situational awareness, and provide real-time support to first responders in increasingly complex scenarios.

Outdated Infrastructure: The Barrier to Modern Public Safety

For decades, public safety systems have relied on legacy technologies designed primarily for voice communication and short amounts of data exchange. While once sufficient, these outdated systems now struggle to support the complex demands of modern crisis management. As incidents of social unrest and violence increase, traditional systems do not provide the necessary capabilities to significantly improve response times and coordination among first responders.

The U.K. exemplifies this challenge. Over a quarter of digital systems used by the U.K. government are obsolete, hampering efficiency and posing significant security risks.

The financial cost of maintaining these legacy systems is equally concerning. The U.K. government

spends £2.3 billion annually just to keep these aging public sector systems running,funds that could otherwise drive much-needed modernization.

As public safety challenges grow, the need for modern, future-proof, reliable and secure communication systems is more pressing than ever. Outdated technology puts both first responders and the public at risk, making it crucial to bridge this gap for more efficient, coordinated responses to emergencies.

Empowering Real-time Decision-making with Video and Predictive Analytics

One of the defining capabilities of 5G in public safety is its ability to support high-definition, low-latency video streaming from various sources, such as drones, body cameras, and fixed surveillance systems. This real-time video streaming is crucial for incident management in high-stress environments like protests or public disturbances, where quick decisions are necessary. Live footage allows command centers to assess situations from multiple angles, ensuring that responses are based on the most current and accurate information available.

Additionally, integrating 5G with AI-powered predictive analytics enhances situational awareness. By analyzing data from crowd movements, social media, and historical trends, AI can identify emerging threats. A recent study found that smart technologies such as AI could help cities reduce crime by 30 to 40 percent and reduce response times for emergency services by 20 to 35 percent. In fact, some police departments have reported a 20 percent decrease in burglaries and a 13 percent reduction in violent crime after implementing predictive policing.

This combination of 5G and AI-powered video surveillance systems enables continuous monitoring and real-time alerts for unusual activity, allowing law enforcement to respond more swiftly and efficiently. Enabling Seamless Collaboration Across Agencies

In complex emergencies, public safety responses often require the coordination of multiple agencies. Whether it's police, fire services, or paramedics, effective communication and collaboration are essential. Unfortunately, legacy communication systems, which were not designed for interoperability, can struggle to meet the demands of multi-agency cooperation.

5G eliminates this barrier by offering standardized technology that enables communication services such as mission-critical push-to-talk and mission-critical push-to-video, allowing different agencies to communicate seamlessly during a crisis. Whether responding to a large-scale protest or a terrorist attack, 5G ensures that first responders can work together efficiently, sharing critical information in real-time. According to a recent survey, 66 percent of public safety professionals now consider 5G either important to their work or a top priority, recognizing its potential to enhance reliability, driving more effective coordination and work efficiency. Location-based services powered by 5G allow for precise tracking of personnel and assets, ensuring that first responders remain informed and are dispatched to the right locations quickly. This improved connectivity and data sharing can lead to more effective incident management and potentially save lives in emergency situations.

The Role of IoT in Public Safety

The Internet of Things (IoT) is transforming industries worldwide, and public safety is no exception. By leveraging IoT devices, public safety agencies can collect and analyze real-time data from various sources, including biometric sensors, environmental monitors, and wearable technology.

These IoT-enabled devices enhance situational awareness and play a critical role in ensuring the

safety of first responders. Biometric wearables, for instance, can continuously monitor vital signs such as heart rate, temperature, and oxygen levels, alerting command centers if a responder's health is at risk. Studies show that these wearables can improve first responder survival rates during high-stress operations by providing constant health monitoring. Environmental sensors can detect dangerous substances like smoke, gas, or chemicals, providing immediate alerts to responders and helping them avoid exposure to hazardous environments.

With the capability of 5G to provide connectivity to a massive amount of IoT devices in one location, Public Safety agencies can utilize this real-time information to create a holistic view of an emergency situation, improving decision-making, response times, and ensuring the safety of both first responders and civilians.

The Future of Autonomous Units in Crisis Response

In addition to broadband, interoperability, and IoT capabilities, 5G technology supports the deployment of autonomous response units, such as drones and robots, into hazardous environments to assess situations and provide real-time data,all while keeping human responders safe. Equipped with sensors and thermal cameras, drones can monitor crowd behavior during protests, transmitting high-resolution video and data to command centers for faster decision-making. Autonomous robots can inspect dangerous areas like burning buildings or collapsed structures, offering critical insights in real time, without risking human lives.

One example is a turnkey drone-in-a-box solution, which can be remotely deployed to assess emergencies, transmit critical data, and aid in resource allocation. With reliable 5G connectivity, these drones are controlled remotely by operators without line of sight, ensuring safer and more effective reaction in emergency situations. In addition to enhancing situational awareness, 5G's support for remote-controlled units improves operational efficiency, reduces risks to responders, and enables faster, more informed decisions in the early stages of a crisis.

Ensuring Reliability in High-demand Scenarios

During large-scale emergencies, maintaining reliable communication is critical. However, network congestion in commercial networks often hampers response efforts. For instance, during the 2011 Virginia earthquake, the sudden surge in call volume led to overloaded mobile networks, rendering both emergency responders and residents unable to make calls during the first hour after the quake. Similarly, during the 9/11 attacks, cellular phone networks were quickly overwhelmed by the high volume of calls, hindering communication for emergency personnel and civilians alike.

With 5G technology these challenges are solved by prioritizing mission-critical communications over commercial users' traffic, ensuring that first responders always have access to network resources without delay, even during heavy network use. Features like Multicast and Broadcast Services (MBS) enable agencies to broadcast critical information to large groups of responders simultaneously, preventing congestion. This ensures that first responders have reliable access to communication channels, improving response times and operational efficiency in areas and moments where there is network congestion.

The Future of Public Safety: Advancing with 5G

The transition from narrowband to 5G in public safety is still in its early stages but promises to significantly improve emergency response. As 5G adoption expands, it will enhance data connectivity and add advanced features such as precise positioning and massive IoT capabilities, laying the foundation for more effective crisis management.

Unlike legacy systems, 5G enables scalability and integrates AI and edge computing, providing the foundation for real-time, predictive crisis management that empowers first responders to act with greater speed and accuracy. In an era of rising global security threats, resilient communication networks are no longer optional, they are essential. 5G is already proving its worth by improving situational awareness, multi-agency coordination, and the ability for first responders to operate effectively across a range of crisis scenarios. By embracing 5G today, public safety agencies can stay ahead of emerging challenges and ensure they are well-equipped to protect communities in an increasingly unpredictable world.