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Huawei's Smart City technologies are helping emergency services put the 'right response' in the 'right place' at the 'right time.' >>

Location is Everything

By Andy Rooke, EENA Member, Vice President, British-APCO, Director, ShadowFocus Consultancy Ltd.

" *Police Emergency. What is your location?"*
    "I've crashed my car into a ditch and my boyfriend is not moving. Please help us!"
"What is your location?"
  "I don't know. We left London, heading south to Brighton. There are no lights and it's really dark. Hurry, I'm scared."

Sadly, this type of call is only too common. As a retired police officer with over 30 years of experience, I spent most of my service patrolling and dealing with serious incidents on the roads of the U.K. When members of the public call for help, very often they do not know where they are.

I not only spent my 30-plus year career trying to find and help victims of car accidents or crime but also helping emergency services improve their technology for communicating with each other by voice and data to speed their response times.

Our motto for an effective emergency services response is: 'Right Response, Right Place, and Right Time.'

This saying is as true now as when first coined in the 1990s. The major problem is that most call-taking and dispatch systems are not yet capable of identifying the location of 911/112 calls from mobile handsets — and, in many countries, the majority of calls are now coming from mobile devices.

The public also has a role to play because very few people are aware of their surroundings, especially during an emergency. When driving, we tend to follow our satellite navigation units until the devices say: "You have reached your destination." When emergencies occur, people must quickly determine their location; and in the midst of a crisis, we are very often incorrect.

Mobile network providers can give only an ellipse location to the emergency call-taker. Locations are derived from mobile phone masts and signal

strength to approximate the location of the calling device. In rural areas, the level of resolution can be sections of 5 km^2 or more. The situation for urban areas is better but not perfect, due in part to the greater density of roads and buildings.

Key Technologies

Fortunately, key technologies to be introduced over the next two years are designed to fundamentally change how emergency service agencies receive, process, and respond to emergency calls.

● eCall

eCall will come to Europe in 2018 and, by law, compliant devices will be installed for free in every new car and light truck. If an accident occurs, the on-vehicle equipment will dial the 112 European emergency number and send a data message with exact GPS coordinates, direction of travel, and last three recorded locations.

● And My Android?

Advanced Mobile Location (AML) is being installed as a standard feature on mobile handsets using the Android operating system. In late 2016, AML will become the standard for all phones using the Google platform. When a 911/112 call is made, the call-taker can request a location from the handset. A command from the call-taker initiates the GPS receiver in the phone. If the handset is located in a building, it will also activate the Wi-Fi receiver to establish the location from the

Wi-Fi IP address.

● The 4G Effect

The entry of 4G into domestic markets is also having an effect on how 911/112 information will be received. 4G-equipped cars and trucks are available worldwide, each with multiple on-board sensors and their own unique IP address. This may lead to images being transmitted or medical data being streamed in real time from vehicles. To be useful, however, the Public Safety Answering Point (PSAP) must be equipped to manage data.

The U.K. is moving ahead with the installation of the Emergency Services Mobile Communications Program (ESMCP), the first country-wide deployment of 4G-based communication systems for emergency services in Europe. Every other European state is now watching the U.K. before committing.

Let's Think

Although emergency call systems are entering the digital age, they are often hindered by outmoded judicial systems and work practices. We need to think differently. Digitalization requires a deeper understanding of how the emergency response process works.

A major question for senior managers is whether to opt for a cloud-based solution or stick with traditional networks that require the acquisition of expensive infrastructure for implementing eCall

platforms across the U.K. and Europe.

As with other modern industrial sectors moving into cloud-based operations, legacy emergency services require security and resilience. For instance, the finance sector has implemented high security and fault tolerance standards that can serve as a foundation for adaptation by the emergency services sector.

The U.K. in particular is an interesting case, where the national government has mandated that the police and fire services work together to improve the collaboration between their respective senior management teams.

At the very heart of 4G communications for emergency services are broadband network backbones and ESMCP handsets.

Before an Incident

Important to turning information into intelligence is the ability to geo-locate and timestamp the data relevant to the user.

For example, an officer completing his end-of-shift paperwork needs to have access to all available data for each incident encountered while on patrol. Smart mobile handsets are a primary component for how patrol officers collect and record information in real time.

The system must anticipate and filter the information coming to the patrolling officer from disparate sources for relevance, including data

feeds from outside normal enforcement boundaries, such as social media.

During an Incident

The call-taker and dispatcher are trained to survey a variety of sources to compose a response. When using a Huawei Safe City solution, many of the sources will have been provided over an electronic Long-Term Evolution (eLTE) backbone capable of carrying visual data from 4G CCTV, CCTV checkpoints, and other network-enabled enforcement systems. Automatic Number Plate Recognition (ANPR) systems are linked with intelligent databases and social media platforms to integrate these systems seamlessly into a single command and control environment.

Raw data becomes real-time intelligence for dispatchers and first responders. Automatic Vehicle Location (AVL) further boosts this intelligence for auto accidents. On arrival, first responders are able to provide an enhanced overall view of the incident with live video feeds to the command center.

The dispatcher, who has tactical command of the incident, can then begin to build a more complete picture of the incident, decide on the response, and allocate additional resources where necessary.

Command and control system quality is proven in incidents that require complex responses from

multiple agencies. Today, each agency operates with its own policies and equipment. Integrated Safe City systems like those provided by Huawei create a new environment where the seamless transfer of data and information requires establishing ad hoc 4G LTE networks.

Analysis and Review

Post-incident management is as important as the original response but is often overlooked. With a multiple-vehicle collision, once the injured parties have been taken for medical treatment, it is likely that additional resources will be needed to ensure that all evidence is retrieved and documented, and the site is restored to normal. These activities require the participation of support agencies operating from different sets of reference data. Many types of data must be captured and analyzed in order to have a complete and accurate debriefing to understand exactly what occurred and the quality of the response; that is, what went well, what did not, and how can processes be improved?

Big Data analytics play a large part in this process. Full and comprehensive data sets — supported by large data stores and fast processing — can amplify the overall understanding of each emergency services environment. Here again, Huawei's Safe City solutions are superbly qualified to meet the needs of the emergency services community.

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The significance of these advances in economic terms, such as cost to deploy, cost to operate, and value received, is notable when considering the resulting improvements in the quality of day-to-day policing against a backdrop of reduced public spending. Coupled with the public's demand for greater accountability and transparency in how emergency services operate, the initiative for Safe City solutions around the world puts Huawei at the forefront of our never-ending effort to ensure that emergency services personnel will continue to provide the right response, in the right place, at the right time. ▲