Digital Transformation in Emergency Services – A new age of public communication?

By Markus Bornheim

Markus Bornheim is Avaya's Consulting Sales Engineer for Public Safety and Emergency Services in the EU and Vice Chair of the European Emergency Number Association (EENA) Technical Committee. Here, Markus outlines the four areas of digital transformation that will improve public access to emergency services:

When we find ourselves in an emergency, we dial a number on our phone and we're connected to a call-taker who makes sense of the situation. That person then, if necessary, dispatches response personnel to resolve the emergency. This time-tested process is about to change, however.

Although this approach is still valid and very effective in principle, we have seen communication habits transform beyond recognition, starting with the introduction of widely available GSM mobile phone services in the 1990s. Since then, the mobility of the caller has become the biggest driver in how to approach emergency resolution.

3G mobile internet services were introduced in the early 2000s and, after the advent of the smartphone as a mass communications device in 2007, we saw an increasing adoption of text-based communication and a decline in voice calls, especially among digitally native demographics.

These were two major paradigm shifts for the communications landscape, and mass mobile adoption changed our expectations forever, redrawing the requirements for emergency services provision. Four main challenges for authorities emerged, manifest in conversations around Digital Transformation and Industry 4.0, throwing a new focus on the automation of communications processes inside and between organizations.

1. How to introduce Multi-Channel public access (voice, video and text)

2. Gathering precise information on caller and incident locations

3. Consolidating Public Safety Answering Points (PSAPs)

4. Ensuring effective multi-agency and cross-border responses

1. Introducing Multi-Channel public access to emergency services

A traditional phone handset is no longer the only option for public communication, considering the massive shift in preference towards text-based and video-enabled communication, especially for younger demographics.

'Voice-only' options have limitations in a diverse society, where not every member of the public has the same level of language skills to describe their emergency, or to understand questions from a call-taker. New communications technologies, such as text and video, enable all types of caller, especially those with accessibility requirements, to benefit equally from fast emergency response times.

For call-takers, opening visual-oriented channels provides access to situational context and evidence of a crime, so they are better equipped to make faster and more effective decisions in response to the situation.

Video communication can be an enabler for digital transformation when established between the ambulance vehicle and the hospital, supporting challenging situations for the ambulance crews by giving access to medical experts via video.

Last but not least, video as an element of telemedicine between the caller and the call-taker can help to prevent sending an ambulance to an incident when it's not really needed.

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2. Getting precise information on caller and incident location

To send responders to an emergency, the information must be as precise as possible. There can sometimes be a degree of confusion and anxiety on the caller's side which makes getting clear details take several minutes. Since around 70% of all emergency calls now originate from a mobile phone, determining the dispatch address can be time-consuming.

The introduction of Advanced Mobile Location (AML) as a feature available on mobile phones with Android Operating Systems has been a big step forward. But the overall approach to mobile phone-supported transmission of location data with satellite precision should be based on the multiple methods available. This could mean using an HTML5 internet connection through a web browser, or usage of location services from messaging apps, to provide the largest possible coverage for as many mobile phone types as possible.

3. Deciding whether to consolidate Public Safety Answering Points

Most existing Emergency Response Organizations and their PSAPs have grown to serve demand in the past few decades, resulting in a constellation of multiple small locations with a small number of call-takers (typically 2-5). This worked well in the 90s because of lower call volumes - anyone who wanted to urgently report a traffic accident had to knock on someone's door and ask for a phone. Now, however, the number of emergency calls per incident has increased significantly because of mobile adoption.

A single incident will receive multiple calls that all need to be answered by call-takers and dispatchers. In large incident situations, the traditional PSAPs experience severe call flooding, resulting in long waiting times and lost calls due to capacity constraints in access lines, as well as call-taking personnel.

From a traffic-handling perspective, the PSAP islands will always be stretched by managing large number of calls on their own, but if we consolidate their efforts they can manage the volumes more effectively. Networking multiple PSAPs to share high-traffic volumes can solve this, supporting call-takers in very busy regions by adding capacity from other regions that face normal conditions. For example, 10 PSAPs with four call-takers combined into a single virtual PSAP construct could share traffic and would, therefore, be three times more effective than 10 isolated islands.

4. How to ensure effective multi-agency and cross-border response

Effective collaboration between different emergency response organizations becomes even more challenging when they belong to different agencies, or if a cross-border response is required. Information is typically exchanged by phone calls, faxes, and manual re-typing of incident data into independent case management systems and, obviously, this is error-prone due to the human-factor when acting under stress.

Multi-agency response can also be challenging if each agency has different information. Cross-country response often happens at national borders, but even more often at the limits of smaller areas of responsibility, regional or even municipal borders. Here also, collaboration is often limited to phone calls, written notes and faxes, rather than a structured exchange of data enhanced by an appropriate means of modern real-time communication.

Overall, more accurate and accessible information about emergency response cases will improve collaboration across borders and between agencies.

Conclusion

Understanding these four challenges will lay the foundations for the digital transformation that is required to enhance and future-proof the operation of emergency response call centers everywhere. It will facilitate a more agile, flexible, and effective collaboration within and between all organizations involved in emergency response.

Processes and procedures driven by events, enhanced by the capabilities of fast and structured exchange of context and situational data, as well as enriched by real-time communication through all available channels (audio, visual and text), will become an integral part of next generation emergency communication. This trend is set to help a wide range of organizations collaborate in emergency response and healthcare.

But beyond that, the public will always want a more comprehensive style of engagement in an emergency, one that delivers faster response times and a higher quality of care. Today's voice-call centric emergency does not enable or support the necessary transformation in the best possible way.

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