THE FUTURE OF ARTIFICIAL INTELLIGENCE IN THE PSAP

WHAT IT MEANS AND HOW TO PREPARE

MOTOROLA *SOLUTIONS*

HOW DO YOU IMAGINE YOUR PSAP
FIVE TO TEN YEARS FROM NOW?

HOW WILL ITS TECHNOLOGY, PROCESSES AND THE RESPONSIBILITIES AND SKILLSETS OF PERSONNEL BE DIFFERENT?

IP and i3 offer PSAPs Next Generation 9-1-1 (NG9-1-1) technology that delivers new capabilities to better meet citizen expectations. But these new capabilities – and future functionalities – don't come without challenges.

Two objectives of the NG9-1-1 movement are to enable more devices to contact 9-1-1 and to allow 9-1-1 agencies to easily interact and share data with each other. While many PSAPs have begun to accept text messages to 9-1-1, they will need to accept many other forms of communication in the next generation world, such as pictures, video and data.

This begs the question: How will PSAPs manage all this data? Further, how do we keep the burden off call takers who will need to decide what information, correlated to an incident, is actionable. And, it's possible, there could be page after page of incident information to decipher, and not all information will be relevant, even if it is correlated.

Without some intelligence to assist call takers in managing the data, upholding the level of service citizens have come to expect seems daunting.

"For years, the biggest thing we could envision was texting and sharing images and video and, to us, that meant NG9-1-1. Now we see that is a miniscule part of what's getting ready to happen. We realize Next Generation is about data and IOT and sensors. In fact, there is a flood of data in front of us that will impact PSAPs much more than video and pictures."

Bob Finney, Communications Director for Collier County, FL

CASE IN POINT: CONTENDING WITH ADDITIONAL DATA

Someone sends a video of a building on fire – and the Medic Alert® information of the "caller" is available as part of the information correlated to the incident. Should the call taker dismiss or minimize this information while searching the HAZMAT (hazardous materials) Information Center for the address?

This example points out how correlated information can be a distraction depending on the context of the incident. But, consider this. What if the caller begins to feel chest pains and initiates a voice call to 9-1-1 after sending the video? Is the right decision to create a new incident for a new call taker? Or, should the caller be routed to the same call taker who received the video message? Regardless, the caller's Medic Alert information would have a very different priority.

Events like these are not out of the question and could become commonplace. New workflows and processes will be necessary. These include those that enable data sharing and collaboration among agencies and across jurisdictions.

In the midst of it all, PSAP personnel will be expected to change. In fact, they will be held to higher standards. They will be expected to make better, faster decisions.

Fortunately, work is underway that can help overcome these obstacles. The work, which is already changing our lives, is in the field of artificial intelligence (AI), and it has the potential to rewrite what we imagine for the PSAP of the future.

ARTIFICIAL INTELLIGENCE DEFINED

Artificial intelligence (AI) is simply the notion that a machine can perform tasks that typically require human intelligence. There is no exact or widely accepted definition of the specific tasks that belong solely to the domain of human intelligence. Over the years, the attention has slowly shifted to exclude some solved problems (for example, chess) from the AI task list while expanding the AI definition to include some new tasks that previously were considered to be unsolvable by computers (e.g., emotion recognition).

Today, the benefits of the advances in both computing and storage technologies allow us to build AI-powered applications that achieve good results in reasonable amounts of time.

INTELLIGENCE AND RELEVANCE

The needs of 9-1-1 Agencies are unique, especially when we look at processing data in the NG9-1-1 world. To begin thinking about this, let's look at two examples of consumer AI applications in light of mission critical applications.

Last year Google announced Google Duplex, an AI system for conducting real-world tasks over the phone. The conversations are meant to be as natural as possible with the machine speaking as a normal person. A Swiss bank uses Natural Language Processing (NLP), a subset of AI, to manage conversations with inbound callers. To do so, the application asks qualifying questions to help open accounts, handle international money transfers and provide account status. It will also transfer the call to a live operator if necessary.

How can these technologies assist 9-1-1 call takers where the focus is on decision support? Adapting these technologies to the needs of PSAPs with a focus on assistive technology is certainly viable. In situations where PSAPs are understaffed and overloaded, AI could gather information while a caller is on hold, allowing the system to process the information so that when it is answered it can be handled more efficiently.

But PSAPs will require more.

Audio, for example, in the PSAP isn't the same as your typical customer support call-center. People are in stressful conditions, not able to communicate clearly and have high levels of noise or distortion. Being able to interpret the audio (automated speech recognition) and then extract intelligence from that conversation, can assist the call taker in making decisions relevant to the situation.

Using the example of the video of a building on fire, the AI-powered application could combine information on hazardous materials that are on-site or make the decision on which medical records should be reviewed. But let's take it a step further and think about AI and the public safety workflow. AI could couple the intelligence extracted from the call, and potentially historical calls, combine it with other data, such as CAD and records, and then public data, e.g. LexisNexis - make sense of what it means and offer intelligent and relevant decisions to assist the call taker, quickly.

When we think about applying AI to the end-to-end workflow versus conducting a task or managing a phone conversation, we see the opportunity to assist call takers with decisions that not only help them better manage an incident, but save more lives.

ASSISTIVE TECHNOLOGY

Change is not easy, and one of the bigger changes in managing the data will be the role of the call taker. Call takers will be expected to adapt to new ways of call handling. The ability for AI to take large amounts of data, organize it and present in a way that makes sense and is relevant to the situation can transform how call takers operate and make decisions today.

Our view is that AI will augment what call takers do today, not replace. In fact, we see call takers' jobs being made better through quality-of-life improvements and decision support to help them deal with all the information they need to ascertain, not only from the 9-1-1 conversation, but from supplementary data. From this viewpoint, AI is an assistive technology. It will assist call takers to make more informed decisions - decisions that will better protect citizens and first responders.

PREPARING FOR AI

Begin to take the steps now to prepare for the data that is just ahead. Here are some tactics to you begin.

- **Identify internal and external resources that can help develop your AI strategy.** Make this part of your NG9-1-1 planning. Put thoughts into how AI can be your assistive technology and deliver decision support.

- **Embrace experimentation and employee involvement.** Does your PSAP environment support experimentation and a willingness to change existing procedures? If not, what steps can you take to bring that sense of experimentation into your NG9-1-1 planning?

- **Reimagine operating procedures.** Considering the examples mentioned in this document, brainstorm with your team one or more ways to respond to a 9-1-1 caller using AI.

- **Redesign work to incorporate AI and cultivate related employee skills.** Are call takers flexible and skilled to adopt new technologies and policies? If not, consider how they begin to prepare for their changing role.
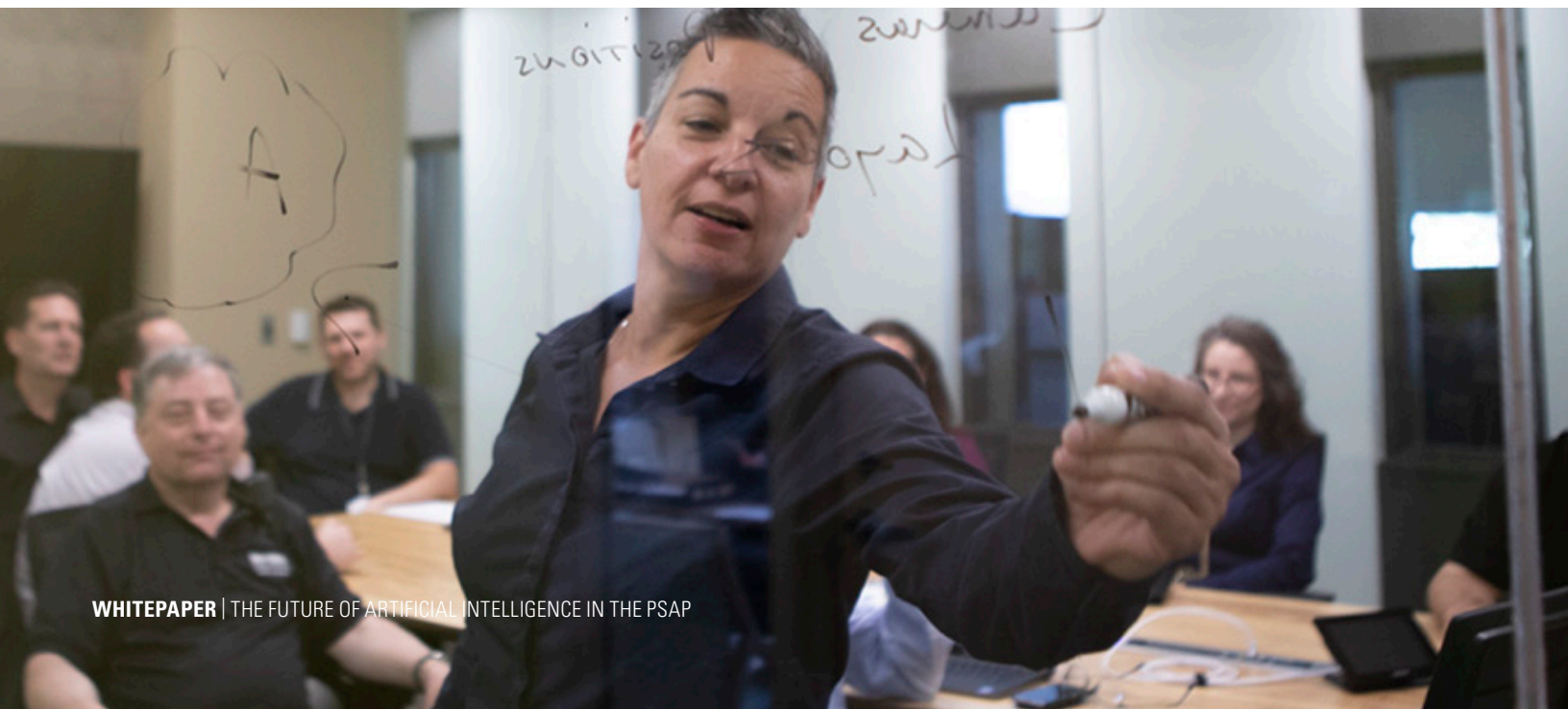
AI AT MOTOROLA SOLUTIONS

We are building AI into our CommandCentral software suite with the philosophy of augmentation, not automation. The data public safety agencies must deal with will create an imbalance in how much they can consume and use quickly and intelligently. The work we are doing addresses this imbalance so agencies can focus their attention on the incident with AI becoming the assistant, not the replacement.

As our CommandCentral software suite integrates the different sleeves of the Public Safety workflow—call handling, command and control, records and evidence—into one unified workflow, we are able to offer additional intelligence to the entire workflow with AI. By extracting information from the different sleeves and combining it in the context of what is relevant for the situation at hand, 9-1-1 Agencies gain new intelligence to improve decisions and better protect citizens and first responders.

For example, CommandCentral Aware, real-time situational awareness software, consolidates critical incident information into one complete operating picture. It offers access to powerful analytics, alerts and video feeds, all through a single consolidated screen. As a result, officers can respond with more intelligence and safety.

As we face the new world of NG9-1-1, public safety agencies must have the right data at the right time.

Avigilon, a Motorola Solutions company, uses video solutions and advanced AI to bring a new level of automation to surveillance by revealing events Agencies may have missed. The AI technology filters recorded video timelines and automatically reviews unusual motion events. As a result, the 'assist' helps operators focus on events that are important.

We're excited about the work we are doing in AI. We often describe it as Mission Critical AI because our approach is founded on our many years of Public Safety experience and knowledge. We know the mission-critical needs of our customers are unique and different from the consumer technologies that leverage AI today. Our commitment is to continue to build on our domain knowledge and deliver solutions that make AI a natural part of your PSAP's experience.

To learn more about the CommandCentral software suite,
visit us at: www.motorolasolutions.com

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