The background of the page is a grayscale photograph of a call center. In the foreground, a man wearing glasses and a headset is seated at a desk, looking at a computer monitor. The monitor displays the Solacom logo. In the background, other call center agents are visible at their desks. A diamond-shaped inset in the lower right quadrant of the image shows a blurred photograph of an emergency vehicle, likely a fire truck or ambulance, with its lights on, moving at speed.

5 Trends to Consider When Choosing a Next-Generation Emergency Call Handling System

A Solacom Brief




Plan for the Future When Evaluating NG9-1-1 Systems

All public safety answering points (PSAPs) know they need to migrate to a Next Generation 9-1-1 (NG9-1-1) emergency call handling and management system. But getting there can be a daunting prospect, especially for smaller PSAPs. To ensure they get the most from their investment, PSAPs must understand how emergency communications and technologies are changing and what those trends mean to their operations.

With this knowledge, PSAPs are in a much better position to choose an NG9-1-1 system that can support today's requirements and smoothly evolve over time to support

new capabilities and technologies. And they have far better ability to optimize call handling and management operations to better serve the public.



Legacy Enhanced 9-1-1 systems don't provide the flexibility or speed needed to effectively manage today's emergency calls.



TREND 1: Location Really Is Everything

The precision of caller location information is crucial. Call takers must immediately know exactly where callers are so they can provide the right guidance and help first responders find people as quickly as possible.

It's no longer enough to use just the x and y axes for location, or to rely only on location information from cell towers. To accurately pinpoint caller location, PSAPs need the ability to view the z axis coordinate for vertical height so they can quickly locate people in tall buildings. They also need the ability to view caller location on floor plans for large complexes, such as shopping malls, and to combine location information from multiple sources to narrow the circle of accuracy.

In many cases, improving location accuracy will require PSAPs to merge location information from cellular service providers with information from companies, such as RapidSOS. RapidSOS provides a national database in which smartphones can automatically register their location when they are used to call 9-1-1. Incorporating location information from these types of private databases is proven to improve location accuracy from hundreds of meters to approximately five meters. Some call handling systems also allow PSAPs to send text messages once a call is received. This

allows the PSAP to collect supplemental information to further isolate a caller's location.

PSAPs also need the ability to accurately locate people who call from Voice over IP (VoIP) phones within an office. That means their systems must be able to receive location information from the IP-PBXs in those offices and accurately display that information on call taker screens.

Once PSAPs determine how best to improve the accuracy of caller location information, they also need to determine how the information is integrated into the NG9-1-1 system and how it is visually displayed to call takers. For example:

- Can caller location be visually displayed on a geographic map, including vertical height?
- How does the system rationalize and display location information from multiple sources?
- How will floor plans be integrated into mapping systems?



TREND 2: Text-To-911 Is Not Optional

Every year, tens of thousands of text-to-911 calls go unanswered. For example, the York-Poquoson-Williamsburg Regional 911 Center in Virginia said more than 30,000 text-to-911 messages went unanswered in its region during 2013.¹

As texting becomes an increasingly ubiquitous form of communication, more and more people will naturally assume they can send a text message to 9-1-1 and it will be received:

- People with speech and hearing impairments now often send text messages instead of using TDD/TTY systems. The need for PSAPs to support this segment of the population is one of the main reasons the Federal Communications Commission (FCC) is strongly encouraging PSAPs to adopt systems that accept text-to-911 calls.
- People who are in situations involving domestic abuse, home invasions, and kidnappings often have no choice but to text for help. These situations are another key reason the FCC is pushing for mandatory text-to-911 support; the ability to communicate silently with authorities can mean the difference between life and death.
- People of all ages have embraced texting as their preferred form of communication. Many younger people wouldn't even think to make a phone call. They intuitively send a text message.

Text conversations are much more direct than voice conversations. People don't start by asking for help as they do on the phone. Instead, they typically state the problem in the first message. Text conversations can also include awkward gaps and overlapping messages as each party waits for the other to respond. These differences mean PSAPs must re-evaluate procedures and processes to ensure they can properly deal with the unique nature of text-to-911 calls:

- Should every call taker receive text calls, or only specific call takers?
- Can call takers handle more than one text conversation at a time?
- How should call takers be trained to handle text communications?

Giving call takers the ability to text out to people, for example to follow up on silent and abandoned calls from cellphones, gives PSAPs new power to clarify situations and dramatically improve clear rates for these types of calls.



TREND 3: Content Is King

With the high popularity of using smartphones to instantly share information, people will naturally include digital content, such as photos and videos, in their text messages to PSAPs. And they won't stop to consider that the emergency call handling system might not support it.

Photo and video information is extremely useful to call takers and first responders because it helps them understand the scope and severity of incidents before they get to the scene. It can also help them identify persons of interest when crimes are committed. Imagine a text message that includes a cellphone video of robbers running from a bank. Or a dash cam video of a hit-and-run as it happens. Or a photo of an altercation that's underway at a major event.

Now, PSAPs need to determine how all of this valuable digital content gets to the right people at the right time:

- How does content come into the NG9-1-1 system?
- How is content stored and assessed?
- How does content get from the NG9-1-1 system to first responders?
- What happens if content is sent, but doesn't get through?
- How do call takers know that content was sent, but not received?



Imagine a text message that includes a cellphone video of robbers running from a bank.



TREND 4: Big Data Has a Big Impact

Text messages and digital content are both part of the trend toward big data — more types of information coming into PSAPs from a wider variety of sources.

Social media outlets, such as Facebook and Twitter, are also new sources of information for PSAPs. During a recent hurricane in the U.S., people made requests for immediate assistance through Facebook instead of a 9-1-1 call. The same thing happened during a cyclone in Australia.


Social media outlets are also an important source of witness information about events that are underway. When people who are already at the scene share details, images, and videos, PSAPs and first responders can tailor their response accordingly. They can see the scale and scope of a house fire, the volume of people involved in a riot, or the extent of flash flooding.

Video footage from other sources, such as drones and security cameras, is another important source of information that PSAPs should consider. Again, fires are a good example. When firefighters can see

the roof of a house that's on fire, or an overhead view of a forest that's burning, they can proactively determine the scope of resources needed to battle the blaze.

Storing, logging, and tracking all of the data that comes in to the system, then analyzing how it was handled, is key to helping PSAPs evolve from reactive operations to proactive operations. The next generation of PSAP databases will be much more sophisticated than today's Structured Query Language (SQL) versions. They will enable PSAPs to analyze a variety of data, including previous call patterns, weather forecasts, and upcoming events to:

- Anticipate potential outcomes, predict call loads, and staff call taker positions accordingly
- Adapt processes to more efficiently and effectively deal with the types and volumes of calls and information they are receiving



When people who are already at the scene share details, images, and videos, PSAPs and first responders can tailor their response accordingly.



TREND 5:

IP Communication Demands Cybersecurity Measures

The legacy analog telephone lines that people historically used to contact PSAPs didn't present any real security risks to PSAP operations. However, as PSAPs migrate to IP-based emergency call handling and management systems, two new cybersecurity challenges emerge. People with malicious intent can now:

- Use IP connections to hack directly into PSAP systems and initiate ransomware, spam, and phishing attacks that can slow down or halt PSAP operations
- Use bots to initiate denial-of-service (DoS) attacks that temporarily or permanently tie up PSAP systems by flooding them with fake calls

To protect PSAPs against these types of attacks, NG9-1-1 systems should include extensive cybersecurity measures. Systems should also incorporate mechanisms that help PSAPs detect when incoming calls are fake or a hoax. This helps to protect PSAPs from sending resources to fake incidents that may be used to distract them from actual incidents.



Systems should also incorporate mechanisms that help PSAPs detect when incoming calls are fake or a hoax.



Getting Ready for Tomorrow's Trends Today

An innovative call handling and management solution provider with a vision for how trends will evolve can help PSAPs make the right choices today and prepare for the future.

To help identify innovative vendors, some PSAPs, such as the North Central Texas Council of Governments (NCTCOG), have included a section in their requests for proposals (RFPs) that asks vendors to highlight their abilities to innovate. These proof points give PSAPs valuable insight into the vendor's mindset and approach to system evolution.

Think Outside the Box


Because NG9-1-1 systems are a major investment, forward-thinking PSAPs are also looking at creative ways of financing and implementing systems.

In some cases, multiple organizations have come together to share the cost and operation of a single NG9-1-1 system. This is possible because NG9-1-1 systems are based on IP technology and include the ability to set up geo-diverse operations across multiple locations.

Stay Informed

As they evaluate NG9-1-1 systems and plan their migrations, it's important for PSAPs to take advantage of the educational resources that are available to them.

Attending NENA conferences and collaboration roundtables is an ideal way to learn about emerging standards and best practices. The Association of Public-Safety Communications Officials (APCO) is another excellent source of information, training, and professional development for best practices in public safety communications.



Solacom Is an Innovative Partner for PSAPs


Solacom is well known as an innovative and forward-thinking PSAP partner. Our purpose-built and flexible NG9-1-1 call handling and management system integrates capabilities, such as location mapping and text-to-911, that are key requirements for PSAPs today. And it is designed to enable PSAPs to evolve their operations over time and to smoothly incorporate new capabilities as they emerge.

We partner closely with PSAPs to understand their specific challenges and recommend solutions that will serve their needs over the long term. We have experience helping PSAPs incorporate information from multiple new sources into their systems, and in deploying NG9-1-1 systems in creative ways to serve the needs of multiple organizations.

We also actively work with industry associations, working groups, and organizations such as RapidSOS to further interoperability and information-sharing initiatives that will help PSAPs better serve the public. Our focus on innovation has led to a number of industry firsts:

- First Geospatial Router in operation (pre-NENA specification) – 2007 for enterprise 9-1-1 traffic
- First demonstration of USDOT proof of concept at NENA 2009
- First national deployment that replaced DMS-100 tandems for 9-1-1 selective routing
- First national deployment using direct IP connectivity from a Local Exchange Carrier (LEC) — Kentucky
- First fully IP-hosted customer premise equipment (CPE) ESInet — Indiana
- First NENA-certified NG9-1-1 — Illinois
- First statewide NG9-1-1 system — Maine

With Solacom as their partner, PSAPs can rely on the experience and expertise of a dedicated NG9-1-1 system provider and a proven industry innovator.



We partner closely with PSAPs to understand their specific challenges and recommend solutions that will serve their needs over the long term.



Reference

1. 911 Call Centers Consider Impact of FCC Texting Proposal, Government Technology magazine, February 2014.
<http://www.govtech.com/state/911-Call-Centers-Consider-Impact-of-FCC-Texting-Proposal.html>

Additional Information

[Click here](#) for more information about how Solacom can help you make the move to an integrated, future-ready NG9-1-1 call handling and management solution for your PSAP.

Contact Us

Solacom 9-1-1 call handling and management solutions are built on more than 30 years of research and innovation in the application of advanced hardware and software technologies for public safety. Today, Solacom Guardian 9-1-1 solutions support thousands of agencies affecting millions of lives annually — from dense urban environments to statewide deployments.

Contact us today to discover how our Guardian solutions can help your PSAP streamline 9-1-1 call handling and management processes and enable more efficient collection of critical information in emergency situations.

Visit our website: www.solacom.com

SOLACOM

© Copyright 2018, Solacom Technologies. All Rights Reserved. The Solacom word and logo are trademarks of Solacom Technologies. Any reference to third-party trademarks is for reference only and Solacom makes no representation of ownership of these marks.