

# WHAT YOU SHOULD KNOW ABOUT NG9-1-1

Understanding the system and its interrelationships is key to planning an ECC upgrade.

By Mel Maier

**N**G9-1-1 has been discussed for more than a decade; it has the potential to provide the emergency communications center (ECC) with voice, text, pictures, multimedia and many other types of data, including a wide variety of digital technologies and sensors connecting people and their environment. However, defining NG9-1-1 is fundamental and providing end-to-end multimedia capability is more than implementing an emergency services IP network (ESInet). Before considering NG9-1-1, it is essential to answer the question, "What is NG9-1-1?"

APCO and other public safety organizations have defined NG9-1-1 as an interoperable, secure, internet protocol-based system that:

1. Employs commonly accepted standards.
2. Enables ECCs to receive, process and analyze all types of 9-1-1 requests for emergency assistance.
3. Acquires and integrates additional information useful in handling 9-1-1 requests for emergency assistance.
4. Supports sharing information related to 9-1-1 requests for emergency assistance among ECCs and emergency response providers.

Public safety's vision for NG9-1-1 has not yet been achieved anywhere in the United

States as defined in this comprehensive manner. NG9-1-1 promises to match the capabilities of the public with the ECC and is well beyond simple IP-based voice communication. ESInets and next generation core services (NGCS) are only part of a full NG9-1-1 deployment. ECCs have been challenged by customized and proprietary implementations that fail to meet expectations and force agencies into upgrades, incurring additional costs and locking them into non-interoperable solutions. 9-1-1 has evolved but in many ways is still dependent upon 1960s technology, leveraging the technologies of that era without keeping pace with the rapid changes of technology leading to today. Similarly, the concept of NG9-1-1 from more than a decade

ago with its use of precursor ESInet deployments does not match the technology available today.

## INTEROPERABILITY

NG9-1-1 must be thought of comprehensively and end-to-end, as we have now defined it. NG9-1-1 is much more than just enabling new information and data inputs into the ECC. Public safety has further defined interoperability as the capability of ECCs to receive 9-1-1 requests for emergency assistance and information/data related to such requests, such as location information and callback numbers from a person initiating the request. Then ECCs are then able to process and share the 9-1-1 requests for emergency



assistance and information/data related to such requests with other ECCs and emergency response providers without the need for proprietary interfaces and regardless of jurisdiction, equipment, device, software, service provider or other relevant factors.

When agencies implement NG9-1-1, callers needing emergency assistance should not have to answer the same questions multiple times because public safety telecommunicators (PSTs) cannot seamlessly transfer calls with incident data. The 9-1-1 community deserves better, as ECCs have been saddled with interoperability problems in legacy networks. After investing public funds into ESInets, they should not have to experience the same issues. Public safety can only

achieve the shared vision of actual end-to-end multimedia-capable NG9-1-1 systems by basing the outcome on the foundational definitions of NG9-1-1 and interoperability.

### **PROJECT MANAGEMENT IMPORTANCE**

Effectively implementing NG9-1-1 requires project management that can be broken down into five phases: initiating, planning, executing, monitoring and controlling.

When initiating the NG9-1-1 project, identify stakeholders to ensure the areas of responsibility are fully represented for workforce operations, technical systems, financial and procurement, and governance. Ensure their interests and concerns are addressed

during this initial consultation. The project charter creation is where having a new foundational understanding of the NG9-1-1 and interoperability definitions can guide the development of the ECC's goals and objectives. The project charter should include the cost-benefit analysis and the statement of work (SOW) for justification of the need for interoperable NG9-1-1. This charter will be the essential reference document throughout the entire project.

Within the planning phase and project management plan (PMP) development, the project schedule is developed and activities identified for completion. Estimate the resources and time required for project tasks and sequence the activities to

note dependencies and priorities within the project.

Recently, supply chain issues have extended the time necessary for completion of public safety agency orders. Preparing a risk register and planning risk response can reduce expected and unexpected schedule delays. Additionally, procurement rules vary by jurisdiction, and the procurement management plan, developed as part of the PMP, must follow purchasing and compliance regulations.

### **REQUEST FOR PROPOSAL DEVELOPMENT**

In the planning phase, it may be beneficial to use a non-binding process known as a request for information (RFI) to provide the ECC with information on vendor marketplace solutions and services that clarify the availability of NG9-1-1 technical and operational solutions that meet the goals and objectives of the project. In the formal request for proposal (RFP), use templated language that defines NG9-1-1 as comprehensively interoperable. APCO International has included within the Definitive Guide to Next Generation 9-1-1 (found online at [apcointl.org/ng911guide](http://apcointl.org/ng911guide)) a detailed template for developing an NG9-1-1 RFP that includes specific operational and functional requirements of the system to provide interoperable end-to-end capabilities. Leaving that language out hinders competition and innovation and will fail to provide a proper NG9-1-1 solution to the ECC.

Take a comprehensive look at the RFP development to provide end-to-end solutions from the viewpoint of the person requesting emergency assistance to the ECC. Addressing field-based responders (and, when necessary, other ECCs) will more likely result in interoperable and more cost-effective solutions than those that rely on precursor ESInet deployments and after-the-fact enhancements.

### **INCORPORATE CYBERSECURITY INTO NG9-1-1**

New security concerns are presented within the ECC when implementing NG9-1-1. Based on advice from APCO Project 43 (found online at [apcointl.org/p43](http://apcointl.org/p43)) cybersecurity should be incorporated into the planning, implementation and operational models from the beginning of designing NG9-1-1 systems. When transitioning current

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9-1-1 networks to IP-based technologies, the ECC shares networks with other ECCs and vendors. NG9-1-1 deployments remain high visibility targets to intrusion and disruption by criminal elements. Cybersecurity training for ECC staff and developing cyber incident response plans guide employees through cyberattacks. Additionally, it is crucial to improve the physical security of an ECC by identifying and eliminating potential vulnerabilities that could allow unauthorized access to the ECC network and workstations.

As the project moves into the execution phase, the work will be managed and directed, then procurement will begin. Continually reviewing the quality of work and adherence to the project scope is imperative. Communication between stakeholder groups is essential to ensure the necessary resources are available where they are needed to support the project schedule. Project monitoring and controlling will begin as work performance data and deliverable status becomes known. Stakeholders remain engaged throughout to ensure risks are identified and mitigated. When necessary, changes are made to the SOW. A change request must be evaluated for its potential impact on the budget, schedule, technical and operational capability, compliance with procurement regulations, and project stakeholders.

The closeout phase ensures that all project deliverables have been fully implemented and tested and that the ECC has successfully used the NG9-1-1 system.

### **NG9-1-1 OPERATIONAL CONSIDERATIONS**

While many of the skills involved with taking NG9-1-1 requests for emergency assistance will be fundamentally the same as today, PSTs need additional training to manage new forms of multimedia, data and

other technologies. Training programs must continually adapt to the fast-paced changes in technology.

By gaining access to additional information, the ECC can take advantage of innovative data and video analytics for improving situational awareness through the real-time analysis of active incidents. Sensor data and the Internet of Things (IoT) has the potential to both send and receive data relevant to the ECC that empower PSTs to better serve the public and field-based responders.

Anticipating the increase in additional data received at the ECC, workload and call management must consider the impact on the PST. Additional personnel and new positions may be necessary to provide real-time analysis of active incident data and determine the relevant multimedia data; sharing this information with field-based responders should be considered.

Taking on additional roles, learning new technology, and potential exposure to graphic images are of significant concern for the recruitment and retention of PSTs. The stress levels within the ECC and work environment has tremendous potential to overwhelm telecommunicators, and it is vital to develop strategies to address the impact of NG9-1-1 on our first first responders. It is incumbent on the ECC to implement safeguards to monitor staff mental health and address the needs of PSTs through peer support programs, counselors, chaplains, employee assistance programs and critical incident stress debriefings.

When implementing NG9-1-1, it is necessary to develop new or update existing ECC policies to address changes in operational capability, such as coordination between ECC and essential emergency service providers, service quality, call taker expectations and responsibilities, cybersecurity, and disaster response and recovery. Additionally, new ECC inputs will require systematic and objective review through an updated quality assurance program that addresses the latest data points and capabilities. The use of criteria-based electronic guidecard systems can help improve call flow and ensure relevant information is captured.

The ECC must also manage public expectations and misconceptions related to implementation of NG9-1-1. As technology rapidly changes and new features for smart devices are released, the public becomes more

disconnected from the reality of the limited technological capabilities of the ECC.

## CONCLUSION

The promise of NG9-1-1 can only be achieved if the 9-1-1 community works toward a shared vision that aligns with the foundational definitions public safety has developed for NG9-1-1 and interoperability. Sharing multimedia, location data and

other important information, regardless of the type of device and service provider, meets the public expectations for NG9-1-1. ECCs must make their requirements clear in RFPs based on public safety objectives to develop end-to-end solutions without limited deployments based upon the early conceptualization of NG9-1-1 that have not evolved with development in the broader communications industry. ●

***Mel Maier**, APCO International's Chief Technology Officer, leads technical efforts related to NG9-1-1, cybersecurity and other emerging technologies. Maier is a former Captain with the Oakland County, Michigan Sheriff's Office, where he was responsible for overseeing the countywide radio system and Sheriff's 9-1-1 emergency communications. Currently, he serves as the leader of the Public Safety Next Generation 9-1-1 Coalition.*

# CDE EXAM #65173

## WHAT IS NEXT GENERATION 9-1-1 - 65173

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|---|--|--|
| <ol style="list-style-type: none"><li>Next Generation 9-1-1 is voice only.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li><li>Next Generation 9-1-1 interoperability means:<ol style="list-style-type: none"><li>Receiving an emergency request for assistance dependent upon the user's device type and jurisdiction</li><li>Receiving an emergency request for assistance dependent upon the user's device and carrier</li><li>Receiving an emergency request for assistance without regard to jurisdiction, device, carrier, software, or other relevant factors and without the need for proprietary interfaces</li><li>Receiving an emergency request for assistance while requesting specific responders by name</li></ol></li><li>ESInets and Next Generation 9-1-1 core services are the only components of an NG9-1-1 deployment.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li></ol> | <ol style="list-style-type: none"><li>ECCs' capabilities should be aligned with the experience and expectations of the public.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li><li>The concept of NG9-1-1 from more than a decade ago does not match the technology available today.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li><li>Interoperability within an NG9-1-1 environment as defined by public safety means using proprietary solutions and custom interfaces to share data.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li><li>Including the foundational definitions of NG9-1-1 and interoperability within your request for proposal (RFP) and scope of work (SOW) will more likely result in interoperable and more cost-effective solutions.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li></ol> | <ol style="list-style-type: none"><li>Cybersecurity should be:<ol style="list-style-type: none"><li>The responsibility of vendors</li><li>Included after installation and testing of NG9-1-1</li><li>Incorporated from the onset (baked in and not bolted on)</li><li>The responsibility of the public</li></ol></li><li>Additional information in the form of multimedia has the potential to increase PST workload and increase stress levels.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li><li>Sharing multimedia, location data, and other important information regardless of the type of device and service provider meets the public expectations for NG9-1-1.<ol style="list-style-type: none"><li>True</li><li>False</li></ol></li></ol> |
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