CDE #54561

# ACHIEVING AN INNOVATIVE AND INTEROPERABLE TRANSITION TO NG9-1-1

## Achieving an end-state, Next Generation 9-1-1 system throughout the country requires that public safety professionals actively engage in defining the needs and requirements of any solution.

By Jeff Cohen

9-1-1 networks at most emergency communications centers (ECCs) are based on decades-old technology and lack the advanced functionality, interoperability and capabilities that are second nature to the general public. When modernizing these networks to Next Generation 9-1-1 (NG9-1-1), solution providers should be aware of public safety's need for:

- Achieving interoperability among NG9-1-1 systems regardless of technology or jurisdiction;
- Promoting competitive and innovative solutions;
- Enabling the most cost-effective and operationally efficient solutions; and
- Ensuring these solutions include more than just an "upgrade" from analog-based voice-only systems to true IP-based, multimedia-capable systems and architectures.

Whether your agency, local jurisdiction, region or state is developing an NG9-1-1 plan or crafting a request for proposals or similar document, below are several steps and considerations that should be taken.

### OBJECTIVES-BASED RFPS — TELL YOUR POTENTIAL VENDORS WHAT YOU REALLY NEED

Do not restrict potential solutions to a specific architecture or approach (including particular functional elements or core services). Instead, redraft these as objectives for prospective vendors to achieve. This will ensure that you avoid precluding new and innovative ways to implement NG9-1-1. Below, we offer a more comprehensive approach you can take with regard to your RFP.

### FIRST, DEFINE NG9-1-1 IN A COMPREHENSIVE WAY

Recent bipartisan NG9-1-1 legislation incorporated a definition of Next Generation 9-1-1 that APCO supports and believes best ensures ECCs receive what they need while remaining future-proof to accommodate ongoing innovative approaches.

### NEXT GENERATION 9-1-1

The term "Next Generation 9-1-1" means an *interoperable*, secure, internet protocol-based system that:

(A) Employs commonly accepted standards;
(B) Enables the appropriate emergency communications centers to receive, process and analyze all types of 9-1-1 requests for emergency assistance;
(C) Acquires and integrates additional information useful to handling 9-1-1 requests for emergency assistance; and
(D) Supports sharing information related to 9-1-1 requests for emergency assistance among emergency communications centers and emergency response providers.

This definition represents a comprehensive, end-to-end NG9-1-1 solution that includes what will be needed by ECCs to not only receive new forms of data but process

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and analyze this information (i.e. call handling, record management, GIS and CAD functionality). Some RFPs do not go this far — soliciting instead just the connectivity to deliver new forms of communication to the doorstep of the ECC (and in the process mislabel such acquisitions as "NG9-1-1"). Even if your agency/jurisdiction is not yet seeking a full end-state NG9-1-1 solution (such as, for example, by seeking an ESInet only), it is advised to keep this comprehensive definition in your RFP to signal that this is your ultimate objective.

This legislation also includes several sub-definitions that APCO similarly supports and takes a more forward-looking and modern approach. Of particular relevance is the following definition of "interoperable."

## INTEROPERABLE

The term "interoperable" or "interoperability" means the capability of emergency communications centers to receive 9-1-1 requests for emergency assistance and related data such as location information and callback numbers from the public, then process and share the 9-1-1 requests for emergency assistance and related data with other emergency communications centers and emergency response providers, regardless of jurisdiction, equipment, device, software, service provider, or other relevant factors, and without the need for proprietary interfaces.

## MAKE "INTEROPERABILITY" A PRIMARY OBJECTIVE

Employing the legislative definition of "interoperable" or "interoperability" pivots the RFP to lay out objectives rather than specifying particular standards. It places the responding technology providers into the position of formulating a solution that achieves interoperability for your agency's operations. Those solutions then would facilitate the use of application programming interfaces (APIs) that are designed to facilitate linking dissimilar vendors and solutions through a common point. There are numerous options available to facilitate true interoperability and the onus should be on the vendor, not the ECC.

Avoid use of the term "interconnection" or "interconnectivity" when you mean to achieve interoperability. Interconnection is not the same as interoperability. Interconnection may mean that the equipment and services within the contract area can exchange information, but very likely does not mean that this is the case with ECCs outside of the contract area. And, "interconnected" historically applies only to the ability to transfer the voice portion of the call, not any of the affiliated data. It is very important that you specify to your vendors that you expect interoperable systems, not just interconnected ones.

Do not leave the matter of interoperability to be worked out at a later date. This will result in costly, after-the-fact integrations or additional proprietary solutions. For example, require any ESInet to be fully interoperable with adjacent ESInets:

> "ESInet communications must be fully interoperable, not only within the ESInet serving our jurisdiction(s), but also with ESInets serving other agencies, and jurisdictions, regardless of vendor or service provider."

Alternatively, you may not even need to specify an ESInet if you properly define

NG9-1-1, because that definition already encompasses a requirement for end-to-end connectivity, and because of alternate solutions like cloud-based technologies and secure broadband connections.

An alternative requirement for connectivity could read as follows:

> "This solution must be capable of supporting interoperable communications that include voice, text, and multimedia communications from the public, between ECCs, and to responders. These capabilities must be inherent in the proposed solution, not as future "add on" capabilities with "to be determined" specifications and additional costs."

Also, it is the role of the solution providers, not public safety, to ensure that their products and services will be "interoperable." Thus, craft resulting contract language to enforce an interoperability requirement, rather than agree to affording the vendor the flexibility to demonstrate interoperability via a future compliance testing process.

The lack of interoperability leads to increased costs and delays and negatively impacts operations, such as increasing the possibility for a misrouted incident. Operationally, consider the importance of not only transferring a misrouted incident but receiving one from an agency whose incident belongs to your jurisdiction. In a next generation environment, transfers that include multimedia data will be even more important for an effective response. Requiring complicated interfaces will make transferring and receiving misrouted calls more difficult.

Often not considered, operational policies and procedures will also be more complicated if extra steps and specialized equipment are necessary to transfer and receive emergency incidents that depend on proprietary interfaces. Limiting the steps to transfer misrouted calls not only reduces the time necessary for NG9-1-1 training, but may reduce negative media and liability exposure that many agencies face.

## INVITE INNOVATIVE APPROACHES

Technology is increasingly creating opportunities for new approaches to NG9-1-1 networks, functions, applications and services. Accordingly, RFPs should invite forward-thinking solutions for NG9-1-1, even if the proposals deviate from traditional approaches to NG9-1-1 network architectures.

Do not preclude cloud-based solutions or hybrid solutions. For example:

> "Preference will be given to any solution, or partnership that provides seamless interoperability, multimedia capabilities and fully enabled IP-based voice and multimedia services. Acceptable solutions are not limited to premise based approaches, and may include cloud-based and/or secure broadband solutions, hybrid solutions, or any specific technology or vendor provided they meet all other requirements for security, reliability, interoperability and multimedia capabilities."

## STANDARDS

Above, we mentioned how our approach stresses objectives over specifying standards. There are a number of standards including those from the Alliance for Telecommunications Industry Solutions (ATIS), the International Engineering Task Force (IETF), and the Third Generation Partnership Program (3GPP) that are already

implemented and operational that not only form the basis for why the consumer marketplace and many other commercial sectors have achieved interoperability, but also impact NG9-1-1. 3GPP is the "home" of the Internet Multimedia Subsystem (IMS) standard that has been operationally deployed worldwide for a number of years. This standard drives the LTE technology on virtually every smart phone and tablet in the world and is being employed by FirstNet to meet its statutory interoperability requirement. There are specific components to IMS that are already being incorporated into NG9-1-1 systems and are integral to successful implementation of interoperable, multimedia capable systems. This standard was specifically designed to facilitate both and should certainly be considered as one of the suite of standards that will help us realize the NG9-1-1 system our industry truly needs.

Likewise, IETF is the home of the SIP standard and the PIDF-LO standards (which are key for delivering location information with NG9-1-1 calls). Where both SIP and PIDF-LO are already operational, they may be applied to accomplish the desired results for VoIP capabilities with voice and location presence. These are a few examples of why it is so important to make your RFP objectives-based and not just compliant with a particular standard.

All of this information is provided in order to assist agencies in making the best choices for your jurisdiction(s) and your citizens. APCO wants you to be fully informed and obtain the best possible services and solutions that you can. ●

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# CDE EXAM #54561

1. 9-1-1 networks at most emergency communications centers (ECCs) are based on decades old technology.
   a. True
   B. False

2. Restricting solutions to a specific architecture or approach is what ECC's need to tell vendors.
   a. True
   B. False

3. The term "Next Generation 9-1-1" means which of the following:
   a. Secure
   b. Interoperable
   c. Internet protocol-based system
   d. All of the above

4. Next Generation 9-1-1 systems should feature which of the following:
   a. Employs commonly accepted standards
   b. Enables ECCs to receive process and analyze all types of requests for emergency assistance
   c. Supports the sharing of information
   d. All the above

5. Interoperability should not be a primary objective in procuring NG 9-1-1 equipment.
   a. True
   b. False

6. The use of the term "interconnection" or "interconnectivity" should be avoided when the intent is to require interoperability in an RFP.
   a. True
   b. False

7. The possible extra steps needed to transfer emergency incidents with proprietary interfaces could lead to more complicated policies and procedures and increase the time necessary to train public safety telecommunicators (PSTs).
   a. True
   b. False

8. Requiring interoperability in an NG9-1-1 environment is not that important because vendors will automatically offer interoperable solutions.
   a. True
   b. False

9. The consumer marketplace and many other commercial sectors have achieved interoperability.
   a. True
   b. False

10. Limiting the steps necessary to transfer misrouted calls can have the following effects:
    a. Reduces the time to train telecommunicators
    b. Could reduce the agency's exposure to negative consequences
    c. Decrease the time it takes to respond to an emergency
    d. All of the above

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