NG911: WHEN TECHNOLOGY DRIVES PUBLIC POLICY

Elaine Seeman, 342 Slay Hall, East Carolina University, Greenville, NC 27858

James Holloway, 330 Slay Hall, East Carolina University, Greenville, NC 27858

ABSTRACT

As telecommunications technology has advanced, citizens have assumed that their communications devices are capable of soliciting emergency assistance. Text, video and calls from Voice over IP (VOIP) phones are increasingly popular; however, procuring 911 help via these modes has not been widely implemented. As the technology of 911 becomes more complicated and more expensive, federal and state agencies have begun to recognize the need for centralized planning. This paper examines federal and state policies and plans to assess the convergence of technology, policies and regulation.

INTRODUCTION

In 1996, the FCC mandated that all 911 calls from wireless and wireline phones be locatable within a defined distance (FCC report and order and further notice of proposed rulemaking, 1996, July 26). For the past twelve years, wireless carriers and PSAPS (Public Safety Answering Points) have struggled to meet this mandate. Only recently have the majority of PSAPS been able to locate wireless 911 calls; problems related to the delay in meeting the 1996 mandate included: the lack of a singular cellular wireless standard, diverse methods of locating calls based on differing standards, varying levels of technical understanding and jurisdiction among PSAPS, and the issuing of an unfunded mandate by the FCC (Seeman, 2002). Delays in implementing wireless 911 prompted the FCC to study the deployment of 91 services. The Hatfield report focused on technical and operational issues and suggested that a national 911 office act as a champion at the national level (Moore, 2008).

Much progress has been made in locating wireless and wireline 911 calls but the emergence of VOIP has created new challenges for the public safety community. Text, video and photos sent from cellular phones have become the modus operandi for young adults. Users assume that they can procure 911 assistance through the same communications channels that they use daily. However, modernizing systems to meet user expectations will require huge investments in new technologies.

Implementing these new technologies, which are collectively known as Next Generation 911 (NG911), will also require changes in 911 operation, governance and funding. Most experts agree that NG911 can best be implemented through the use of Internet Protocol (IP) networks and standards. According to a recent report prepared for the members and committees of Congress, "An IP-based emergency communications network will facilitate interoperability and system resilience, improve connections between 911 call centers, emergency responders, and alert and warning systems; provide more robust capacity; and offer flexibility to receive calls for help in any format" (Moore, 2008).

Developing such a system is ambitious, necessary and complicated; it will require cooperative coordination on federal domestic security, emergency management, communications and 911 policies and state public safety and communications policies. Particularly, state policy coordination demands operational and technical or system-wide integration of the state 911 regulatory framework and county

and municipal emergency call services, emergency management and geographical information system programs.

This paper is part of a research stream related to 911 law, public policy and technology implementation. Recently two entities, a state 911 Board and the research arm of the National Emergency Number Association (NENA) have asked the authors to examine the need for state and national planning in the light of NG911. This paper, which is the initial step in responding to their requests, will proceed as follows: First we discuss federal legislation and resulting national planning and grant initiatives. Then we explore guidelines and assistance developed by national public safety organizations. Next we talk about state planning efforts and legislation. Finally, we discuss local resistance and the cost of not moving forward with NG911.

FEDERAL LEGISLATION, PLANNING AND GRANTS

Federal legislative and administrative regulatory activities governing the 9-1-1 system determine the roles, obligations and responsibilities of telecommunications and other industries and state policy-makers and agencies involved in developing and deploying technologies, establishing and maintaining state 9-1-1 systems and managing municipal and county emergency call services.

In a number of legislative acts since 2004, Congress has addressed the affect of emerging technologies on the ability to respond to 911 calls. In response to suggestions recommended in the 2002 Hatfield Report, and others, Congress passed The Ensuring Needed Help Arrives Near Callers Employing (ENHANCE) 911 Act of 2004 (P.L. 108-494). The ENHANCE 911 Act created the E-911 Implementation Coordination Office (ICO) to serve as a federal 911 champion and to oversee a grants program for the implementation of and operation of E911 (ENHANCE 911 Act, 2004). This Act focused on compliance, rural coverage, and the appropriate use of fees levied by states for 911.

The New and Emerging Technologies (NET) 911 Improvement Act of 2008 (P. L. 110-283) specifically addressed Voice Over Internet Protocol (VOIP) access to 911 call centers and called for the ICO to coordinate a national plan for migration to an IP-enabled 911 network. This act also extended FCC oversight and regulatory authority to include VOIP service providers. Previously, only wireline and wireless carriers had to comply with 911 connectivity requirements. The FCC addressed parity of access and related capabilities for VOIP call in Report and Order WC Docket No., 08-171 (2008).

The National Plan as defined in the NET 911 Act has not yet been developed. However, based on and past Congressional support and legislation, Moore (2008) suggests four objectives that a National Plan should address. These include:

• **Equality of service and access to 911-** All 911 calls must receive the same level of information and responsiveness regardless of call location, originating communications device or the physical capability of the caller.

• Mechanisms to improve PSAP funding and to monitor fee collection and disbursements. Congress has tasked the FCC with monitoring and reporting on the both the collection of state 911 fees as well as on the disbursement of those fees to PSAPs and carriers. The purpose of this reporting is to assure that funds collected for 911 are used only for their attended purpose. In addition, by administering Federal 911 grants, the ICO can guide the funding of 911 improvements and withhold grant funding from any state that disburses 911 funds for non-allowable uses. • Federal Leadership in Improving 911 Capabilities. A Department of Transportation (DOT) Working Group is constructing the architecture to demonstrate how an NG9-1-1 system would operate and why it offers improved capabilities over the current voice-based system. Other agencies such as the National Institute for Standards and Technology (NIST), the National Telecommunications and Information Agency (NTIA), the Department of Homeland Security, and the FCC are developing standards that will enable a next generation network for emergency communications to operate effectively (Weiser et al., 2008).

• **Transition to IP-Enabled 911 Systems.** Based on the developing standards, architecture and National Plan described above IP-Enabled 911 systems are becoming close to realization. However, attainment depends on a successful migration away from the existing voice-based infrastructure to a network architecture that can be best provided at the state or regional rather than local level (Hatfield et al., 2008).

NATIONAL ORGANIZATIONS

Professional organizations of emergency response call-takers have been active in developing standards, supporting legislation and in educating their membership about NG911 and resultant changes to come. The National Emergency Number Association (NENA) and the Association Public Safety Communication Officials (APCO) have partnered with federal agencies and commercial entities to develop functional and interface standards for NG911 (NENA Functional, 2007) In addition, NENA has developed database management recommendations to insure data quality (Intrado, 2008). In an effort to have their opinions heard, the NENA Next Generation Partner Program published a policy paper with recommendations for both state and federal policy makers (NENA, Next Generation Partner Program).

STATE PLANNING

Until the advent of cellular phones, 911 was usually local and under the jurisdiction of a police department or county sheriff. When the FCC mandated enhanced 911 functionality to include wireless callers, states got involved (FCC report and order and further notice of proposed rulemaking, 1996, July 26). Weiser et al. (2008) found that those states with some kind of statewide 911 oversight were able to support PSAPs through training, funding, equipment approval and bulk purchasing, increased support for the technology, and a higher level of interoperability.

To implement NG911, state oversight will be required to construct the necessary infrastructure; most PSAPs use equipment that cannot be upgraded to VOIP NG911 standards. The cost saving of consolidating equipment and software for GIS mapping and caller databases from multiple (often hundreds) of sites to a single IP-based network with one computer hosting GIS mapping and a single database is considerable.

Federal legislation strongly encourages each state to develop a plan for moving toward Next Generation 911. Indeed some federal matching grant opportunities are contingent on the state having developed a state plan. At this juncture, states appears to be struggling. Each State Plan is unique as evidenced by three recent presentations (Florida, Indiana and Tennessee) to the NC State Wireless Board. What is not unique however, is the plan to consolidate services through an IP-based 911 network.

LOCAL RESISTANCE

To local emergency agencies, consolidation is often viewed as a dirty phrase. PSAPs resist consolidation due both to fear of job loss and also due to the fear of loss of control. Resistance to change is always a factor when implementing new technology; for local PSAPs, NG911 changes everything and it is scary for them. However Weiser et al, (2008) suggest that an IP-based NG9-1-1 system offers opportunities to the PSAPs for improved call routing, personnel efficiencies and 24/7 backup, and economies of scale and scope. (Weiser et al, 2008). Clearly the advantages of NG911 need to be emphasized. The ramifications of not adopting NG911 also must be considered.

A less effective 9-1-1 system means that police, fire and emergency services may arrive a few minutes late. These late arrivals expose citizens to greater personal injuries and personal and real property damages and commercial and business losses. Logically, this exposure (attributed to less effective emergency call services or 911 systems) has a cumulative economic cost shared by industry, consumers and public social programs. Consequently, any convergence that includes cooperative coordination of federal domestic security, emergency management, communications and 9-1-1 policies and state public safety and communications policies must now consider the economic, social, political and other losses of less effective state 9-1-1 systems.

CONCLUSION

The convergence of technology, policy and regulation to further emergency call services, public safety and homeland security is really about what 9-1-1, Enhanced (E) 9-1-1 and Next Generation (NG) 9-1-1 has yet to do for the American public and private sectors. An IP-based 911 network would use the capabilities of modern communication devices to get help more quickly and efficiently. If Virginia Tech students had been able to silently text for 911 help, lives could have been saved. If a cell phone user could send pictures of the individual abducting a child, lives could be changed. Accomplishing this will require planning and cooperation.

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