



Issue Brief

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Wireless Communications Interoperability

Every day the lives of American citizens and the public servants charged with keeping them safe are jeopardized as a result of problems associated with wireless communications interoperability. Whether responding to a terrorist attack, natural disaster or other incident, law enforcement officers, firefighters, paramedics, and other emergency personnel frequently arrive with equipment that will not allow them to talk to one another. These first responders are often forced to send and receive messages over multiple radios to reach units from different agencies and jurisdictions. In extreme cases, they must use runners to deliver hand-written notes. As a result, minutes are lost and lives and property are at risk.

Achieving wireless communications interoperability requires solving a number of administrative and technical issues including the need for better coordination and planning, flexible and open architectures and standards, greater public safety spectrum allocation and innovative funding approaches. The goal, however, remains simple – providing equipment and systems that will allow public safety responders to communicate and share information with other peer responders on demand and in real time.

Coordination and Planning

Public safety agencies and jurisdictions must work together to achieve interoperability. State leadership is essential to developing a coordinated approach and improving the national public safety communications infrastructure. Many states have established foundations for collaboration and planning through interoperability executive committees (SIECs), or similar governing bodies. A well-defined governance structure improves the process of any major project and such an entity should be authorized to make decisions about and oversee the implementation of interoperability initiatives. It can also be effective for enhancing communication, establishing guidelines and policies, and reducing turf battles among agencies and jurisdictions.

The public expects their lives and property to be protected by government – whether federal, state or local – without distinction as to who responds. Citizens also expect government to work efficiently with utilities and the private sector when necessary. To effectively respond to emergencies, government and industry must plan for interoperability from the outset.

Technology and Standards

One of the biggest impediments to wireless communications interoperability is the incompatibility of public safety radio systems and equipment utilizing different proprietary technology. The need for standards became apparent in the 1980s as manufacturers began offering improvements to the functionality and efficiency of their analog radio systems. Better, more secure systems emerged, but each manufacturer used unique protocols to provide these enhancements.

In response to this problem, a cooperative effort on the part of public safety users and radio manufacturers began in 1989 to create interoperability standards for wireless communications. Known as Project 25, this initiative resulted in a set of standards for interoperable digital radio voice and data communications. Unlike many other communications standards and technologies in the commercial wireless industry, public safety user mission critical requirements drove the development of the Project 25 standards.

Spectrum Allocation

Increased demand for wireless communications capabilities has made the usable radio spectrum a very limited natural resource and nearly all of the available frequencies have been allocated. The public safety community has access to only 47.2 MHz of total spectrum. Scarce spectrum results in congested radio traffic and increased interference. This severely limits the ability of first responders to communicate with one another and can jeopardize their safety. Further complicating the interoperability problem is the fact that these allocations are fragmented into many different bands of the radio spectrum.

In 1997, Congress directed the FCC to allocate an additional 24 MHz of spectrum in the 700 MHz band for state and local public safety. However, TV broadcasters' have failed to vacate these channels as current law allows them to retain their existing analog channels until December 31, 2006, or when at least 85 percent of television households in their community have access to digital television – whichever is later. The uncertainty over when this spectrum will be vacated has prevented many state and local governments from making plans or funding commitments to use the newly allocated spectrum.

Funding

Public safety agencies have historically developed radio communications systems based on individual needs, and spending decisions were based on strategies that did not consider interoperability. Traditional funding mechanisms have done little to discourage the development of stand-alone systems, further exacerbating the problem. Upgrading or replacing their public safety communications infrastructure poses a significant fiscal challenge for state and local jurisdictions. Many jurisdictions have proposed systems to be shared by multiple agencies, yet the cost of these projects can exceed \$200 million and public safety must compete for scarce financial resources with other interests such as education and health care. Because of these costs, public officials at all levels of government must establish wireless communications interoperability as a fiscal priority, develop funding strategies and incentives that encourage greater intergovernmental collaboration, and identify current and sustained funding sources to develop shared or compatible systems.

Conclusion

States have a vested interest in establishing and providing statewide public safety wireless systems because first responder communications often crosses more than one departmental or jurisdictional boundary. A more balanced, coordinated approach to solving the interoperability problem can ensure an infrastructure that provides uniform quality of service for everyone.

With an enterprise view of information technology, state chief information officers have emerged as key members of their state's homeland security and emergency response teams. Both are natural extensions of the state CIO's role, particularly as it relates to the communications infrastructure that supports public safety in the detection and response to threats and incidents.

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