

**Joint Statement for the Record**

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## **Introduction**

Good afternoon Chairman Cuellar, Ranking Member Dent, and Members of the Subcommittee. Thank you for inviting us to speak to you today.

The Science and Technology (S&T) Directorate's Command, Control and Interoperability Division (CID), within the Department of Homeland Security (DHS), uses a practitioner-driven approach to create and deploy information resources that enable seamless and secure interactions among homeland security stakeholders. Our goal is to ensure that stakeholders have comprehensive, real-time, and relevant information to protect the Nation.

The Office of Emergency Communications (OEC) was established by Congress to serve as the Departmental focal point for emergency communications policy, planning, technical assistance, and coordination. On July 31, 2008, OEC completed the first-ever National Emergency Communications Plan (NECP), which provides a framework for emergency communications users across all levels of government. The NECP was developed with significant stakeholder input from Federal partners, private sector stakeholders, and public safety officials at the state and local level. Moving forward, OEC will continue to assess the emergency communications landscape and to identify what is and what is not working; develop plans to reverse deficiencies in emergency responders' communications capabilities; collaborate on initiatives with our Federal, State, and local partners; and work with our partners to implement programs and activities that target gaps and make measurable improvements in emergency communications.

As the members of this Subcommittee are well aware, the ability to communicate is essential to the success of any emergency response operation. Emergency responders need to share vital data and voice information across disciplines and jurisdictions to successfully respond to day-to-day incidents and large-scale emergencies. A key mission of CID's Office for Interoperability and Compatibility (OIC) is to strengthen interoperability by developing technologies and tools—reports, best practices, frameworks, and methodologies—that emergency response agencies can use immediately. We are also developing data and voice messaging standards and testing communications equipment to those standards. Though testing proves useful, the key to improving interoperable communications requires a focus on user needs and requirements. As a result, we rely on both practitioners and policy makers across disciplines, jurisdictions, and levels of government to ensure that our work is aligned with responders' needs.

Our focus on the practitioner level has done much to improve interoperability since the attacks of September 11, 2001. Also within DHS, OIC and OEC are working closely to ensure coordination and consistency among our programs, services, policies, and activities. A few examples of ways that DHS has improved and is working to improve interoperability include the following:

- In 2004, OIC developed the Interoperability Continuum to help policy makers understand what it takes to achieve interoperability: effective and collaborative governance, well-designed standard operating procedures, well-implemented technology solutions, meaningful training and exercises, and the integration of all of these elements into day-to-day operations.
- In 2006, OIC conducted the landmark National Interoperability Baseline Survey, which revealed that approximately two-thirds of emergency response agencies use interoperability to some degree in their operations.
- In 2007, each of the Nation's major urban/metropolitan areas developed a Tactical Interoperable Communications Plan.
- In 2008, 56 states and territories developed Statewide Communications Interoperability Plans (SCIPs); OEC's Interoperable Communications Technical Assistance Program (ICTAP) is working closely with the states to help them implement the SCIPs and align them with the goals and objectives of the NECP.
- Later this year and continuing into 2009, OIC will complete laboratory testing, demonstrate, and pilot a multi-band radio that is capable of operating across different radio bands, across different modes—including digital and analog—and with radios developed by different manufacturers.
- OEC is establishing the Emergency Communications Preparedness Center (ECPC) to improve the coordination of interoperability programs and activities across the Federal government; later this year, the ECPC plans to finalize its operating charter and submit a strategic assessment to Congress on progress to date and remaining challenges to interoperability.
- OEC is working with Federal Emergency Management Agency (FEMA) to establish Regional Emergency Communications Coordination Working Groups (RECCWG) to coordinate multi-state efforts to improve the survivability and interoperability of communication systems; beginning next year, OEC plans to hire ten regional coordinators that will be collocated in the FEMA regional offices to serve as senior points of contact for OEC in that region.

### **System of Systems Approach**

With emergency response practitioner input, OIC developed a core strategy for improving interoperability for the Nation's emergency response community. This strategy promotes a "system of systems" approach using standards-based communications equipment. This approach grants emergency response agencies the flexibility to select equipment that best meets their unique technical requirements and budget constraints. It also allows systems operated by different emergency response agencies to communicate, regardless of their manufacturer. The long-term strategy aims at building a system of systems so that separate agencies can join together using interface

standards, compatible procedures, and training exercises without having to discard major investments in their existing systems.

Ultimately, emergency responders operating on a system of systems will be able to respond to an incident anywhere in the Nation, using their own equipment, on any communications system, and on dedicated public safety spectrum as needed and authorized. OIC is working on identifying solutions that advance the emergency response community toward a reliable system of systems—one that is not dependent on any single technology but instead allows for maximum flexibility within and among numerous technologies.

### **Research, Development, Testing, and Evaluation Efforts**

OIC is improving interoperable communications through multiple research, development, testing, and evaluation (RDT&E) efforts related to land mobile radio (LMR) communications, public safety grade communications networks, and interoperable applications. Access to the 700 megahertz (MHz) band will have a positive impact on the spectrum needs of the emergency response community which will continue to evolve beyond voice communications. Examples of OIC's ongoing efforts in this area include:

#### **Multi-Band Radio**

The advent of two-way radio communications in the early 1930s generated a need for public safety radio channels, or spectrum. To support emergency response radio communications, the Federal Communications Commission reserved radio spectrum within several different frequency bands for public safety use. Until recently, emergency response radios were built to operate within a single radio band. As a result, local, tribal, state, and Federal emergency response agencies had to rely on the use of several single-band portable or mobile radios to maintain a level of interoperability with partner agencies. While some agencies swapped or shared radios, others employed time-consuming methods to exchange information, including relaying messages through dispatchers or using runners to hand-carry messages.

To address these challenges, OIC worked with the emergency response community and its partners in the Federal Emergency Management Agency and OEC to identify requirements for a multi-band radio. OIC is in the process of further developing and testing a prototype multi-band, multi-mode portable radio capable of providing uninterrupted communications between local, tribal, state, and Federal emergency response agencies operating in the various public safety radio bands. The radio is capable of operating in the primary State and local public safety bands between 150-162 MHz and 470-512 MHz as well as in the 700 MHz and 800 MHz bands. Additionally, when authorized, the multi-band radio will be capable of operating within the Federal public safety bands 162-174 MHz, 406.1-420 MHz; and in the 138-144 MHz, and 380-400 MHz bands which are used primarily by the Department of Defense.

This capability represents a significant step for Federal agencies that need to interoperate with their local, tribal, regional, and state counterparts. This multi-band radio is equal in form, factor, and cost to existing high-end portable radios. However, a significant difference is that this multi-band radio equips emergency responders with the unprecedented capability of operating across the entire range of public safety radio bands. To communicate with another agency, users simply select the assigned channel.

OIC will test and evaluate this multi-band radio through pilots nationwide. These pilots will focus on testing the radio's operation across multiple systems—analogue, conventional, digital, and Project 25 (P25) trunked—and multiple agencies, including local, tribal, state, Federal, and military. During these field tests, the primary users of the new technology will likely be emergency responders in a command and control role or those involved in special operations that need to interoperate with multiple entities.

OIC is in the pre-planning stages for an initial pilot in New York City. The pilot will involve emergency responders at the local, regional, and state levels. The pilot will thoroughly evaluate the radios and the results will provide vendor-agnostic best practices for integrating multi-band radio technology into agencies across the Nation.

To successfully support emergency response communications and operations, it is essential that technologies align with user requirements. In keeping with its user-driven approach, OIC is working closely with DHS customers to ensure that the multi-band radio meets current and future operational requirements, such as personnel tracking, usage in locations where there is a danger of explosion, and responder health and well-being monitoring. OIC and S&T are encouraging private industry to continue developing similar technologies that meet emergency responders' diverse needs and requirements. The principal reason for OIC's undertaking of multi-band radios is to pressure industry to do what has always been technologically feasible. Results are already evident—multiple companies have entered the competition and others are likely to join in the near future.

### **Radio Over Wireless-Broadband**

As demonstrated recently on Capitol Hill, OIC—in partnership with the National Institute of Standards and Technology (NIST) and the Institute for Telecommunication Sciences (ITS)—is leading the Radio Over Wireless-Broadband (ROW-B) project to research how to connect existing LMR systems with advanced wireless broadband technologies, such as Push-To-Talk over Cellular, while also leveraging Geographic Information System (GIS) technology. Push-To-Talk over Cellular technology allows for walkie-talkie-type communication over a cellular phone network. This smart phone technology effectively allows a single user to reach multiple users through talk groups on the cellular network. By reducing the need to place several calls to coordinate a group, this technology saves critical response time.

GIS technology refers to a host of applications that identify the location (based on a map) of other vehicles, equipment, and emergency responders. GIS databases display these locations on maps that include important information such as roads, buildings, and fire hydrants. This technology enables emergency responders to access the locations of critical resources—such as equipment and personnel—in real time and to form dynamic talk groups based on the proximity of resources.

ROW-B will enable emergency responders and agencies working on interoperable communications to evaluate the benefits and limitations of providing interoperability between previously incompatible systems. By documenting lessons learned and best practices, ROW-B will assist localities nationwide in the integration of existing and emerging communications systems. The impact of the ROW-B project reaches beyond technology. Emergency response agencies will have an opportunity to create new standard operating procedures as well as new governance structures for managing incident communications.

### **Voice over Internet Protocol**

OIC is also working to improve the bridging devices that emergency responders rely to connect radio systems creating networks. Computer networks are increasingly being used to transmit voice communications among radio systems. This is done using a technology known as Voice over Internet Protocol (VoIP). OIC is working with emergency responders, NIST, and ITS to define a common connection for bridging devices that use VoIP. This connection allows one vendor's bridge to pass a voice call to another vendor's bridge. In support of these efforts, OIC has held multiple VoIP PlugFests to test interoperability between different VoIP-based radio bridges.

### **700 MHz Statement of Requirements**

OIC continues to support efforts to fully define the emergency response community's communications requirements. In that regard, OIC—through the National Public Safety Telecommunications Council—led the creation of the *Public Safety 700 MHz Broadband Statement of Requirements* that was published in November 2007. OIC brought together many of the stakeholders involved in developing this document, including emergency responders, equipment manufacturers, and service providers. Through a practitioner-led process, the emergency response community clearly and articulately provided their requirements for a broadband network.

### **Project 25 Compliance Assessment Program**

P25 is focused on developing standards that allow radios and other components to interoperate regardless of the manufacturer from which they are made. This Project's efforts enable emergency responders to exchange critical communications. The goal of P25 is to specify formal standards for interfaces between the various components of an LMR system.

In order to better address the needs of emergency responders, Congress passed legislation calling for the creation of the P25 Compliance Assessment Program (CAP). P25 CAP is a partnership of CID, NIST, ITS, industry, and the emergency response community. P25 CAP establishes a process for ensuring that equipment complies with P25 standards and is capable of interoperating across manufacturers. P25 CAP is providing manufacturers with a method for testing their equipment for compliance with P25 standards. With results publicly posted, P25 CAP is helping emergency response officials make more informed purchasing decisions.

### **Wireless Broadband Productization Project**

Starting in FY 2009, this project plans to test and evaluate commercially-available and emergent wireless broadband products. The overall goal of the project is to ensure that technologies developed in a laboratory work in a real-world environment. The testing and evaluation will reveal capability gaps, if they exist. Ultimately, emergency response agencies will be able to purchase solutions that meet their needs and maintain interoperability as future networks are deployed.

### **Conclusion**

The emergency response community has long sought additional spectrum for mission-critical activities. The additional spectrum in the 700 MHz band is essential to the emergency response community's requirements and helps to satisfy this shortfall. The 700 MHz band can support functions that many existing bands cannot. In addition to voice communications, 700 MHz will allow emergency responders to exchange critical text, imagery, and other data. OIC will continue to work with local, tribal, state, and Federal emergency response agencies on these RDT&E efforts to strengthen interoperable communications across the various public safety bands.

Ultimately, interoperability is not solely a technology problem that can be solved with just the "right" equipment or the "right" communications system. All of the critical factors for a successful interoperability solution—governance, standard operating procedures, training and exercises, and integration of systems into daily operations *as well as* technology—must be addressed.

We appreciate the opportunity to testify before you today and would be pleased to answer any questions you may have.