



# Interoperability TECHNOLOGY Today

A Resource For the Emergency Response Community

Summer 2008



## Arizona Law Enforcement Officers Take to Street with New Hand-Held Technology

Arizona law enforcement units—including agents, detectives, officers, and sheriffs—are taking to the streets equipped with a new technology. The technology program, known as AZLink, makes it possible for law enforcement units in the field to access and exchange criminal data using hand-held, wireless personal digital assistants (PDAs).



Funded by the U.S. Department of Homeland Security's Command, Control and Interoperability Division (CID), AZLink has expanded from a pilot project in southern Arizona to an initiative involving agencies across the state as well as the Arizona Counter Terrorism Information Center (ACTIC). AZLink provides law enforcement officers in these regions with the capability to use PDAs to access information—including criminal histories, mug shots, driver's license data, and incident reports—that they otherwise would need a computer system to access. Officers in southern Arizona also are using AZLink to access maps and aerial photographs to assist investigations. Officers typically need this type of data, known as Hot File information, during an initial encounter with a suspect or suspicious vehicle.

Prior to the deployment of AZLink in 2007, many Arizona law enforcement units in the field only could access critical criminal data from police radios or from computer systems located at headquarters. "Without AZLink, if you are an officer on a bicycle, or a motorcycle, or on foot at an event, you have to bring the suspect to a computer system," says Arizona Criminal Justice Commission Information

Technology Program Manager Bill Kalaf. "Sometimes, this means driving a suspect to the station to validate information that could not be accessed on the street."

*"Getting data into the hands of emergency responders on the frontlines in real time is a critical component of improving information sharing."*

—CID Knowledge Management Tools Program Manager Bruce Baicar

According to studies performed by the AZLink Northern Arizona ACTIC Region, AZLink saves officers approximately 30 to 90 minutes in a given shift. AZLink's wireless data exchange capabilities have an even greater impact on the unquantifiable factor of officer and public safety, says Kalaf. An ACTIC intelligence officer recently used the PDAs to access and review a suspect's driver's license photo with Special Weapons and Tactics (SWAT) officers minutes before the suspect emerged from a SWAT barricade. In another case, officers and investigators used AZLink to access criminal histories and police reports in real time, enabling the arrest of a murder suspect as well as suspects accused of fraud and aggravated shoplifting.

"The impact of AZLink reaches far beyond the technology gaps it is addressing," says Kalaf. "The initiative is building valuable partnerships across Arizona law enforcement agencies, Federal agencies, and border state agencies—enabling agencies to strengthen critical information sharing and coordinate operations."

Local, state, and Federal agencies—including the Federal Bureau of Investigation, U.S. Customs and Border Protection, U.S. Immigration and Customs Enforcement (ICE), and Transportation Security Administration—are testing more than 350 PDAs along Arizona's borders and within the state's airports and cities. ICE agents have 19 PDA units in the field with agents processing 20 to 30 information requests per day.



"Getting data into the hands of emergency responders on the frontlines in real time is a critical component of improving information sharing," says CID Knowledge Management Tools Program Manager Bruce Baicar. "AZLink represents a significant step toward improving information sharing not only among emergency responders in Arizona, but also agencies nationwide."



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## About Interoperability TECHNOLOGY Today

Through a practitioner-driven approach, the Science and Technology Directorate's Command, Control and Interoperability Division (CID) creates and deploys information resources—standards, frameworks, tools, and technologies—to enable seamless and secure interactions among homeland security stakeholders. With its Federal partners, CID is working to strengthen capabilities to communicate, share, visualize, analyze, and protect information.

CID interoperability programs address both data and voice interoperability. CID is creating the capacity for increased levels of interoperability by developing tools, best practices, technologies, and methodologies that emergency response agencies can immediately put into effect. CID is also improving incident response and recovery by developing messaging standards that help emergency responders manage incidents and exchange information in real time.

*Interoperability Technology Today* is published quarterly by CID at no cost to subscribers. Its mission is to provide the emergency response community, policy makers, and local officials with information about interoperability initiatives nationwide, best practices, and lessons learned.

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Homeland Security

## UPCOMING EVENTS

### Events & Conferences

#### Association for Public-Safety Communications Officials International 74th Annual Conference and Exposition

August 3-7, 2008  
Kansas City, Missouri  
<http://www.apco2008.org>

#### International Association of Fire Chiefs Fire Rescue International 2008

August 14-16, 2008  
Denver, Colorado  
<http://www.iafc.org>

#### National Emergency Management Agency 2008 Annual Conference

September 8-11, 2008  
Portland, Oregon  
<http://www.nemaweb.org>

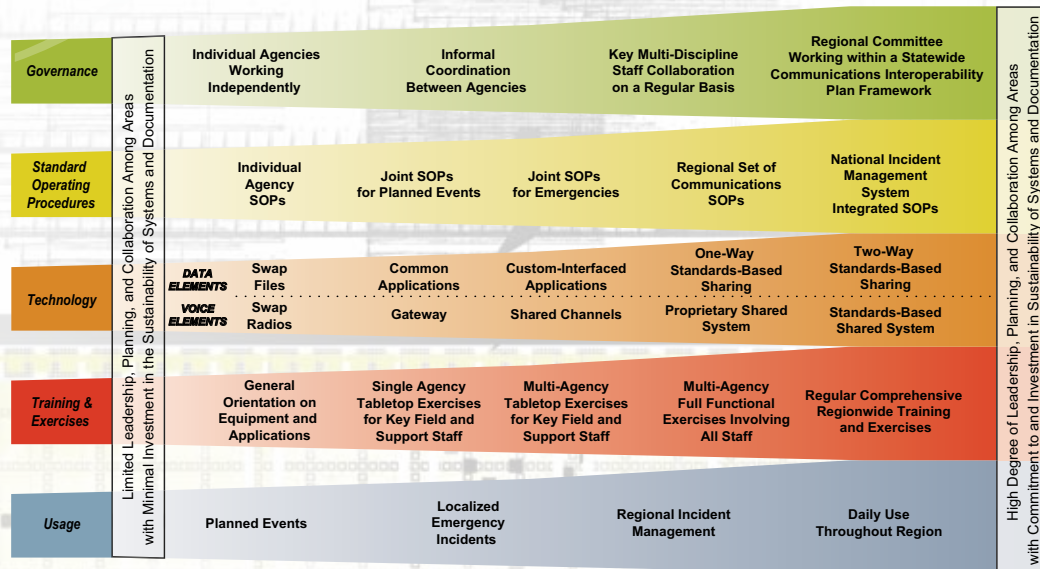
#### 10th Annual Technologies for Critical Incident Preparedness

October 29-31, 2008  
Chicago, Illinois  
<http://www.ctc.org>



Homeland Security

## Interoperability Continuum



### DIRECTOR'S MESSAGE

By Dr. David Boyd

Since its inception, the Command, Control and Interoperability Division's Office for Interoperability and Compatibility (OIC) has been committed to advancing voice communications interoperability—considered by emergency responders to be the most fundamental and essential communication mode among dispatchers, incident commanders, and responders on the frontlines. Today, the ability to exchange emergency data—a map, a video image, or an alert—is increasingly critical to the success of field operations.

In response to the new role data exchange plays in emergency response communications, OIC has updated the Interoperability Continuum, which graphically depicts the multiple dimensions of interoperability. Designed to help agencies and policy makers plan and implement interoperability solutions, this tool identifies five critical success factors for progress: governance, standard operating procedures, technology, training and exercises, and usage. Today, jurisdictions across the Nation are using the Interoperability Continuum to track their region's progress in strengthening interoperable communications.

The new edition of the Interoperability Continuum features an updated technology lane that includes stages of data communications interoperability in addition to voice. Agencies can use the new Interoperability Continuum to map the data exchange progress—from swapping files to two-way standards-based sharing. Detailing the stages of interoperability, the new data lane includes the following benchmarks:

- **Swap Files:** Swapping files involves the exchange of stand-alone data/application files or documents by physical or electronic media (e.g., Universal Serial Bus devices, network drives, e-mails, faxes). This process effectively creates a static "snapshot" of information in a given time period. Though swapping files requires minimal planning and training, it can become difficult to manage beyond one-to-one sharing.
- **Common Applications:** The use of common proprietary applications requires agencies to purchase and use the same or compatible applications and a common vocabulary (e.g., time stamps) to share data. Common proprietary applications can increase access to information, improve user functionality, and permit real-time information sharing between agencies. However, the use of common proprietary applications requires strong governance to coordinate operations and maintenance among multiple independent agencies and users; these coordinated efforts are further compounded as the region expands and additional agencies use applications. Common proprietary applications also limit functionality choices as all participating agencies must use compatible applications.
- **Custom-Interfaced Applications:** Custom-interfaced applications allow multiple

agencies to link disparate proprietary applications using single, custom "one-off" links or a proprietary middleware application. As with common applications, this system can increase access to information, improve user functionality, and permit real-time information sharing among agencies. Improving upon common applications, this system allows agencies to choose their own application and control the functionality choices. However, if using one-to-one interfaces, the use of multiple applications requires custom interfaces for each linked system. As the region grows and additional agencies participate, the required number of one-to-one links will grow significantly.

- **One-Way Standards-Based Sharing:** One-way standards-based sharing enables applications to "broadcast/push" or "receive/pull" information from other disparate applications and data sources. This system enhances the real-time common operating picture and is established without direct access to the source data; this system can also support one-to-many relationships through standards-based middleware. However, because one-way standards-based sharing is not interactive, it does not support real-time collaboration between agencies.
- **Two-Way Standards-Based Sharing:** Two-way standards-based sharing is the ideal solution for data interoperability. Using standards, this approach permits applications to share information from disparate applications and data sources and to process the information seamlessly. As with other solutions, a two-way approach can increase access to information, improve user functionality, and permit real-time collaborative information sharing between agencies. This form of sharing allows participating agencies to choose their own applications. Two-way standards-based sharing does not face the same problems as other solutions because it can support many-to-many relationships through standards-based middleware. Building on the attributes of other solutions, this system is most effective in establishing interoperability.

In keeping with its practitioner-driven approach, OIC partnered with the Continuum Working Group (CWG) to update the Interoperability Continuum. Established in July 2007, the CWG is comprised of members from the Emergency Response Council, Executive Committee, and Practitioner Steering Group. These practitioner bodies provide OIC with expertise on data and voice interoperability initiatives.

OIC is committed to ensuring that resources take into account all aspects of interoperability. We look forward to continuing to work with the emergency response community and Federal partners to equip localities with the resources they need to navigate the road to interoperability.

# Value of Virtual Alabama a Reality

Alabama's emergency responders are taking to the frontlines equipped with cutting-edge common operational awareness. Created and first launched in Alabama, a new visualization tool known as Virtual Alabama overlays statewide satellite imagery and aerial photography with critical data such as real-time weather information and the location of fire hydrants, utility lines, gas pipelines, and hazardous materials. Alabama government and homeland security partners are using the comprehensive database to model, analyze, and exchange information during emergencies.

"Suppose you're a firefighter responding to a large-scale fire at a school. Wouldn't you like to access building floor plans, identify which classrooms are occupied at that time, and determine where hazardous materials are stored?" asks Alabama Department of Homeland Security (AL DHS) Director Jim Walker. "Virtual Alabama is saving lives with this type of information."

The applications of Virtual Alabama reach far beyond the emergency response field. County and state officials can use the technology to efficiently and accurately assess damage after disasters. For example, if a tornado were to hit Alabama, officials could use Virtual Alabama to access pre-tornado imagery and compare that imagery to aerial photographs taken after the disaster. Officials could then access the property tax data stored in Virtual Alabama to rapidly assess the property tax valuation for each damaged structure. This work enables officials to quickly develop an accurate disaster assistance request for the Federal Government.

The idea for Virtual Alabama was originally conceived while AL DHS officials conducted damage assessments following Hurricane Katrina. When Alabama Governor Bob Riley requested pre-hurricane imagery, state officials had aerial photographs of regions post Hurricane Katrina, but could not readily access photographs of the devastated regions before the hurricane hit. "Alabama's counties had spent millions of dollars mapping the state and collecting valuable information such as building design and the location of every fire hydrant, but we hadn't consolidated all of this data into a useable resource," says Walker.

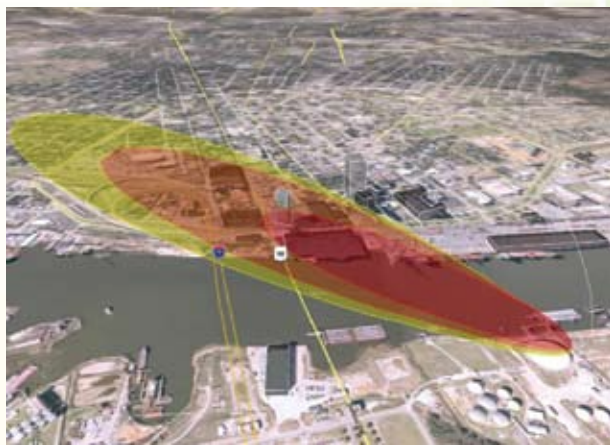
To address this capability gap, in October 2005, AL DHS partnered with the U.S. Space and Rocket Center and Google Earth to develop a visualization tool that leverages existing state asset imagery and infrastructure data. Equipped with the Google Earth Enterprise platform, Virtual Alabama combines thousands of statewide maps, satellite images, aerial photographs, and infrastructure datasets into a single, limited-access site. "Virtual Alabama is only limited to the imagination of the user," says Walker. In May 2008, the system had 2,800 users representing more than 550 agencies and each of Alabama's 67 counties with the tool's user base growing exponentially. This number will only continue to grow as users with a government e-mail address can access Virtual Alabama at no cost.

Virtual Alabama carried an initial price tag of only \$150,000 for computer software, hardware, and Google Earth Enterprise licensing fees. The state

funded the technology and distributed it free of charge to counties and agencies. "We put Virtual Alabama in the hands of the people who are going to make a difference—the local police officers and firefighters and other first responders on the frontlines," says Walker.



Partnerships among local, state, and Federal agencies have been essential to the success of Virtual Alabama. "In developing Virtual Alabama, we relied on local and state partnerships to provide existing imagery and data," says Walker. "These types of partnerships and collaboration will continue to be important across our data sharing efforts." To ensure the continued success of the tool, each agency periodically loads data into the limited-use system and controls the level of access to data input through firewalls.



Virtual Alabama's scope and user group are broad with the tool assisting homeland security agencies and partners, city and county governments, economic developers and planners, public works operators, natural resource managers, environmental agencies, agriculture departments, transportation managers, and military operations. "Realizing Virtual Alabama's benefits beyond homeland security purposes was a turning point for us," says AL DHS's Assistant Director of Science and Technology Norven Goddard. "What we're finding is that we've only really tapped into about 10 percent of the technology's capabilities."

"Virtual Alabama's capabilities can have a significant impact beyond Alabama's borders," says Goddard. "We want the Federal Government to adopt Virtual Alabama as a best practice across all 50 states—we think it's that good."



*"Suppose you're a firefighter responding to a large-scale fire at a school. Wouldn't you like to access building floor plans, identify which classrooms are occupied at that time, and determine where hazardous materials are stored?" asks AL DHS Director Jim Walker. "Virtual Alabama is saving lives with this type of information."*



## Interoperability in Rocky Mountain State Reaches New Heights

In 1992, Colorado's Digital Trunked Radio (DTR) Operations Manager Mike Borrego drove more than 5,000 miles across the state with a vision: To ensure that designs for the new statewide trunked radio system aligned with the operational requirements of emergency responders in the field. The initiative—which included meetings with more than 100 agencies—became the cornerstone of Colorado's practitioner-driven approach to statewide interoperability progress.

“Focusing on identifying user requirements rather than available technology capabilities has proven invaluable to planning for and implementing Colorado's statewide communications system,” says Borrego. Conceptualized in the early 1990s, a single Project 25-based DTR 700/800 megahertz (MHz) system is now replacing the patchwork of disparate radio systems that once supported state emergency response operations. Expected to be completed this year, the communication system will use 188 radio towers to support more than 32,000 users representing more than 700 local, tribal, state, and military agencies. The goal of the \$78.9 million project is to provide 95 percent mobile coverage across the mountainous state.

### Blueprint for Change

The DTR project gained momentum in 1993 when Pope John Paul II visited Denver, Colorado, to lead an outdoor mass attended by an estimated 400,000 people. Requiring coordinated communications across a robust fleet of law enforcement agencies, the large-scale event exposed a need for improved interoperability. The Colorado Department of Personnel and Administration's Division of Information Technologies partnered with a user group comprised of local, tribal, and state emergency response representatives to draft the *Colorado Digital Trunked Radio System Plan*. Published in 1995, the plan outlines the standards and operational needs of end users. “Even in the face of skepticism, we were married to the plan til' death do us part,” says Borrego.

Due to a lack of funding, the statewide DTR system remained a blueprint until the late 1990s when interoperability challenges during multi-jurisdiction, multi-discipline emergencies—including the 1999 Columbine High School shootings—topped agendas of county and state legislatures. In 1998, the state legislature created the Public Safety Trust Fund for use by state agencies to install the DTR radio system. More recently, homeland security and Colorado Wireless Interoperability Network grants have funded the system's build out.

### Interoperability Milestone

For an effective regional planning approach, Colorado didn't need to look further than the shared system connecting Douglas and Jefferson Counties. In 1996, Arapahoe County, Douglas County, Jefferson County, the City of Aurora, and the State of Colorado signed a Memorandum of Understanding to allow the interconnection of their radio systems. In 1998, Douglas and Jefferson Counties began building a multi-county, 800 MHz, trunked radio system. The system grew to cover northeastern Colorado using numerous sites and supporting more than 3,000 users. Douglas and Jefferson Counties implemented their shared communications system as part of an intergovernmental agreement. The agreement outlined specifically how the two counties would implement and utilize a shared communications infrastructure designed to distribute costs among system participants.

As the first system in Colorado to link multiple government entities and jurisdictions through a common digital communications infrastructure, the Douglas-Jefferson County system became a model for Colorado's multi-year, multi-phased DTR system. “A state trooper traveling on a state highway across Colorado will be able to talk to every agency along the way,” says Borrego. “That's a great achievement for us.”

Colorado uses an interoperability gateway—known as the North Central Interoperability Gateway—and 14 interoperability talk groups to link the single statewide system to networks in two metropolitan areas, which have opted not to replace their existing radio systems. “Partnerships and long-standing relationships among emergency response agency leaders make the scenario work,” says Borrego.

### Partnerships for Progress

The success of Colorado's communications system hinges in part on these types of strong working relationships. Of the more than 700 agencies using the statewide communications system, 80 percent are non-state agencies and 20 percent are state agencies. When the system is completed, localities will own and operate 60 percent of the infrastructure while the state will own and operate the remaining 40 percent. “We have the local-state partnerships that make this ratio work,” says Borrego.

Colorado's locally-driven approach to interoperability progress is the core foundation of the state's Consolidated Communications Network of Colorado (CCNC). “The CCNC as it is today is the result of a vision of true pioneers,” says CCNC President and Elbert County (Colorado) Communications Center Director Steven West. “This vision has developed into a network of professionals sharing knowledge, resources, and expertise to produce an effective statewide communications interoperable solution.”

The users group is comprised of representatives from the 700 agencies that use the statewide DTR system. “Every discipline and every member agency has an equal voice at the table,” says former CCNC President and former Douglas County (Colorado) Sheriff Office Chief Michael Coleman. “It doesn't matter if you're a 6-man department or a 600-man department.”

Organized into committees, CCNC members manage the statewide communications system using a comprehensive approach to interoperability. This approach includes drafting governing policies, developing standard operating procedures, and coordinating training and exercises. “Over the last several years, we have had multiple examples of the need for truly interoperable communications not only nationwide, but worldwide as well,” says West. “CCNC has identified and continues to identify areas that need to be incorporated into interoperability plans. This has been accomplished by a bottom-to-top approach that addresses every level of operations, for both emergency and day-to-day operations.”

“The technology is not a finish line for us,” says Coleman. “It's not what makes an effort a success. The people are the difference. At the CCNC, we all sit down at the table together, put our egos and politics aside, and work in support of a common vision. This is what has made our system a success.”

## Best Practices from Interoperability Initiatives in Colorado

- Invest in planning rather than immediately pursuing technology options.
- Ensure that the interoperability solution aligns with the needs of end users in the field.
- Identify champions across all levels of government and across agency leadership.
- Cultivate relationships and partnerships across regions, agencies, and levels of government.

## Data Technology Keeps In Step with NIMS STEP

Emergency managers are steps closer to ensuring that technologies supporting response operations adhere to the Common Alerting Protocol (CAP) and the Emergency Data Exchange Language (EDXL) suite of standards. These data messaging standards enable emergency responders to share critical data—such as a map, a situational report, or an alert—seamlessly across disparate software applications, devices, and systems. The effective exchange of this type of data is essential during emergency response operations.

“Many times, the success of an operation hinges on the capability of emergency responders to successfully share vital, timely data across multiple entities,” says U.S. Department of Homeland Security (DHS) Command, Control and Interoperability Division (CID) Program Manager Denis Gusty. “Incorporating data messaging standards into information-sharing products will ensure that agencies can exchange essential data across otherwise incompatible systems.”

To evaluate product adherence to data messaging EDXL standards, CID is partnering with the DHS Federal Emergency Management Agency’s (FEMA) Incident Management Systems Integration (IMSI) program. The initiative, known as the National Incident Management System Supporting Technology Evaluation Program (NIMS STEP), provides an independent, objective evaluation of commercial and government hardware and software products related to incident management. Participation in the voluntary program does not constitute certification of NIMS compliance or an official DHS endorsement of the product.

“NIMS STEP meets an unmet need by focusing on data exchange interoperability and by providing a testing venue for vendors to demonstrate consistency with CAP, EDXL-Distribution Element (DE), and NIMS concepts and principles,” says FEMA IMSI Program Specialist David Larimer. “Ultimately, NIMS STEP is designed to support first responders and emergency managers in their decision making during the purchasing and procurement process to ensure that systems purchased for field operations are consistent with NIMS and are interoperable from a data exchange standpoint.” Evaluation activities are also designed to help create a uniform level of compliance and expand technology solutions.

NIMS STEP supports NIMS, which identifies the requirements for ensuring interoperability and compatibility among multiple response agencies. NIMS efforts provide a consistent, nationwide approach for agencies at all levels of government to effectively and efficiently manage response operations. “As NIMS indicates, systems operating in an incident management environment must be able to work together and not interfere with one another,” says Larimer. “Common communications, digital data formats, and standards are critical in achieving system interoperability and compatibility.”

In support of these NIMS criteria, NIMS technical standards CAP and EDXL are linked to IMSI testing and evaluation activities. The CAP standard enables practitioners to exchange all-hazard emergency alerts, notifications, and public warnings. Such data can be disseminated simultaneously over many different warning systems, e.g., computers, wireless, alarms, television, and radio. The EDXL suite of standards includes the DE standard, which enables responders to distribute data messages by recipient, geographic area, or other specifications such as discipline type. The EDXL suite also will include the Resource Messaging (RM) and Hospital Availability Exchange (HAVE) standards, which are expected to be ratified by the Organization for the Advancement of Structured Information Standards later this year. The RM standard will enable responders to exchange resource data such as personnel and equipment. The HAVE standard will enable responders to exchange information about a hospital’s capacity and bed availability with medical and health organizations.

“NIMS STEP supports the important standards development work that DHS, its Federal partners, standards organizations, and emergency responders are advancing,” says Gusty. “The program represents an important mile marker on the road to seamless data exchange for emergency responders in the field.”

Questions about NIMS STEP can be directed to [nimsstep@nimssc.net](mailto:nimsstep@nimssc.net). Additional information about the program is available at [http://www.fema.gov/emergency/nims/nims\\_testing.shtm](http://www.fema.gov/emergency/nims/nims_testing.shtm).

## OIC Seeks Practitioner Volunteers to Participate in Research Testing

The Office for Interoperability and Compatibility (OIC) is working with the emergency response community and Federal partners to strengthen interoperability capabilities by testing communications equipment and identifying practitioner requirements for technologies. For example, OIC recently tested surveillance video clips to develop recommendations for ensuring clear, accurate video applications. The success of these research initiatives depends upon the data that OIC gathers from emergency responders who volunteer to participate in subjective tests. The agency is seeking active or retired emergency responders—police officers, firefighters, emergency medical service personnel, Federal agents—to participate in upcoming testings. As a subjective participant, volunteers use their own judgment to provide feedback, which is kept anonymous. Testing takes place at the Institute for Telecommunications Sciences laboratories in Boulder, Colorado, and volunteers’ travel expenses are paid for in accordance with Federal travel regulations. More information about upcoming testings and how to participate is available at <http://www.its.bldrdoc.gov/psvq>.

## DHS Releases Data Messaging Standards Language Guide for Requests for Proposals

The U.S. Department of Homeland Security has released a Data Messaging Standards Language Guide for Requests for Proposals (RFPs). Developed with practitioner input, this guide is intended to assist procurement officials who develop RFPs for emergency response information technology systems. The language provided in the guide requires manufacturers to incorporate Emergency Data Exchange Language (EDXL) messaging standards into their products. EDXL standards enable emergency responders to share critical data—such as a map, a situational report, or an alert—seamlessly across disparate software applications, devices, and systems. Effective exchange of this type of data is essential during emergency response operations.

## DHS Type III COML Training to be Released

The U.S. Department of Homeland Security’s (DHS) Type III Communications Unit Leader (COML) course has been recognized as supporting the National Incident Management System (NIMS), which provides a consistent, nationwide approach for agencies to manage emergency response operations. The Type III COML course trains emergency responders how to be radio communications unit leaders during all-hazards emergency operations—significantly improving communications across the multiple disciplines and jurisdictions responding to an incident.

For the COML program, incident response is organized into five categories of magnitude and complexity. The type of response operation an incident necessitates is determined by the level of resources required to address the incident as well as the incident’s duration (e.g., one hour, several weeks). As the most complex incident, a Type I response necessitates a multi-discipline, multi-jurisdiction response for a significant duration, such as recent large-scale natural disasters. As the least complex incident, a Type V response requires limited resources and time, such as a routine traffic stop. Recognized by the DHS Incident Management Systems Integration Division as supporting NIMS, the Type III COML course is expected to be made available to localities and states in summer 2008. Additional information about the Type III COML course is available on the SAFECOM Web site at [www.safecomprogram.gov](http://www.safecomprogram.gov).



## Multi-Band Milestone for Radio Communications

Emergency responders are steps closer to communicating among agencies at all levels of government, regardless of the radio band. A new software-defined radio technology, known as the multi-band radio (MBR), is capable of operating on all public safety radio bands between 100 megahertz (MHz) and 900 MHz. The new radio bridges a major interoperability gap for emergency responders on the frontlines.

### Fragmented Frequency Bands

The advent of two-way radio communications in the early 1930s generated a need for additional 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, many agencies had to rely on the use of several single-band portable radios to maintain a level of interoperability with partner agencies. While some agencies swapped or shared radios, others employed time-consuming methods to relay messages, including contacting other dispatchers and using runners to hand-carry messages.

Fragmented frequency bands continue to present an obstacle to emergency response communications during daily incidents and major events. “Our team’s operational plans during Super Bowl XLII required considerable interaction with Federal and military resources; a majority of the metropolitan agencies utilized 800 MHz trunked technology which made communicating with VHF and UHF users problematic at times,” says Phoenix (Arizona) Communications/Information Technology Project Manager Jesse Cooper.

### Technology Marches On

To address these challenges, the U.S. Department of Homeland Security’s (DHS) Command, Control and Interoperability Division (CID) recently awarded a contract to a communications corporation based in Clarksburg, MD; the contract requests a demonstration of an MBR that enables emergency responders to communicate with partner agencies regardless of the radio band. The MBR prototype is capable of operating in the 136-174 MHz, 380-520 MHz, 700 MHz, and 800 MHz bands. Additionally, when authorized, the MBR is capable of operating on primary Department of Defense bands in the 136-138 MHz and 380-400 MHz range as well as the following two Federal Government bands: 162-174 MHz and 406.1-420 MHz. This capability represents a significant step for Federal agencies, which need to interoperate with their local, tribal, regional, and state counterparts.

The MBR is equal in form factor and cost—it carries a price tag of \$4,000-\$6,000—to existing, high-end, portable radios. The only difference is that the MBR equips emergency responders with the unprecedented capability to operate across the entire range of public safety radio bands. To communicate with another agency, users simply select the assigned channel. For larger operations,

such as the Super Bowl, users could carry a single radio instead of switching between multiple hand-helds to talk to users in other disciplines and agencies.

“Multi-band radio technology will provide emergency responders a degree of interoperable communications that has been very much needed in the past, but never accessible before now,” says CID Director Dr. David Boyd.

### Field Tests

Later this year, DHS will test and evaluate the MBR through pilots nationwide. The pilots will focus on testing the radio’s operation across multiple systems—analogue, conventional, digital, and P25 trunked—and multiple agencies, including local, tribal, state, Federal, and military agencies involved in emergency response.

During these field tests, the primary users of the new technology are likely to be responders in a command and control role, such as incident commanders, battalion chiefs, and Federal officials who coordinate with local agencies. “As multi-band radio technology becomes more widely used, the implementation by strategic level staff alone will enable a unit to communicate across jurisdictions when coordinating response,” says Cooper. “Having the ability to quickly access multiple frequency bands will assist communications personnel with establishing emergency responder interoperable communications more quickly and efficiently.”



### IN YOUR OWN WORDS . . . . .

By Weber County (Utah) Sheriff Brad Slater

## Planned Events Yield Opportunities of Olympic Proportions

At the XIX Winter Olympic Games, athletes from a record 18 Nations earned gold medals. The victory that didn’t make headlines was the interoperability achieved by the 90 emergency response agencies tapped to support the Winter Olympic Games operations.

When Salt Lake City, Utah, was named host of the 2002 Olympic Games, there was unquestioned consensus among emergency response agencies that planning for the Games required an unprecedented level of cooperation and coordination across local, state, and Federal entities. With 78 events; 2,399 athletes; 8,730 media; 22,000 volunteers; and millions of spectators, no one fleet of vehicles or personnel could provide all of the resources and expertise necessary for a successful operation. What we didn’t anticipate was how the longevity and value of the relationships established, technologies tested, and operations exercised during the Olympic Games would contribute to Utah’s statewide interoperability progress. Interoperability planning for the Winter Olympic Games demonstrated that the impact of a planned event can reach far beyond the event’s finish line.

One of the most visible impacts of the operations for the Winter Olympic Games was the large-scale test of the Utah Communications Area Networks (UCAN). Providing radio coverage for approximately 85 percent of the state, the 800 megahertz system supports more than 15,000 users and 120 local, state, and Federal agencies. The history of the network underscores the pivotal role of the human element in interoperability progress. While the communications system only took three years to build, it took six years of political compromise and negotiations to secure the needed support to purchase the system equipment.

During the Winter Olympic Games, UCAN supported all emergency response radio traffic as well as communications for the Salt Lake City Olympics

Organizing Committee. The network processed 10.5 million talk requests and supported nearly 16,000 radios, effectively proving Utah’s interoperability capabilities. Despite the overwhelming success of the system, problems still arose during testing. For example, the UCAN field test identified a need for training, with some users unable to remember how to operate the system. By identifying an area in need of improvement, the test assisted UCAN officials in allocating future resources appropriately.

Today, Utah leverages the valuable infrastructure assets it acquired through the Olympic Games with the Utah Wireless Integrated Network (UWIN). UWIN’s mobile data and voice networks enable users on UCAN, the Law Enforcement System, State Radio System, and Utah National Guard System to interoperate.

Advanced technology alone could not effectively address the magnitude and complexity of the operations for the Winter Olympic Games. These operations required partnerships across jurisdictions and among local, state, and Federal agencies such as emergency management, emergency medical services, fire services, law enforcement, public works, and transportation agencies as well as the Department of Defense, the Federal Bureau of Investigation, and the United States Secret Service. The Utah Olympic Public Safety Command provided an invaluable opportunity for cross-pollination and coordination among various levels of government. Many of the relationships formed among agencies during the Winter Olympic Games became the foundation for long-term partnerships—ultimately helping Utah gain ground in achieving its vision for statewide interoperability.

## From the Mississippi Front Lines to Capitol Hill with Congressman Bennie Thompson



A volunteer firefighter for 26 years in Hinds County, Mississippi, Congressman Bennie Thompson (D-Mississippi) knows first hand how critical interoperability is to emergency responders on the front lines.

“During my time in the fire service—well before the Oklahoma City bombing, the September 11, 2001, attacks, and Hurricane Katrina—communications challenges significantly impacted our ability to coordinate and respond during an emergency,” says Congressman Thompson. “My experience made me aware of the many vulnerabilities of the fire service—like outdated technology and equipment—but also highlighted the need for leadership and an advocate that would champion real solutions.”

The interoperability needs of emergency responders has topped Congressman Thompson’s agenda since he entered public service 39 years ago. The longest serving African-American elected official in the State of Mississippi, Congressman Thompson served as Alderman and Mayor in his hometown of Bolton and as Supervisor for Hinds County before being elected to Congress in 1993. As a local official, Congressman Thompson focused on ensuring that localities and emergency response agencies received the resources they needed to successfully interoperate.

Today, Congressman Thompson champions interoperability progress from a national vantage point. Serving his eighth term as the Democratic Congressman for Mississippi’s Second District, Congressman Thompson also is serving his third term on the Committee on Homeland Security, which he chairs. “My awareness and familiarity with the vulnerabilities and challenges first responders face has increased significantly since becoming a Member of Congress,” says Congressman Thompson. “When I was elected to Congress, and especially after I became

Chairman of the Committee on Homeland Security, I was forced to broaden my policy solutions to better the entire country.”

To effectively address nationwide interoperability challenges, Congressman Thompson balances the threats faced by the Nation’s largest cities with the needs of rural communities like his hometown. “As a Member of Congress who represents a rural district, I recognized early the funding disparities between urban cities and rural communities,” says Congressman Thompson. In response to these funding issues, Congressman Thompson is working to ensure that regions are interoperable regardless of location or population.

Strengthening interoperability nationwide is an ongoing process—not a one-time investment, says Thompson. Federal initiatives need elasticity to adapt to new interoperability needs. Today’s legislation represents a mile marker, not a finish line, for interoperability progress. Thompson adds that the Federal Government must be prepared to adopt comprehensive policies for tomorrow’s advanced interoperability solutions.

## Q&A with Congressman Bennie Thompson

### Q. What are the major interoperability challenges facing the Nation and Mississippi?

A. The availability and access to public safety spectrum is an ongoing concern for the first responder community. Currently, public safety is competing for access to limited radio communications spectrum in the Federal Communications Commission’s (FCC) auction of the “D” Block of the 700 MHz band. The safety of the American people is at risk due to the inability of thousands of public safety agencies to communicate during a disaster, whether natural or man-made.

Congress is long overdue in holding the responsible Federal agencies—the FCC and the U.S. Department of Homeland Security (DHS)—accountable for developing and providing a necessary nationwide, broadband public safety network. We must work to improve the limited and fragmented radio communications spectrum that hampered first responders during the attacks of September 11, 2001, which were heavily criticized in The 9/11 Commission Report.

It is critical that we move forward collectively, realizing that long-term investment in interoperability is imperative and the reward will be many lives protected and saved by sound policy implementation. In fact, the Office of Management and Budget estimates interoperability solutions to cost more than \$15 billion nationwide.

An example a little closer to home for me is the estimate for deploying an interoperable statewide network, which would cost \$150 to \$300 million in Mississippi. Congress must continue to encourage the FCC and DHS to strike a balance in a public-private partnership for the improvement of nationwide interoperable emergency communications despite the cost. Otherwise, our first responders will be left juggling multiple radios—leading to a virtual battle of public safety personnel over the existing airwaves.

### Q. What is your vision for interoperability?

A. In a “perfect world,” I envision interoperable emergency communications to be a harmonious system of systems across jurisdictions and disciplines, allowing first responders to effectively respond to any and all emergencies. To reach this goal, each state must be held accountable for developing a statewide emergency communications plan that implements the five pillars listed in DHS’s SAFECOM Interoperability Continuum. These five factors are: (1) governance (2) standard operating procedures, (3) technology, (4) training and exercises, and (5) usage. This Interoperability Continuum is used to measure a jurisdiction’s progress in achieving interoperability.

According to SAFECOM, “More than 90 percent of the public safety communications infrastructure in the United States is owned and operated at the local and state level. The lives of the American people depend on a bottom-up approach—where operability concerns of local fire, medical, and law enforcement are addressed by a comprehensive and transferable emergency communications plan at the national level.

Congress must set the level of expectation higher for states and localities. We cannot simply give out equipment to the first responder community and hope for the best. The first responder community consists of more than 61,000 public safety agencies including:

- 830,000 emergency medical service personnel
- 960,000 firefighters
- 710,000 law enforcement officers

That is why I have designed an efficient grant formula which relies upon a state’s compliance with requirements established in the Statewide Interoperability Communications Plan which inevitably contributes to a national emergency communications system.

### Q. When did interoperability issues first top your agenda?

A. The loss of life due to inoperable communications during the tragic events of September 11, 2001, and the catastrophic devastation caused by Hurricanes Katrina and Rita has caused Congress to seriously reevaluate the level of support provided to the first responder community. As a former firefighter, I can personally attest to how important communications are during emergencies. We must continue to ensure that operational capabilities are resilient because they serve as the backbone for our communications system. The unexpected rash of tornadoes that hit the South in February 2008 has made it clear that you cannot have interoperability without operability.

### Q. What lessons have you learned since becoming involved in interoperability issues as an emergency responder and as a Congressman?

A. I have learned that without a real plan in place to respond to a disaster or an attack, all the resources in the world will not get you the results you want. Similarly, without the necessary funding and resources, all of the planning in the world is not going to get you very far. This can be said for most issues I face in Congress, not just emergency communications. That is why Congress needs to be more proactive in funding critical life-saving initiatives of our first responders as they work to achieve interoperability across the country.



# Interoperability TECHNOLOGY Today



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