



# Interoperability TECHNOLOGY Today

A Resource For the Emergency Response Community

Spring 2009



Spotlight

## Leading San Francisco's Uphill Charge

**C**hief Heather Fong has tirelessly dedicated her career to the improvement of her city's safety. During that time, she has pioneered a forward-looking perspective when evaluating San Francisco's interoperability needs.

Chief Fong received her Bachelor of Arts Degree in 1979 from the University of San Francisco and her Master's Degree in Social Work from San Francisco State University in 1988. Chief Fong's work with the San Francisco Police Department (SFPD) began with her service as a Cadet in the Police Activities League, and subsequently as a Civil Service Police Cadet. She was sworn in as a San Francisco police officer in 1977. Since entering the Department, she has held the positions of Officer, Inspector, Sergeant, Lieutenant, Captain, Commander, Deputy Chief, Assistant Chief, Acting Chief, and currently, the permanent Chief.

Chief Fong has made her mark on many important roles in the field: she has successfully managed patrol, performed as an Academy training officer and instructor, and served as a child abuse investigator and youth programs coordinator. Chief Fong gleaned even more experience in public service as a drug education instructor, grant writer, strategic planner, and commanding officer.

In August 1998, Chief Fong was designated the Commander of the Special Operations Division. While serving in this Division, she was responsible for the Traffic, Tactical, and MUNI Transit companies. Upon promotion to Deputy Chief in June 2000, Chief Fong managed the uniformed patrol personnel of the SFPD Field Operations Bureau. In 2002, she was assigned to oversee the Administration Bureau before reporting as the Assistant Chief of Police in 2003. On April 14, 2004, Mayor Gavin Newsom appointed her to be San Francisco's Chief of Police.



**Q:** As San Francisco's Chief of Police, what are the key interoperability challenges currently facing your city?

**A:** When considering all that goes into achieving interoperability, we have to look beyond the responsibilities that lie just within the realm of police departments. San Francisco has embraced the priority of interoperability; accordingly, in the late 1990s, the city instituted a consolidated dispatch model on the 800 Mhz system citywide. This is a public safety radio system shared among a number of city agencies. The system features shared channels known as "talk groups" that bring various units and agencies together in the midst of a disaster or large-scale planned event.

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## About Interoperability TECHNOLOGY Today

*Interoperability Technology Today* is published quarterly by the Science and Technology Directorate's Command, Control and Interoperability Division (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.

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.

Through a practitioner-driven approach, 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.

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Homeland Security

## UPCOMING EVENTS

### Events & Conferences

#### IACP Law Enforcement Information Management Training Conference and Exposition

May 18-21  
Dallas, Texas  
<http://www.iacptechnology.org/2009LEIMConference.html>

#### NDIA 2009 Homeland Security S&T Stakeholders Conference East

May 18-21  
Washington, D.C.  
[http://www.ndia.org/events/9680/Pages/9680\\_2009HomelandSecuritySTStakeholdersConferece-East.aspx](http://www.ndia.org/events/9680/Pages/9680_2009HomelandSecuritySTStakeholdersConferece-East.aspx)



### DIRECTOR'S MESSAGE

By Dr. David Boyd

At the Command, Control and Interoperability Division's (CID) Office for Interoperability and Compatibility (OIC), we base our success upon the ways we contribute to the interoperability of our Nation's emergency response community. Working together, from initial meetings to gather requirements through program and project development to the final stages of product commercialization and integration, practitioners are a driving force behind everything we do. Practitioner involvement has enabled OIC to continually provide high-quality, valuable products to the Nation's emergency response community.

OIC recognizes that the majority of public safety response events originate at the local and state level, which is why we have always advocated a "bottom-up," practitioner-driven governance structure. OIC values the critical input from the emergency response community—especially from local, tribal, state, and Federal responders, policy makers and leaders. Their insights are vital to ensuring that our resources are aligned with responders' needs.

OIC's practitioner-driven approach is based upon the premise that the roughly 60,000 emergency response agencies nationwide—including state homeland security officials and policy makers across all levels of government—determine how we prioritize projects and initiatives. The development of successful solutions requires a focus on user needs and requirements gained through regular input from practitioners and policy makers across disciplines, jurisdictions, and levels of government.

When OIC was established in 2004, I made it a priority to develop a unified strategic plan in partnership with key stakeholders from local, tribal, and state emergency response agencies. This plan focused on how to overcome the interoperability challenges facing the emergency response community. The success of this initial interaction led to the creation of three main stakeholder groups that promoted regular communication with practitioners. These groups continue to exist more than five years later and include the Executive Committee (EC), the Emergency Response Council (ERC), and the Practitioner Steering Group (PSG), among several additional, initiative-specific working groups.

The EC is one of our key resources for gaining direct access to public safety practitioners and policy makers.

EC members provide strategic leadership and guidance on emergency responder's needs; communicate decisions, plans, and results to relevant constituencies and practitioners; define and articulate the needs of the public safety community; and oversee the ERC. Representation on the EC includes members of leading public safety associations; local and state government officials; and observers from interested, contributing Federal agencies.

Broader in scope, the ERC is comprised of members of the EC and their alternates; representatives from local, tribal, state, and Federal public safety practitioner and policymaking associations; representatives from national public safety associations; and up to 25 public safety at-large members. The ERC provides general input on emergency responder user needs to the EC and participates in project action teams to develop work products and user requirements. The ERC not only supports OIC initiatives—the group also promotes OIC's efforts by communicating decisions, plans, and results to relevant constituencies, practitioners, and subsets that are not directly engaged in OIC activities.

The EC and ERC exemplify the unique, practitioner-driven governance structure for which OIC and CID have become so well known.

The PSG consists of practitioners from the emergency response community representing law enforcement, fire, emergency medical services, public health, transportation, and emergency management agencies. Meeting quarterly, the PSG helps OIC harness the group's input on current and future data communications and interoperability activities, including the development of Emergency Data Exchange Language standards.

By communicating regularly with practitioners, gathering input from these working groups, and researching efforts to successfully incorporate this critical input, OIC has been able to capture best practices, lessons learned, requirements, and input from emergency responders nationwide. Together, this information has driven the development and evaluation of resources for cross-jurisdictional information sharing technologies, policies, and processes that support the cooperative efforts of emergency response agencies nationwide.

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Right now, we see a need to promote and implement cross-disciplinary training to optimize these talk groups. While it's important for every department to be familiar with the duties within their scope, when using interoperable technologies to communicate with other groups, it would be beneficial to understand the scope of other departments as well.

We also need to increase the number of channels that are available on the shared radio system. Currently, we have 10 police districts. With that many districts, there are times during the week when activity on the system is so high that officers are unable to accomplish all that they need in the way of communication.

With the technological advancements made by our generation, there also comes the responsibility to consistently re-evaluate—in this case, by adjusting and expanding the scope of our shared system's frequency and our use of the public safety radio spectrum. As we move forward, it's important not to say, "I have an 800 Mhz radio and that's just fine," but instead to ask, "How is this system best incorporated not just for our city alone, but for the entire Bay Area and the neighboring counties?" We have to look at how we can establish and maintain communications with areas that are farther out.

**Q: Are there any physical hindrances being addressed?**

A: San Francisco is famous for its hills. The challenge we encounter here is ensuring that all of our radio communications systems can effectively operate regardless of a public safety official's location. Our telecommunications maintenance groups strive to guarantee the physical security of our phone wires, but this doesn't mean that officials are immune from dead zones. There are still times when an officer can hear the voice of another party but not communicate back. Our city is continuously looking at this problem to ensure the greatest amount of stability.

A key part of the solution comes from receiving feedback from those officials serving on the front lines. It's not enough for technicians to regularly survey the issue. It is most beneficial for us to receive input from those responders and dispatchers in the field who encounter dead zones. This accomplishes two things: first, the concerns of officers are addressed, and second, our teams are better informed about the problem.

**Q: What type of interoperability progress are you seeing the San Francisco emergency response community make?**

A: In terms of improvements, we are already looking toward more coordination with the entire region, or the 10 Bay Area Counties as we refer to it. We see the benefit of fostering multiple partnerships throughout the region rather than employing a one-city focus.

We are also working on the implementation of microwave systems on multiple land locations because many of the radio transmitters require microwave access. This will better enable our teams to ensure interoperable communications across the region. In the long term, we are also

looking at ways to enhance day-to-day operations. For example, we are instituting a Memorandum of Understanding (MOU) with the California Highway Patrol (CHP) because they now carry some SFPD radios in their cars.

We established our partnership with the CHP to better manage incidents that transfer jurisdictions—such as a car pursuit that segues onto the freeway outside of the city. During incidents such as these, we can better determine when to relinquish the pursuit to the CHP. Also, in high-violence issues related to gangs, we have seen how important it is to maintain high levels of communication with the CHP. We can approach these violent incidents together because both jurisdictions are affected. It will take time to assemble the entire MOU and address all of the details; however, both parties agree that it will be a worthwhile agreement.

**Q: Tell us more about SFPD's partnership with the CHP.**

A: The CHP initiated a program called Operation IMPACT. This program allows CHP officers to be deployed into city areas that face high levels of gang violence. The SFPD is very fortunate that the CHP came and worked alongside us on these issues. To open the lines of communication between the two groups, we gave some of our radios to CHP officers during Operation IMPACT. Based on the benefit of those interactions and many others, we determined that it would shorten response time if the participating CHP officers could be monitored on our shared public radio system. In the past, officers would have to go through the dispatch system to notify the CHP of incidents that crossed over into their jurisdiction. Now, CHP officers will already be aware and respond accordingly thanks to the shared use of our 800 MHz system.

**Q: What interoperability milestones would you like to see San Francisco achieve over the next five years?**

A: A long-term goal on our periphery is the direction of the new 700 MHz spectrum. Throughout the last several years, there have been many discussions about re-banding. I think that we need to look at all of these areas and decide if re-banding is the most comprehensive approach that will ensure use of the new spectrum for law enforcement officials anywhere in the U.S. Yes, this spectrum would enable a universal voice system, but the question remains: does it fully address data integration?

There are some groups who feel that the 700 MHz opportunity is the best way to move forward while other groups think that the long-term costs will overshadow the benefits. I think we need to evaluate the Nation's utmost priorities in terms of interoperability—we all desire a solid plan that will set up the public safety community for a successful communications mechanism. Right now, various public safety groups are working with different government entities to ensure that emergency responders have full confidence in what the 700 MHz spectrum will ultimately provide.

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## Utah Communications Agency Network Celebrates 10th Anniversary

The benefits of an overarching interoperable public safety radio system are limitless. Just consider the Utah Communications Agency Network, which is celebrating its tenth year of connecting regions across the State.

When Utah won the bid to hold the 2002 Olympic Games 10 years ago, an intergovernmental task force extensively researched Utah's public safety radio communications abilities from all angles. Following this study, the task force provided an official recommendation for the State to begin preparations for a public safety radio system, now known as the Utah Communications Agency Network. This expansive communications system would allow users to govern themselves while meeting the need for several different public safety agencies to connect during large-scale planned events and emergencies.

Steve Proctor, Executive Director of the Network, explains a primary benefit when it comes to establishing a public safety radio system. "A good radio communications system brings diverse agencies together and educates each party on the specific roles performed by other agencies." The Utah Communications Agency Network demonstrates how public safety communications infrastructure connects different disciplines and jurisdictions, as 130 agencies across the State have joined together through the implementation of the network and shared resources. Through this public safety radio network, these agencies share common interoperability channels known as "Event Channels" on the public safety spectrum. When a large-scale planned event or emergency takes place, each unit can sign onto that Channel on the spectrum and

communicate. The availability of Event Channels even makes daily tasks—like regulating traffic flow—easier and more effective. For example, if an accident requires the services of multiple emergency response vehicles on scene, then these differing public safety groups can communicate quickly and efficiently while maintaining the integrity of on-site protocols through the common interoperable channel.

To initiate development of the Network, legislation was written and ultimately passed to begin the planning and implementation phases. These phases established an official governance structure, enabling the level of organization, funding, and growth that Utah needed to realize the communications system. Proctor adds, "States must garner support from

various governance groups in order to establish an expansive and effective public safety radio network." In 1999, the contract to commence construction on the Network was signed. In 36 months, 40 sites were constructed in the initial project. Since that time, the network has grown an additional 30 percent adding areas outside the original coverage plan.

As other states consider the prospect of implementing a radio communications network, there are many important factors to keep in mind. Most noticeable is the expensive cost that accompanies such a large infrastructure. When many agencies join together to implement an expansive public safety radio network with common resources, the cost should be shared among each region since those communications capabilities will become common resources. States should also remember that each participating region will share a common space on the spectrum, granting each agency more accessibility to other public safety groups in times of emergency.

Currently, the Utah Communications Agency Network is planning to expand the radio communications capabilities into the northeast, northwest, and southern regions of the State. Extending the Network to these areas will provide coverage to both highly populated and rural regions, thus enabling the Network to further connect emergency responders across the State.

### Lessons Learned from the Utah Communications Agency Network

- **Identify a "shared pain" or issue to bring stakeholders together.**
- **Identify a "Convener of Stature" to bring stakeholders together; in Utah's case, this individual was the Governor.**
- **Select a committed leader to be the "broker." This person will maintain continuity throughout the planning and implementation phase.**
- **Promote a spirit of openness, transparency, and voluntary participation among all involved.**
- **Critical Mass—work toward a hard deadline to ensure deadlines are met.**

# New York Optimizes PSIC Funds to Improve Emergency Response Communications

For the first time, Federal funds have been made available through the Public Safety Interoperable Communications (PSIC) grant program to 10 New York counties and the City of Watertown, New York, in the amount of 12 million dollars. These funds will be dedicated to improving public safety radio communications throughout the State's emergency response agencies. These New York regions are using the PSIC grants to upgrade several different aspects of their public safety infrastructure, including governance, training exercises, infrastructure construction, and radio subscriber equipment.

The U.S. Department of Homeland Security's Office of Emergency Communications designed the PSIC grant program to provide emergency response agencies with the opportunity to achieve measurable and meaningful improvements through the efficient use of all telecommunications resources. PSIC grant funds require participating states to develop a strategic communication interoperability plan to address communications gaps across the region. In order for New York to receive PSIC funds, the State had to present an officially approved strategic plan. Since New York's strategic communication interoperability plan received approval from OEC, administrators are now working to ensure that each designated county and city use the awarded funding according to the original request for the award and OEC guidelines. Currently charged with assisting the PSIC grant process, Dr. Melodie Mayberry-Stewart, New York State Chief Information Officer and Director of the Office For Technology, explains why the implementation phase of the State's strategic interoperability plan is so important. "In a state as expansive as New York where any number of disasters and emergencies can take place at any time, information among responders must flow as freely, as clearly, and as quickly as possible in an open communications system," she says.

## Short- and Long-Term Goals

Since New York's strategic communication interoperability plan has been developed, submitted, and approved, the State is focusing on both short- and long-term goals. In the short term, emergency response officials are investigating the aging radio communications systems that have been in place for the previous 50 years. While it is an expensive endeavor to update local government, tribal and state agencies' public safety radio infrastructure and equipment, it is important that responders are able to work with modern interoperable systems to establish seamless communications processes.

At the same time, responders are identifying long-term interoperability goals. Dr. Mayberry-Stewart explains, "The State is committed to deploying a fully interoperable digital land mobile radio system across the State. This type of system would dramatically improve the rate of recovery and response for our emergency responders. Integrating technological advancements throughout our statewide communications system will allow responders to communicate while traveling from one geographic location to another without interruption—a current challenge for many of our units."

## Incorporating Advanced Technologies

The regions of New York are also considering various broadband strategies to accompany their interoperable infrastructure goals. While aligning radio applications is a key component of seamless communication, New York emergency response officials are looking for ways to get other applications—such as law enforcement databases and imagery—into the hands of emergency responders quickly and efficiently. Additionally, there are growing numbers of emergency response practitioners who are using Personal Digital Assistants (PDAs) as a main venue for communication. For this reason, many New York governance groups are investigating ways to merge relevant technologies, such as PDAs, that will provide responders with greater access to critical information.

Dr. Mayberry-Stewart points out the importance of a strategic communication interoperability plan that incorporates the use of advanced technologies. She says, "Using a plan that requires a strong governance model to keep sound architecture and reliable vendors accountable will better enable responders to capitalize on newer technologies and achieve the milestones included in the State's interoperability plan. As a result, our communities will be safer and stronger."

# Project 25 ISSI Test Tool Wins the Gold

On November 18, 2008, the Project 25 (P25) Inter-RF Subsystem Interface (ISSI) Test Tool (ITT) took home the gold—that is, the Department of Commerce's coveted Gold Medal Award for Scientific/Engineering Achievement. The ITT team received recognition for exceptional ingenuity in identifying, developing, and promoting a technical solution that enables industry to implement new interoperable communication standards.

Created through a joint initiative of the National Institute of Standards and Technology's Office of Law Enforcement Standards, the National Telecommunications and Information Administration's Institute for Telecommunication Sciences, and the U.S. Department of Homeland Security's Office for Interoperability and Compatibility, the ITT is responsible for accelerating the development of P25 standards for interoperable communications. An open-source software tool, the ITT is also essential in the testing of emergency response and public safety radio interfaces.

The ISSI, one of the three core P25 interfaces that significantly improves response and recovery operations overall, aids in the purchase and implementation of both operable and interoperable P25-compliant emergency response communications systems. More specifically, the ISSI allows emergency response and public safety agencies to interconnect systems on their wired networks, commonly known as intranets.

The development and widespread use of the ISSI and the ITT represents tremendous strides for the acceleration of P25 standards and the integration of non-proprietary systems across the Nation. The ISSI connects disparate P25 networks, while the ITT automates the standards that have been developed to test the ISSI. Product developers, manufacturers, and state and local governments can use the ITT to verify that disparate P25 networks can connect.

The ITT is critical for several reasons: the tool verifies if radio interfaces are working properly and leverages the development of commercial emergency response products. It also provides industry groups with an open source tool that works to overcome the challenge of validating products as P25-compliant. Combined, industry use of the ITT tremendously benefits the emergency response community and government groups at all levels.

The ITT will continue to aid emergency response agencies nationwide by extending and modernizing their communications networks, enhancing resource usage, and improving operations. The ITT also benefits manufacturers, as the tool can be used to test products for P25 compliance. As a result of this testing, more ISSI-based, P25-compliant products will be on the market for emergency response use.

Although version 1.0 of the ITT was completed in 2007, the tool continues to be refined by industry and government entities. As technology equipment and P25 standards continue to improve, the ITT will be updated accordingly.

The ITT is available for download at no cost at: <https://p25-wireline.dev.java.net/>.



## OASIS Adopts Emergency Data Exchange Language Standards

In recent years, data communications have become increasingly critical in the world of emergency response communications. As data-based technology has become more accessible, a growing need for data standards to improve communications has also increased. In response, the U.S. Department of Homeland Security's Office for Interoperability and Compatibility (OIC) collaborated with practitioners to develop a series of data messaging standards known as Emergency Data Exchange Language (EDXL) standards. In late 2008, OIC debuted two new EDXL standards known as the Hospital Availability Exchange (HAVE) and Resource Messaging (RM) standards.

The EDXL HAVE standard allows emergency responders to exchange information regarding the status of hospital resources—including bed availability, available services, capacity, and other key operational elements of the hospital. Responders can access this information in the field and from emergency operation centers. Essentially, HAVE enables responders to determine almost instantly where the victim will receive the best care according to their needs and the corresponding hospital's available resources. For example, using HAVE, an emergency medical services team responding to a fire may be able to transport a burn victim to a hospital that specializes in burn treatment. With this information at their fingertips, medical and emergency agencies can respond to emergencies and disaster situations with greater efficiency and speed.

EDXL RM also addresses shared resources, but in a slightly different context. RM provides a set of standard information formats allowing emergency responders to request response teams, assets, or other resources for use in incident responses. Using RM, an emergency response agency can then track the request, associated payment(s), and return of the resource. This standard effectively transforms resource sharing into a more organized process. RM will help improve the speed and timing of requesting and receiving a critical resource. With the ability to track the cost and payment of the resource, localities are more likely to provide resources knowing they have an electronic trail of the resource — from delivery to return to payment.

Recognizing the benefits of each of these standards, the Organization for the Advancement of Structured Information Standards (OASIS) introduced EDXL HAVE and EDXL RM into its suite of standards in November 2008. Before either standard was eligible for consideration, OIC was required to present at least three Statements of Use (SOU) for each standard. An SOU is a written statement of success; to be eligible for adoption, companies that have used or are currently using HAVE and RM had to provide SOUs. EDXL HAVE and EDXL RM were able to compile the needed SOUs and pass into the stage of technical committee review. Following intense scrutiny by leading standards experts, OIC's data messaging standards were approved for inclusion in the OASIS suite of EDXL standards. RM and HAVE then joined the ranks of the more than 60 OASIS-approved open standards that currently govern the global information society.

With this distinction comes international appeal; OASIS boasts a constituency of more than 5,000 participants from 600 organizations situated in over 100 countries around the globe. With such a widespread base of supporters, RM and HAVE are no longer confined to the United States. They are now standards that may be used and implemented worldwide, creating a unified and uniform approach to emergency response communications.

Though available to the wider public, some standards development organizations require payment for the adoption and implementation of standards. In the case of the EDXL standards, these funding demands could prove especially problematic as Federal grant funding is beginning to require the implementation of EDXL standards. Fortunately, as OASIS standards, HAVE and RM are available to the public at no cost. OASIS does not require any licensing fees, royalty charges, or any other form of payment for the use of OASIS standards. This financial freedom allows a greater number of agencies to access and use the standards. Once in the hands of emergency responders and managers, HAVE and RM will tremendously improve their ability to respond and exchange information in real time.

To learn more about OASIS and how to adopt EDXL HAVE and RM, please visit <http://www.oasis-open.org>.

### IN YOUR OWN WORDS

By Doug Onhaizer, Communications Administrator, City of Virginia Beach

## Interoperable Technologies Must be Used to be Learned

It's hard to know what you're missing if you never experienced it to begin with. This is the challenge facing many of the Nation's emergency responders serving on the frontlines. As a communications leader in the Hampton Roads region of Virginia, I see the importance of practitioners needing to use interoperable technologies and apply best practices every day. Regularly applying interoperable technologies and methodologies will help users to improve communication across disciplines and jurisdictions when a large-scale event or emergency occurs. When a major incident like a natural disaster or terrorist attack takes place, responders who use the interoperable technologies frequently will deploy the necessary interoperable tools more readily and successfully.

In Virginia's Hampton Roads region, we use the Overlay Regional Interoperable Network (ORION)—a 700 MHz Project 25 command and control regional voice network that allows emergency responders to communicate across the region. We recently experienced a regional disaster that brought together different emergency groups from several different regions. Those responders who knew how to use the various interoperable technologies benefited immensely from the ability to talk to neighboring emergency responders. Those who were not familiar with the technologies did not attempt to use the available resources and, as a result, experienced limited regional communications. There is a way to prevent this from happening in your region: prioritize the issue of interoperability throughout your agency/city/region and find opportunities to use interoperable systems on a regular basis. This way, when a large-scale event or emergency takes place, responders will be prepared to effectively use these critical technologies.

With ORION in place, our region now faces the issue of acquiring involvement from more practitioner groups to operationalize the system. By operationalize, I

mean to educate emergency responders on how to use the system, how to apply it, and how to know when not to use it.

To better operationalize ORION, the system is managed by two governance groups: the ORION Advisory Group (OAG) and the ORION Steering Committee. The OAG—a group of practitioners who understand the capabilities of ORION—present ORION's operational needs and requirements to the ORION Steering Committee at their regularly scheduled meeting held every other month. The ORION Steering Committee, which is comprised of a group of communications professionals, then identifies solutions relevant to the requirements presented by the OAG. These solutions provide the OAG with a game plan to prioritize and address significant challenges and projects on the horizon.

Through this method of governance, we have uncovered fundamental best practices. First, the governance group—in our case, the OAG—must possess a keen understanding of the interoperable system's operational procedures. At the same time, it is important that the Steering Committee maintains the end goal of operationalizing the system alongside of the OAG governance group. Each group must apply their area of expertise while still prioritizing the main goal of the other.

Within the Hampton Roads region, it is the work of governance groups that makes ORION a useable system. This system, however, can only be fully optimized when units find ways to practically incorporate ORION into their daily communications protocols. When this takes place, we are better prepared and positioned to effectively communicate during large-scale emergencies and improve our rate of response and recovery.

# NIEM Updates OIC Data Messaging Standards

Whether dealing with an event as minor as a routine traffic incident or as major as a hurricane evacuation, emergency responders must have established communications to effectively react and provide on-site protocols. Although many in the response community believe that technology is the culprit of all communications problems, research and experience demonstrates that this is not the case. Communications are affected not only by equipment, but also by the standards and processes that govern that equipment.

Even with this understanding, there are very few standards that address information sharing. To address this interoperable communications gap, the U.S. Department of Justice and the U.S. Department of Homeland Security (DHS) partnered to launch the National Information Exchange Model (NIEM) in February 2005. NIEM develops and disseminates standards and processes that improve information sharing among the justice, public safety, emergency and disaster management, intelligence, and homeland security communities.

NIEM is composed of multiple domains that address various areas of public safety and homeland security. NIEM's domains—Emergency Management (EM), Immigration, Infrastructure Protection, Intelligence, International Trade, Justice, and Person Screening—each have standards associated with their primary mission objectives. The EM domain specifically focuses on improving the efficiency and accuracy of information sharing among emergency responders. These efforts closely align with the mission of the DHS Office for Interoperability and Compatibility (OIC).

To accommodate the emergency response community's growing reliance on data communications equipment in recent years, OIC has focused its efforts on developing data messaging standards. Two of these standards, known as the Common Alerting Protocol (CAP) and the Emergency Data Exchange Language Distribution Element (DE) standards, are particularly useful within the emergency response community. The CAP standard allows for the widespread exchange and dissemination of all-hazard emergency alerts, notifications, and public warnings. Using CAP, emergency response agencies can distribute warnings to the public simultaneously through a number of devices, including computer systems, wireless networks, alarms, televisions, and radios. While CAP targets communications with the public, the DE standard works to improve information sharing among responders themselves. The standard allows them to send information and files in a uniform way. Responders may elect to send messages by geographic area, agency, or some other filter. As each of these standards deals heavily with information sharing, NIEM quickly contracted them for use within the Model.

Because these standards were developed before NIEM was created, they do not comply with NIEM's format for standards and processes. As a result, they have been included as external standards. Originally integrated into NIEM in November 2006, these two standards and the EM domain as a whole were recently updated. With this update, outdated content was removed and the domain was provided with the flexibility to create Information Exchange Package Documents (IEPDs).

In addition to serving as external standards, elements of CAP and DE have been extracted and are used to create IEPDs. IEPDs provide a standardized format

for exchanging information. Though IEPDs are neither recognized as official data messaging standards nor approved by standards development organizations—for the time being, at least—they are still useful within the emergency response community. If an established standard does not meet the needs of an agency, officials may draw on specific CAP and DE elements to create an IEPD or message. Essentially, each IEPD provides a series of best practices that may be used to create informal messaging standards that are tailored to an individual agency.

NIEM's inclusion of the CAP and DE standards represents a significant win for the emergency response community. First and foremost, these standards will effectively reduce the time and resources required for emergency responders to exchange information. Improving information sharing has the potential to vastly change the landscape of emergency response communications and, in turn, emergency response operations.

As a part of NIEM, OIC's standards and their associated benefits are now available to a wider audience. As a major national initiative that is gaining traction across the spectrum of homeland security stakeholders, NIEM continues to expand its audience. While OIC caters primarily to traditional emergency response agencies—law enforcement, fire, and emergency medical services—NIEM diversifies its clientele. Now, other agencies involved in the public safety realm—such as universities and transportation agencies—can integrate OIC standards into their operations.

At first glance, emergency response agencies may restrain from participating. In today's economy, budget woes are not uncommon amidst skyrocketing costs. Officials are regularly forced to make difficult decisions as they delegate funds. While leaders continue to fret over whether to choose new equipment or training sessions, they will no longer have to worry about information sharing: NIEM provides a wealth of standards and information sharing resources for free. Without any additional costs or membership requirements, agencies can select and implement those standards and processes that are most needed within their region.

NIEM's user-base is expanding as it becomes increasingly embedded in grant funding. As it stands now, NIEM regulations affect all grant recipients that devote funding toward implementing information

exchange capabilities with Extensible Markup Language (also referred to as XML) technology. These agencies are required to use NIEM and comply with the Model's implementation guidelines. NIEM's Web site also notes that grantees are "required to assemble, register and make available without restriction all IEPDs and related artifacts generated as a result of the grant to the component registry." NIEM's inclusion in grant funding stipulations ensures that emergency response agencies access and actively use information sharing standards.

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NIEM will further serve the homeland security community as it expands its focus. In future years, OIC plans to integrate additional data messaging standards into NIEM's EM domain. As NIEM broadens its library, emergency response agencies will have access to the most recent and relative standards and processes. As technology advances, NIEM and OIC will continue to provide the resources to ensure that information sharing and communications are not lost.

To learn more about NIEM and the CAP and DE standards, please visit <http://www.niem.gov>.

## Director's Message from page 2

With this valuable information, OIC has created tools for use by all practitioners and stakeholders facing the interoperability challenge. A sample of these tools include the *Interoperability Continuum* (adopted recently by Canada and the United Kingdom), the *Computer-Aided Dispatch Interoperability Project Documentation of Regional Efforts*, and the *Writing Guide for a Memorandum of Understanding*.

With input from practitioners, OIC developed and recently updated the Interoperability Continuum to help the emergency response community and policy makers plan and implement interoperability solutions. The tool identifies five critical success factors that must be addressed to develop a sophisticated interoperability solution: governance, standard operating procedures, technology, training and exercises, and usage of interoperable systems. The degree of interoperability depends upon the improvement of all five of these elements—no one factor (e.g., technology) is the solution to achieving interoperability. The updated Continuum divides the technology element into both data and voice elements to reflect the modern path to improving interoperability via information sharing and voice communications. Jurisdictions across the Nation are using the Continuum to track progress in strengthening interoperable communications.

In addition to the Continuum, practitioners played a vital role in identifying a need for interoperable computer-aided dispatch (CAD) systems. When an individual calls 9-1-1, the incident information is immediately entered into a CAD system, a unique technology that enables dispatchers to more efficiently dispatch personnel and resources to an incident. While CAD systems are well suited for incidents confined to one jurisdiction, they are not equipped to handle incidents that

require aid from neighboring jurisdictions. Made aware of these barriers, OIC launched the CAD Interoperability Project (CADIP) to research the problem through case studies with agencies that had implemented successful CAD interoperability solutions.

The CADIP team visited each agency and interviewed dispatchers, dispatch managers, emergency managers, city managers, mayors, fire chiefs, vendors, police managers, information technology representatives, project managers, communications directors, and city chief information officers to determine not only the successes and failures of each solution, but also general best practices that agencies nationwide could mirror. Reviews showed that for success, each region had to first develop formal governance structures to bring together the right players. Only by working closely with end users were officials able to determine the specific needs of their region and develop an appropriate solution. These case studies and interviews yielded a wealth of information that was then presented in the *Computer-Aided Dispatch Interoperability Project Documentation of Regional Efforts*. This document serves as a guide for practitioners across the Nation looking to tackle their own CAD interoperability obstacles.

These are but a few examples of the critical role practitioners play in OIC's work. Communication with practitioners is at the heart of how we operate—through an end-user, customer-driven approach. It is this valuable partnership and ongoing communication with practitioners that brings us all one step closer to OIC's vision for stakeholders to have comprehensive, real-time, and relevant information to create and maintain a secure and safe Nation.

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