

READINESS

Emergency Preparedness & Response

Converging IT and communications technologies are improving combined government and private sector Emergency Preparedness & Response efforts.



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Prepare To Share

Government has to continue its historic transformation after 9/11 and institutionalize information sharing policies, process, procedures and above all, changes to our organizational culture.

There is an old saying that “everything is local”. But what is “local” depends on what your definition is. And that’s especially true when it comes to emergency preparedness and response.

In today’s world a natural or man-made disaster may strike one or more local communities, but if the incident is large enough like in the case of 9/11 or Hurricane Katrina, then local becomes national in a hurry.

To respond to these tragic events, our government has developed what seem to be countless policy documents.

Number One on the list is the recently implemented National Response Framework (NRF). According to FEMA NRF website, “the NRF presents the guiding principles that enable all response

(NEP), the National Infrastructure Protection Plan (NIPP), the National Preparedness Guidelines and the National Incident Management System (NIMS) to name just a few.

All provide policy. All provide guidelines. All tell what to do when disaster strikes.

On Policy’s Front Lines

At the DHS Science and Technology Directorate (S&T), some of our nation’s best minds work tirelessly each day on solutions that help save lives and preserve property.

They – like First Responders in the field – are on the front lines of our nation’s emergency preparedness and response efforts.

“A lot of the technologies, most of what we work on here in the



Science and Technology Directorate, whether it’s in the communications side or all the other things we work on, come from the needs of the First Responders and our other customers, such as the Coast Guard and those operational elements of Homeland Security,” explained Luke Klein-Berndt, S&T Command, Control and Interoperability CTO.

“They come to us and say ‘we need something that will do this, whatever this is’, and then we will go out to industry, to laboratories, to universities and say ‘help us come up with the science that will make this happen’,” said Klein-Berndt.

“Let’s find a way to, once we’ve got the technology to work, to make it into something that can be actually used in the field,” he went on to say. “And then ultimately we get a product that we can actually get out there into the hands of the

partners to prepare for and provide a unified national response to disasters and emergencies – from the smallest incident to the largest catastrophe. The Framework establishes a comprehensive, national, all-hazards approach to domestic incident response”.

In addition to the NRF, other policy documents include the Federal Continuity Directives (FCD), the Emergency Management Assistance Compact (EMAC), the Homeland Security Exercise and Evaluation Program (HSEEP), the National Exercise Program

users. But it’s what they are asking for, and it’s what they have asked us to meet. So it’s not like we are coming up with technologies just for the sake of it, we are actually working on real needs here.”

The operative words are “real needs”. And for Klein-Berndt one of the real needs is interoperable communications capabilities. And the result is the P25 compliant radios so First Responders can use one radio to meet their communications needs. (Read more on page s8)

Fulfilling “Real Needs”

Another professional on the front lines is Dr. Steven Phillips, Associate Director for Specialized Information Services at the National Library of Medicine (NLM).

Dr. Phillips is leading NLM in developing the Disaster Information Management Research Center (DIRMC) to ensure the effective use of libraries as major and untapped resources in the nation’s disaster management efforts.

According to NLM, several activities under development include: the creation of Emergency Information Centers within NLM and the National Network of Libraries of Medicine (NN/LM, a network of nearly 6,000 libraries) to work in conjunction with Emergency Operation Centers (EOCs); training



Winston Churchill said, ‘We are at the end of the beginning.’ We have a long way to go, but we are at the end of beginning if we are going to share information as we must share it to protect the nation.”

—Ambassador Thomas McNamara, Program Manager for the Information Sharing Environment

and continuing education programs; a database of published literature on disasters; Web 2.0 applications; syndromic and other surveillance research; and communication interoperability technologies to support continuity of operations (COOP) programs.

Why is the NLM leading this effort?

“It was very unusual,” said Dr. Phillips. “After Katrina, people noticed that many of the displaced were going to libraries. The public just took it upon themselves, because there was an open building that happened to be a library and basically that’s how the whole thing got started.”

What seemed unusual was that Katrina victims and government responder agencies alike were using libraries. So why were they going there? Because libraries often had Internet access and wireless connectivity. Victims used them for information on Federal recovery programs and to register so they could find their relatives and their relatives could find them.

What the public got started has resulted in NLM efforts to develop the DIMRC. And one of the outcomes of the DIRMC program is <http://sis.nlm.nih.gov/dimrc.html>, the new government portal dedicated to provide personnel, tools, information and research to assist with disaster preparedness and response.

Dr. Phillips is also working on developing a new position within an organization – the Disaster Information Specialist. This person will connect First Responders and their agencies with information that is “just-in-time” and “just-what-I-need”, which is essential to support preparedness and a rapid and integrated response.

“One of our Disaster Information Specialists will be working at the fusion center,” said Dr. Phillips. “We are basically just a resource so if someone comes to us and says we need help with this, where do you start? You start with information. It may end up totally different from when you started, but where do you start? You start with information.” (Read more on page s5.)

Fusing Information

Sharing information is what fusion centers are all about.

A fusion center is a mechanism to exchange information and intelligence, maximize resources, streamline operations, and improve the ability to fight crime and terrorism by merging data from a variety of sources.

Since 2004 more than 50 fusion centers have been created in states and major urban areas. Each fusion center is independent, but connected. On the national level the National Counter Terrorism Center (NCTC) has been called our national fusion center by Ambassador Thomas McNamara, Program Manager for the Information Sharing Environment.

But on the front lines are professionals such as Lt. Jeff Wallerton who works with the Maryland Coordination Analysis Center (MCAC).

“We provide real time information about what is going on,” explained Lt. Wallerton. “Our job is to make sure that the information we have is analyzed and that we protect those in law enforcement, fire fighting and the private sector. We analyze the information first so that we don’t jeopardize their lives and we don’t send them on wild goose chases.”

Lt. Wallerton said that’s his mission and is what he and his colleagues do day-in and day-out.

“I could talk for hours and hours about success stories that we have had, but without the department chiefs from FBI and DHS, without the state and locals, the fire departments, the emergency responders, the private sector, information would stop flowing in.” (Read more on page s12.)

For Luke Klein-Berndt, Dr. Steven Phillips and Lt. Jeff Wallerton the common denominator is information sharing.

Our nation’s emergency and response efforts depend on creating and living the information sharing environment; one where parochialism cannot be tolerated, because preparedness and response – and lives – rely on sharing, not hoarding information. □

Just In Time, Just What I Need

The DIRMC – Disaster Information Management Research Center – mission is to provide access to quality disaster health information to the nation at all stages of preparation, response, mitigation and recovery.

Information allows us to make the correct decisions during any type of emergency. But where can you find it? Who is gathering it? How is it being disseminated to those who need “just in time, just what I need” information?

In short: How do you deliver the right information in the right format to the right person at the right time?

Tackling this immense task has been mission of Dr. Steven Phillips of the National Library of Medicine (NLM). His job has been to establish a Disaster Information Management Research Center (DIRMC) at NLM.

The purpose is to have a single government agency that specializes in providing disaster information and trains people to provide that information. NLM has made a strong commitment to disaster remediation and to provide a platform for demonstrating how libraries and librarians can be part of the solution to this national problem; and to ensure continuous access to health information and effective use of libraries and librarians when disasters occur.

The centerpiece of Dr. Phillips’ efforts is the DIRMC website – <http://sis.nlm.nih.gov/dimrc.html> – which is the new government portal dedicated to provide personnel, tools, information and research to assist with disaster preparedness and response.

“We are trying to make it user friendly at every level, not only the type of information but the accessibility of the information,” explained Dr. Phillips. “We are not creating information; we are just finding credible information. Then we will massage it in a way that when appropriate can be loaded down to PDAs in short summaries of that information.”

WISER Information

Take for example WISER – the Wireless Information System for Emergency Responders – which is a chemical identification algorithm and continually being developed through its dynamic process.

“We have information on about 400 chemicals,” said Dr. Phillips.

“Say you are a First Responder going to a chemical event whether it’s an accident or a terrorist attack and you don’t know what that chemical is. You could look at your PDA or your Blackberry and enter in it’s a yellow plume and 400 may go down to 200. Enter in it is irritating to the skin and the number may be come down to 75. You go on; you can do symptoms for example people that are exposed to it are throwing up and they’ve passed out and they have headaches, it may come down to 10. And

generally within about 14 or 15 questions you can get down to two or three chemicals and classes of chemicals.”

WISER has been developed to be intuitive and easy to navigate. It provides information tailored to specific role of emergency responder and focuses on unknown substance identification capabilities. It also provides a platform that can be expanded to support other emergency response needs. It has a cross platform, multi-device architecture containing a rich stand-alone capability with enhanced connected wireless capabilities. With its GPS capabilities it provides a common operating picture and shared situational awareness.

REMM Diagnosis and Treatment

Another DIRMC tool is the REMM – Radiation Event Medical Management -- which provides guidance on diagnosis and treatment of radiation events for health care providers. (Learn more at <http://remm.nlm.gov>)

The need for REMM stems from the need for First Responders to know how to respond to mass casualty radiation events said Dr.



Phillips. “It provides evidence-based, practical information for those without formal radiation medicine expertise; and provides web-based information that is also downloadable in advance, for availability even if the Internet is not accessible during a disaster.”

There are four types of events covered in REMM: dirty bomb, nuclear explosion, nuclear reactor accidents and transportation accidents.

DIRMC Responsibilities

“The objective of all this is to have – and this is what we’ve asked to do – a single government portal for this information,” said Dr. Phillips, “so that you don’t have to go to CDC for one type of information, Homeland Security for another, and maybe TSA for a third.”

“We won’t be creating the information, but we will be taking the information, linking to it, creating search engines that can search it seamlessly. You put in a term like in Google, it’ll come to you, but not just the list and it will give you the report.”

“There’s also certain password protected or secret stuff that we have such as where are antibiotics being stored? How are they being distributed? The general public doesn’t need to know those plans, but we want to have that information there so that these people know where they can go, and then if they need permission to get into that information, they can get that information.”

“We are also including include an organization of all the literature that’s out there, which we call the Grey literature,” said Dr. Phillips. “It’s not commercial literature, it’s literature that includes presidential directives such as HSPD-21, national planning scenarios such as the National Response Framework and state, regional and local action reports and training scenarios.”

NLM and the 6,000 libraries that are part of the NN/LM (National Network/Libraries of Medicine) have the job of delivering this information.

The Disaster Information Management Research Office (DIMRO) will be the hub for DIRMC activities including targeting community resources; providing training design and technologies; and providing preparedness options and response plans for plans for different events (e.g. flu v flood).

Further it will team librarians with emergency planners and provide tools and services with downloadable information into a PC or handheld, while continuing training, continuing education and research efforts.

The DIRMC will also be the repositories of the history of regional events; help plan and train for the regional response as a


team; and act as communication hubs, data triage centers and data-bases resources – all connected with back-up plans.

Disaster Information Specialist

“We are in the process of creating subspecialty in library science, what’s called a Disaster Information Specialist,” noted Dr. Phillips. “This is a person who specializes in acquiring information for that team. It’s like a medic in the field, it’s like

a court reporter, and they just have a special job.”

The reason this is being done is because there are endless reports, Presidential Directives and the National Response Framework. All of these lengthy reports describe specific duties for specific types of people such as health care workers, public health



<http://sis.nlm.nih.gov/dimrc.html> is the new government portal dedicated to provide personnel, tools, information and research to assist with disaster preparedness and response.

workers, doctors, nurses.

“All the reports talk about how important information is, ‘just in time information, just what I need’ information, but there’s no information specialist gathering all that for you and me,” explained Dr. Phillips.

“What we want to do is create a curriculum – right now for librarians, but in the future there may be other types of people – for these Disaster Information Specialists as a subspecialty of library science, just like you have medical librarians, map librarians, historians and on and on,” Dr. Phillips added.

According to Dr. Phillips, the curriculum could be passed to the network of regional libraries who could then train their network of librarians when appropriate to do this.

“Hopefully rather than having this as some central government project with a report that says you should do this, we want to be proactive and have it go down the network of 6,000 libraries and all their associate libraries.”

Dr. Phillips noted that the public librarian is very well equipped to do this job and that it doesn’t have to be full time. “It depends on the circumstances. If it is at the federal or state level, then it might be a single job, but if it is at a town of 50,000 people with two libraries, it might just be a part time job,” said Dr. Phillips.

“At least they will know how to do it; that a body of literature is being organized to help them figure out what do I need from my town’s perspective.” □

Radio Waves

The Project 25 steering committee for digital public safety radio communications has developed interoperability standards for digital equipment and systems.

At the Super Bowl, Eli Manning and Tom Brady didn't have to read lips or decipher hand signals. They had a wireless radio in their helmets communicating on one frequency; so amid all the noise and organized chaos, they could communicate clearly.

At the same time members of the Phoenix Police Department weren't as fortunate. Many of those working the Super Bowl had to carry three or four radios in order to speak with the different agencies from the federal, state, and local law enforcement and first responder entities.

Why? Because they all operated on different radio frequencies explained DHS Science and Technology (S&T) Directorate Command, Control and Interoperability CTO Luke Klein-Berndt.

But now, increasingly that problem is being solved, as a demonstration of P25 radios proved at the International Wireless Communications Expo in Las Vegas in February.

According to the DHS S&T, "this portable radio prototype is designed to enable emergency responders – police officers, firefighters, and emergency medical service personnel – to communicate with partner agencies regardless of radio band. Seamless radio communications among multiple agencies would represent a significant milestone in overcoming the communications challenges our nation's First Responders have faced during large-scale emergencies."

"In order to perform his mission, the Phoenix policeman often had to carry three or four radios on him at all different times to be able to speak to federal, state and local authorities," said Klein-Berndt.

"What we did by doing this demonstration, is we had a sampling of radios that were all in different bands representing the state police, and the local fire department, and the federal government," said Klein-Berndt. "We showed how that one radio could have answered them all instead of this guy having radios clipped all over his body. And that is not uncommon. Whenever there are incidents that require multiple agencies, there are very, very frequently folks out there carrying multiple types of communications devices on them. It's cumbersome."

The Rosetta Stone for Radios

One of the big features for P25 is that it allows for interoperability explained Klein-Berndt. "It's the Rosetta Stone that allows different manufacturers to talk together. So that's very

important for interoperability."

Leveraging the work on the P25 the S&T has awarded a contract to develop a software-defined radio so federal, state and local first-responders could operate across the 10 critical frequency bands used by first-responder agencies.

In addition, the S&T sought a technology that matched the current market price for hand-held radios but would perform like multiple radios, letting command-and-control operators use a single radio to communicate to another agency operating on a separate frequency.

The software-defined radio communicates with radios that operate in the 136-174 MHz, 360-400 MHz, 402-420 MHz, 450-512 MHz, 700 MHz and 800 MHz frequencies. It also is compatible with analog FM systems according to Klein-Berndt. "By operating across frequencies, users will be able to talk to multiple agencies. Users simply turn a switch on the radio to the particular frequency and can send and receive messages from radios on any of the aforementioned federal, state or local channels."

P25 Standards

Government and industry have joined together to develop P25 standards. "We are about to start testing this program, it's the Project 25 compliance testing program," said Klein-Berndt.

"We go and evaluate how well laboratories can perform these standardized tests, and the ones that we find that are capable of doing those tests and repeating them and recording them correctly, very much like an ISO standard certification, we recognize these labs."

This recognition allows the labs to perform these tests and then issue a test report which manufacturers can use to issue a declaration of compliance.

"This program will start providing a way buyers can be assured the radios they buy actually meet this interoperability standard and the different performance specifications," added Klein-Berndt.

This is a big change because right now manufacturers can just claim that their radio is standards compliant. "This program and process will really ensure the rigors are there in this testing and have a physical process to see that this is all done and conducted," explained Klein-Berndt.

Field Deployment

What's exciting to Klein-Berndt and his colleagues is that finally product development is getting to the point where most manufacturers have some sort of P25 product and going from in the P25 phase where it's no longer just written standards, it's getting to where it's really getting to product and coming to real market force.

"For the multi-band radio we are finally seeing this transforming from a lab based technology to something that's really going to the field and meeting the needs," said Klein-Berndt. "So it's really an exciting time where we are seeing this real transition from the older proprietary systems to really a time when we are able to overcome some of these technical barriers and start to overcome some of the cultural issues and some of the other issues."

What that means that in a very short time you are going to be able to buy Brand A, Brand B or Brand C and they are all going to be just like you would go out and buy a TVs. You will be assured that all these brands conform to a standard and test reports will all be available on the web so you can find out quickly what radios meet that specification.

"Think of it as when you pick up that 802-11 wireless card, it has that Wi-Fi stamp on it," explained Klein-Berndt. "You know when you get that stamp you can just put that in and it will connect your whole network. You don't have to worry. You can get them from Qwest or AT&T and it all will work fine."


Multi-Band Radios

Without the P25 standard, the multiband radio wouldn't be possible because it wouldn't be able to talk to the different digital systems said Klein-Berndt.

"You need that common digital standard to be able to talk to a Qwest system and then also to talk to an AT&T system. You need that common digital standard. So having the P25 standard is what makes this possible. It really helps it. But in addition there is also some really cutting edge technology in the radio that makes it possible to tune into the different spectrum bands."

The way to think about it is right now your car radio has the ability to pick up both AM and FM. But in the First Responder world many have radios that are only AM or FM. What has been created is a radio that's able to talk to both spectrums and expanding to include XM, Sirius and Hi-Def radio.

Further – and most importantly – these radios are going to be the same size and weight as the current radios. "We are not adding some backpack size radio that someone has to lug around or



P25 compliant systems are being increasingly deployed with radios able to communicate in analog and digital mode providing a high degree of equipment interoperability, compatibility and economy of scale.

something that they can't carry with them for the eight hour foot beat that they have to do," said Klein-Berndt. This is something that is meant to be the same size and weight. Plus it is rugged, rugged, rugged.

"Think of it as almost four radios in one," added Klein-Berndt □

Fusing Information

A fusion center is a mechanism to exchange information and intelligence, maximize resources, streamline operations and improve the ability to fight crime and terrorism by merging data from a variety of sources.

Silos are great for storing grain, but they run against the grain when it comes to sharing information and intelligence. Information sharing is critical for preparing for any natural or man-made disaster and is the difference between life and death when responding to calamity.

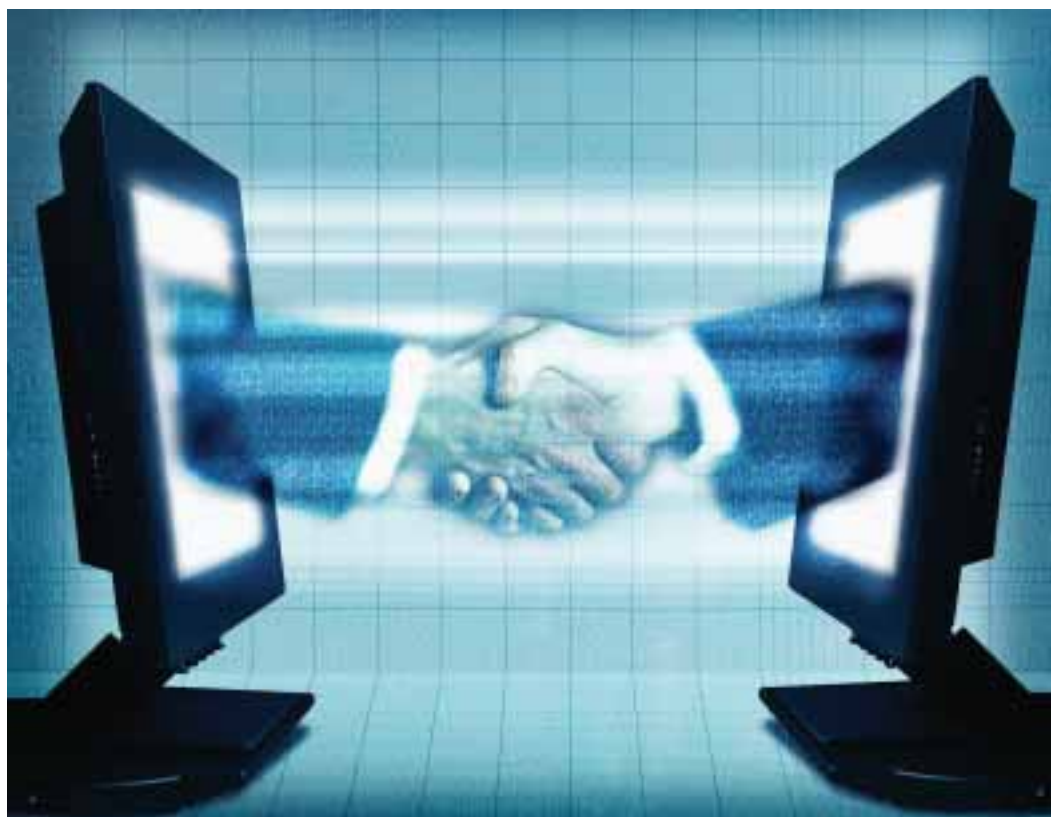
One of the outcomes of the 9/11 tragedy has been the development of fusion centers. In 2004 and 2005, many states began creating fusion centers using local, state, and federal funds. Today according to DHS there are 58 operational centers in 46 states.

“In response to the threat of terrorism, public safety leaders from all disciplines have recognized the need to improve the sharing of information and intelligence across agency borders. Every law enforcement, public safety, and private sector official involved in information and intelligence sharing has a stake in this initiative. Leaders must move forward with a new paradigm on the exchange of information and intelligence,” says the joint DOJ/DHS report, Fusion Center Guidelines.

“At the state and local level, they have a new post 9/11 job,” noted Ambassador Thomas McNamara, Program Manager for the Information Sharing Environment at the recent AFCEA Solutions Conference on Information Sharing. “They are the front line defenders against terrorism that has penetrated our borders. This is a new aspect of defense they hadn’t had to do before. We need to face this without exaggerating it, but not underestimating it either.”

McNamara explained that fusion centers play a decisive role and are a critical part of the president’s National Strategy for Information Sharing. “They strengthen the nation’s ability to protect communities from future attacks.”

“Working together – leveraging federal as well as state and local networks; moving relevant information and intelligence quickly; enabling rapid analytic and operational judgments – that is what this



network of centers is all about,” added Charles E. Allen, Homeland Security Undersecretary for Intelligence and Analysis speaking at the second national Fusion Center Conference in March.

The Core of Collaboration

Fusion centers embody the core of collaboration, and as demands increase and resources decrease, fusion centers will become an effective tool to maximize available resources and build trusted relationships.

The agency has pumped more than \$254 million from FY 2004-2007 to state and local governments in support of these centers. Inside these fusion centers are DHS analysts who work side by side with state and local authorities and facilitate the two-way flow of timely, accurate, actionable information on all types of hazards. DHS has deployed 23 officers as of March 2008, and will have 30 professionals in major Fusion Centers nationwide by the end of FY08.

“The one thing I would say is the benefit of these fusion

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centers – if you had to narrow it down to some very specific one sentence bullets – is access to non-traditional sources of information,” said Robert Riegle, Director of the State and Local Government Program Office within the Office of Intelligence & Analysis at DHS during the AFCEA Homeland Security conference.

“When you talk in those terms people, especially civil libertarians, the hair stands up on the back of their neck,” said Riegle. “But the simple fact of the matter is this isn’t new information; it’s information that exists out there today in public records and databases throughout the U.S. at the state and local level and quite honestly at the federal level. But it’s getting that information into one environment where we can see what the interdependencies are so that we can begin to analyze that from a common standing, a common point of view.”

“So we are not developing new spy networks within the domestic sphere of the United States of America, that’s not the intention at all,” noted Riegle. It’s to find the existing information that we traditionally have not had access to such as the Department of Motor Vehicles or public health information that’s not restricted by HIPPA.”

Centers Of Action

On the ground mitigating those threats is Lt. Jeff Wallerton with the Maryland Coordination Analysis Center, the MCAC. He told the AFCEA audience about the real-life benefits of fusion centers.

“Imagine a place where law enforcement has the opportunity to go everyday to get analytical information. Imagine a small police department that has less than 100 police officers and they are working a homicide investigation. And the only thing they have to go on is a pay telephone number of what is going on. And that pay telephone number is located in Harlan, Kentucky,” explained Wallerton.

According to Wallerton, Harlan, Kentucky is a small rural area, has a hotel, 15 eating establishments, 13 are fast food, two are sit down restaurants, with one pay phone located next to the Holiday Inn – one road in, one road out. Police also know that this individual has relatives that live in Tennessee. The ability to get that information, put it on a poster, put the name “and then disseminate the information out to local law enforcement and within 45 minutes that individual is arrested in Harlan Kentucky is what happened because of the work that we did.”

The NCTC – Our National Fusion Center

Ambassador McNamara is proud of the progress that has been made so far in improved information sharing and the role the National Counter Terrorism Center (NCTC).

Established in 2004, the NCTC supports agencies in their analysis and activities said McNamara. It is now the central shared knowledge bank of known and suspected terrorism and activities and ensures all levels of government have all the source information and all support they need to execute their plans or perform independent or alternative missions. The result is the all this information is available not only to them but to all agencies and entities that are part of the NCTC. McNamara also announced that within the NCTC a new

interagency threat assessment and coordination group has been established to facilitate production of what we call “federally coordinated information” related to terrorism for dissemination to state, local and private sector partners.

It is important to note that state and locals are working with their federal counterparts in a dedicated workspace where the state and locals have full connectivity to all the systems available within NCTC said McNamara. “There is an immediate need for us at the federal level to understand that our defense and national security depend on our state and local partners having the information they need to do their jobs just as feds need it.”

“Indeed the NCTC is effectively our national fusion center,” said McNamara. “A critical part of the information sharing environment has been to create this national integrated network of state and major urban area fusion centers to share information with each other and with the federal government.”

At the same time fusion centers are valuable tools for DOD since their homeland defense missions depend on time delivery of domestic terrorism information for success said McNamara.

“Most of our military assets are located in CONUS and that means that hookup and information sharing environment has to include DOD within the 50 states. With fusion centers progress is being made. “We are getting there,” said McNamara. “It is not as strong as it needs to be yet, but we are making progress.” □



The benefit of fusion centers is access to non-traditional sources of information and getting that information into one environment where analysts can see the interdependencies and examine data from common point of view.



Industry Insights

AT&T Government Solutions

For AT&T, planning for and responding to crises is a way of life, from hurricanes to floods to acts of terrorism. Its business continuity preparedness efforts include day-to-day operational activities to ensure continued service to its customers, broad scenario planning, as well as individual threat assessment and analysis, centralized command and control coordination, and detailed recovery procedures for critical functions.

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