

OCSC Newsletter Disaster Management

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Technology, Collaboration and Communications Remain Critical to Hurricane Recovery

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Comments and Suggestions

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1-800-FED-INFO

In 2005, more than ever before, technology was used to provide information and services through digital means to aid victims of hurricanes Katrina, Rita and Wilma. For months after these unprecedented disasters, Federal, State and local governments, non-profit organizations, the private sector and individuals remained committed to the recovery process.

This edition of the Intergovernmental Solutions newsletter looks at the many ways governments, associations and private industry are confronting the problems arising from major disasters. The articles describe the experiences, observations and insights of those who used and are continuing to apply the best technology solutions they could find to help them deal with the scope of these natural disasters.

The recovery from Hurricane Katrina posed a tremendous communication and coordination challenge for governments and non-profits at the Federal, State and local levels. It was the largest operation ever undertaken by the American Red Cross. The extent of the recovery effort required widespread intergovernmental collaboration and the development of innovative information technology (IT) service delivery mechanisms.

The newsletter offers many examples in which innovative technology was

brought to bear on the massive recovery problems. It also illustrates some of the efforts taken by governments and other major players to ensure the dissemination of reliable recovery-related information.

States and counties, particularly those in the hurricane-ravaged Gulf Coast region, provided what they could for their victimized citizens. They coordinated aid through their information services departments, non-governmental partners and vendors. The governor of Florida, the chief information officer of Alabama and the chief technology officer of Texas discuss their experiences here. The CIO of a Virginia county, who volunteered to help out in the Emergency Operations Center in New Orleans, makes a case for a pragmatic approach to applying technology. The Emergency Management Assistance Compact (EMAC), a state-to-state mutual aid agreement, illustrates the importance of regional collaboration. And the National Association of State Chief Information Officers (NASCIO) highlights the need for interoperable radio communications among first responders, law enforcement and emergency management officials from every level of government.

The Federal government stepped up to coordinate contacts with citizens

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affected by the storms. The U.S. General Services Administration's Office of Citizen Services and Communications was key to the Federal effort. Its National Contact Center at 1-800-FEDINFO ratcheted up its own operations, extended its hours and provided contract assistance to the Federal Emergency Management Agency to handle almost a million calls to 1-800-621-FEMA. It established a central repository of links to information for hurricane victims on FirstGov.gov, the U.S. government's official web portal. FirstGov.gov's Spanish-language version, www.espanol.gov, was a critical source of information for Spanish-speaking citizens.

Other interagency groups also describe how they contributed to the recovery effort. Federal Web managers came together to coordinate the presentation of hurricane-recovery information on agency web sites across the government and made it easier for citizens to find information quickly and intuitively. The presidential initiative Geospatial One-stop maintained a website, www.geodata.gov, that provided all recovery operations with access to seamless digital information on geographic features, such as elevation, transportation, and manmade structures. The community of practice studying semantic interoperability in emergency management information sharing describes public-private collaboration to improve the technology underpinnings that make it possible to coordinate emergency management across organizations.

While the 2005 hurricanes provided disaster-management wake-up calls for governments in the United States, nations around the world experienced similar breakdowns in coordination and communications after the Christmas 2004 tsunami hit South Asia, killing over 200,000 residents and tourists. Governments from Scandinavia to the South Pacific, from the United States to the United Kingdom scrambled to provide assistance to their citizens and who were affected by the tsunami. An article from Sweden addresses how that country learned a lot about the shortcomings in its own disaster-management capabilities, and has since instituted new plans to handle disaster situations. Another describes how Sri Lanka and others

are looking into programs that will allow the government to "push" text messages out to citizens' cell phones in the event of a national disaster. In other countries, like New Zealand, the government is working hard to ensure that disaster-management programs are in place and functioning before the occurrence of a widely anticipated pandemic.

Back in the United States, victims-aid organizations were tested to their limits during the hurricane season. Their experiences illustrate the scope of the disaster and the range of solutions that had to be found to deal with it. The CIO of the American Red Cross discusses the difficulties they encountered and how they were able to use IT to meet an essential need with a solution that was quickly deployed, a solution that holds benefits for the organization now and in the future. The heart-warming story of how the National Center for Missing and Exploited Children reunited thousands of dislocated children with their families illustrates how organizations stepped up to meet unexpected challenges. Another article tells how pharmacists and doctors came together to make it possible for hurricane victims to get the prescriptions they need by "e-prescribing." The private sector offers an idea for treating disaster victims at remote temporary field treatment sites supported by a Web-based crisis management system.

This newsletter offers a few of the many stories of how intergovernmental cooperation and innovative technology were used to confront the huge challenges presented by the immediate and critical need for effective disaster management. The range of subjects, which are just the tip of the iceberg, show how better communications—on all levels—must be a key priority for government in the future.

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Statement by Governor Jeb Bush on Emergency Response: *Keep First Response Local*

By: *Jeb Bush*
Governor of Florida

In the wake of Hurricane Katrina, Americans are looking to their leaders for answers to the tragedy and reassurances that the mistakes made in the emergency response will not be repeated in their own communities. Congressional hearings on the successes and failures of the relief effort are already underway.

As the governor of a State that has been hit by seven hurricanes and two tropical storms in the past 13 months, I can say with certainty that Federalizing emergency response to catastrophic events would be a disaster as bad as Hurricane Katrina.

Just as all politics are local, so are all disasters. The most effective response is one that starts at the local level and grows with the support of surrounding communities, the State and then the Federal government. The bottom-up approach yields the best and quickest results - saving lives, protecting property and getting life back to normal as soon as possible. Furthermore, when local and State governments understand and follow emergency plans appropriately, less taxpayer money is needed from the Federal government for relief.

Florida's emergency response system is second to none, under the direction of Craig Fugate, director of the State Division of Emergency Management. Our team is made up of numerous bodies at all levels of government, including State agencies, the Florida National Guard, first responders, volunteer organizations, private-sector health care organizations, public health

agencies and utility companies. Once a storm is forecast for landfall in Florida, all these groups put their disaster response-and-recovery plans into high gear.

Natural disasters are chaotic situations even when a solid response plan is in place. But with proper preparation and planning, it is possible - as we in Florida have proved - to restore order, quickly alleviate the suffering of those affected and get on the road to recovery. The current system plays to the strength of each level of government. The Federal government cannot replicate or replace the sense of purpose and urgency that unites Floridians working to help their families, friends and neighbors in the aftermath of a disaster. If the Federal government removes control of preparation, relief and recovery from cities and states, those cities and states will lose the interest, innovation and zeal for emergency response that has made Florida's response system better than it was 10 years ago. Today's system is the reason Florida has responded successfully to hurricanes affecting our State and is able to help neighboring states.

But for this Federalist system to work, all must understand, accept and be willing to fulfill their responsibilities. The Federal government and the Federal Emergency Management Agency are valuable partners in this coordinated effort. FEMA's role is to provide Federal resources and develop expertise on such issues as organizing mass temporary housing. FEMA should not be responsible for manpower or a first response - Federal efforts should

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serve as a supplement to local and State efforts.

Florida learned many lessons from Hurricane Andrew in 1992, and we have continued to improve our response system after each storm. One of the biggest lessons is that local and State governments that fail to prepare are preparing to fail. In Florida, we plan for the worst, hope for the best and expect the unexpected. We understand that critical response components are best administered at the local and State level.

Our year-round planning anticipates Florida's needs and challenges - well before a storm makes landfall. To encourage our residents to prepare for hurricane season this year, for 12 days Florida suspended the State sales tax on disaster supplies, such as flashlights, batteries and generators. Shelters that provide medical care for the sick and elderly take reservations long before a storm starts brewing. To ensure that people get out of harm's way in a safe and orderly manner, counties coordinate with each other and issue evacuation orders in phases. Satellite positioning systems,

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State and Local News

advanced computer software and a uniform statewide radio system allow all of these groups and first responders to communicate when the phones, cell towers and electricity go out.

The Florida National Guard is deployed early with clear tasks to restore order, maintain security and assist communities in establishing their humanitarian relief efforts. Trucks carrying ice, water and food stand ready to roll into the affected communities once the skies clear and the winds die down. Counties pre-determine locations, called points of distribution (PODS), that are designed for maximum use in distributing these supplies.

Florida's response to Hurricane Katrina is a great example of how the system works. Within hours of landfall, Florida began deploying more than 3,700 first responders to Mississippi and Louisiana. Hundreds of Florida National Guardsmen, law enforcement officers, medical professionals and emergency managers remain on the ground in affected areas. Along with essential equipment and communication tools, Florida has advanced over \$100 million in the efforts, including more than 5.5 million gallons of water, 4 million pounds of ice and 934,000 cases of food to help affected residents.

I am proud of the way Florida has responded to hurricanes during the past year. Before Congress considers a larger, direct Federal role, it needs to hold communities and states accountable for properly preparing for the inevitable storms to come.

The writer, Jeb Bush is the 43rd governor of Florida. For more information, contact Lindsay Mirabito via email at: Lindsay.Mirabito@MyFlorida.com.

Alabama's CIO Provided Critical Telecommunications Services for Katrina Evacuees

*By Jim Burns, Chief Information Officer
State of Alabama*

In the aftermath of Hurricane Katrina, Alabama had to find homes and services for thousands of newly homeless citizens who had evacuated the hurricane-devastated coastal region. The State government joined with the Federal government and the private sector to ramp up rapidly to provide an unprecedented range of services. Governor Robert Riley designated several Alabama State Parks as long-term locations for evacuees. The Federal Emergency Management Agency provided a large number of comfortably sized trailers to house hundreds of evacuees in the Alabama parks.

The Office of the Alabama Chief Information Officer and the Information Services Division (ISD) provided telephone and Internet access for evacuees relocated to the State Parks. Evacuees had a great need for Internet access—to sign up for benefits, search for loved ones, send e-mail messages, learn current news, search for jobs, and for a multiplicity of other purposes. Telephone service was especially critical, because cellular telephone service is not normally available in the rural settings of the State Parks.

Information technology and telecommunications vendors that had an ongoing relationship with the state donated equipment and services, while

ISD provided the manpower to help the Katrina victims. For Internet access, Alabama received laptop computers as a donation from Dell, software from Microsoft, and networking equipment from Cisco—all of which were vendor partners in Alabama. ISD provided the personnel to install and set-up the donated computer resources, and purchased T-1 data circuits to tie the facilities located in the parks into the Internet using ISD's access point. Blue Coat Systems provided an appliance and the software to filter out pornographic content and other undesirable material for Internet users in this family setting. For telephone service, VONAGE donated telephone interface ports that tied into our T-1 lines at each site and dozens of POTS phones. The VONAGE service provided free local and long-distance calling for all the evacuees using the T-1 data circuits, a great solution for this situation, because we only had to run one T-1 line in order to provide full connectivity for broadband Internet access and clear voice communications to as many as ten computers and ten phones.

Jim Burns is the Chief Information Officer for the State of Alabama. For more information, contact Jim Burns via email at: jim.burns@alabama.gov.

How Process, Procedures and Inadequate Technology Can Inhibit Emergency Response

By Jack Belcher, CIO, Arlington County, VA
Delivered to the GSA Office of Intergovernmental Solutions 2005
Face-to-Face Meeting

I'm the CIO in Arlington County, Virginia. I was the CIO in Arlington County on 9/11, and I was in the Emergency Management Center when the Pentagon was hit. And just coincidentally back in September 2005, I spent two weeks in New Orleans as part of the Northern Virginia Emergency Management Team that was deployed to see what we needed to do to be able to react better to events, particularly natural disasters. It's a critical issue. In New Orleans, among the people in the field who were doing the job, I found a number of things I thought were particularly interesting, basic things. We may have access to advanced technology, but, as a society, we've installed processes and procedures that inhibit how we make our folks do their job.

My colleagues and I were stationed in the Emergency Operations Center in New Orleans, right outside the Superdome. Even though I was a CIO going down there, I actually found myself doing things unrelated to technology. I was doing a lot of order and fulfillment work, logistical work. We had a process, an outdated way we asked for services—basic order and fulfillment services. In the 2-1/2 weeks I was there, I made approximately 32 requests for Port-A-Johns. For every request, I had to fill out why I needed the Port-A-John, and where was the Port-A-John going to be used. I had to send it forward to the State authority in Baton Rouge. They would look at it. They'd spend a day trying to understand the purpose of me getting that Port-A-John. They would then come back, ask more questions, and then finally, hopefully, they would approve it. And if they approved it, then we had to turn over and try to find funding for it. And then we'd have to go find somebody that could supply that Port-A-John. It was a basic order and fulfillment process. Many of us talked about that at length; we know there are technologies that could help these people do their job.

You need to consider warehousing, if you are buying something and you have to take it to a warehouse, which we did. We commandeered a warehouse on a wharf in New Orleans. There's got to be some way of keeping track, relating the goods you've ordered with the truck that's delivering them,

to make sure that somebody is not just showing up at the warehouse dropping goods off. With the goods that are coming in, you know where they're storing those goods, and when somebody comes in to get them, you know that the people asking for those goods are authorized to get those goods. Why is that important? We had a lot of medicine, in some cases we were ordering guns, and you don't want anybody going in and getting that stuff. It was a basic warehousing technology initiative.

During the course of the recovery in New Orleans, when the City began letting people back into different jurisdictions, there was absent a coordinated process to do credentialing. So how do you know that the person who is showing up into the parish (county) actually has a right to get into that parish? We had no records. The records had been washed away, so the whole question of record retention and records recovery comes into play.

I mention all this because if you look at what we do, we have all these technologies, we are raised technologists. We say if you've got a problem, here's a service we've got for you. And we expect that the people on the other end understand how to utilize the technologies we have arrayed for them. In many cases they don't understand how to use those technologies. What we need to do as technologists is to really understand, what the problem is. (And the government I think needs to do this from the top down.) What is the problem, what are we trying to achieve, say, in the New Orleans situation? You might say, well, what does New Orleans have to do with us? We're not going to have a flood in upstate New York, or we're not going to have a flood here in Arlington, Virginia, or Washington DC. Probably not, but we could have a pandemic event that closes down an entire city, that means that certain parts of the city are not accessible anymore.

So we ought to pay attention to what happens in New Orleans, put on our technology hats, and try to figure out what it is we can do to automate that process better. In the order and fulfillment process, there is no reason why somebody should have to go through a 20-minute exercise to get a Port-A-John. I think what happens is that we're trying to prevent people from mispending funds. When we're talking about a commodity like a Port-A-John, where I think we need to step back and ask what is the ultimate goal here, let's apply technologies in such a way as to actually advance the response to the event. So that would be my response. I think it's listening more than we have, being able to take a pragmatic approach to how we apply technology technology.

Jack Belcher is the Chief Information Officer for Arlington County, where he is also the Director for the Department of Technology Services. Mr. Belcher came to Arlington County from the International Monetary Fund where he led the effort to streamline the creation, review, dissemination and publication of Fund information. For more information contact Jack Belcher via email at jbelcher@arlingtonva.us.

Technology for Emergency Management: *The Texas Perspective*

Larry A Olson
Chief Technology Officer, State of Texas

The Challenge

When Hurricane Katrina hit our neighboring Gulf States, Texas Governor Rick Perry sent out the message early and often that there was no higher priority in Texas government than disaster relief. As 250,000 Katrina evacuees made their way to Texas, all levels of our State – including government and the private sector – began collaborating on a focused and dramatic scale. When Hurricane Rita hit a few short weeks later, we were prepared to put those skills into action again for our own citizens.

Our Texas response was led by Jack Colley, State Coordinator for the Governor's Division of Emergency Management. Jack managed the State Operations Center and contributed outstanding overall leadership to the effort. His three daily conference calls brought together nearly a thousand public officials to solve the day's highest priority problems and greatly fostered inter-governmental collaboration. My own agency, the Texas Department of Information Resources (DIR), was proud to participate in these activities.

Foundation for Collaboration

Historically, DIR has been the statewide purchaser of commodity IT goods and services for State agencies and more than 4,800 other public entities across Texas. As such,

my team has developed relationships with agencies, cities, counties, school districts, and the vendor community. During each disaster, we made it our top priority to reach out to public entities and vendor partners to ensure the tight alignment of technology relief activities.

Rapidly Deploying Government Services to New Populations

Hurricane Katrina dramatically – and quickly – increased the number of citizens seeking government assistance. As citizens of one of the only states with a 211 network, Texans can call "211" from any telephone at any time of day to be connected immediately with agents who can assist them in gaining access to services. The massive influx of 250,000 Katrina evacuees in the Houston and Beaumont areas quickly overwhelmed the local 211 call centers, as well as many of the call centers in neighboring Louisiana.

Our agency, together with our private sector partners eLoyalty, SBC (now AT&T), and Cisco, was able to quickly re-route calls across the VoIP-based converged network, add a new 50-telephone support center in Austin, and thereby expand the network's capacity to meet demand. In addition, we were able to absorb some of the excess call volume from the State of Louisiana. I am especially proud that our staff and partners were able to complete what would have been a full month of work in less than 36 hours.

Using the Internet to Link Citizens with Government

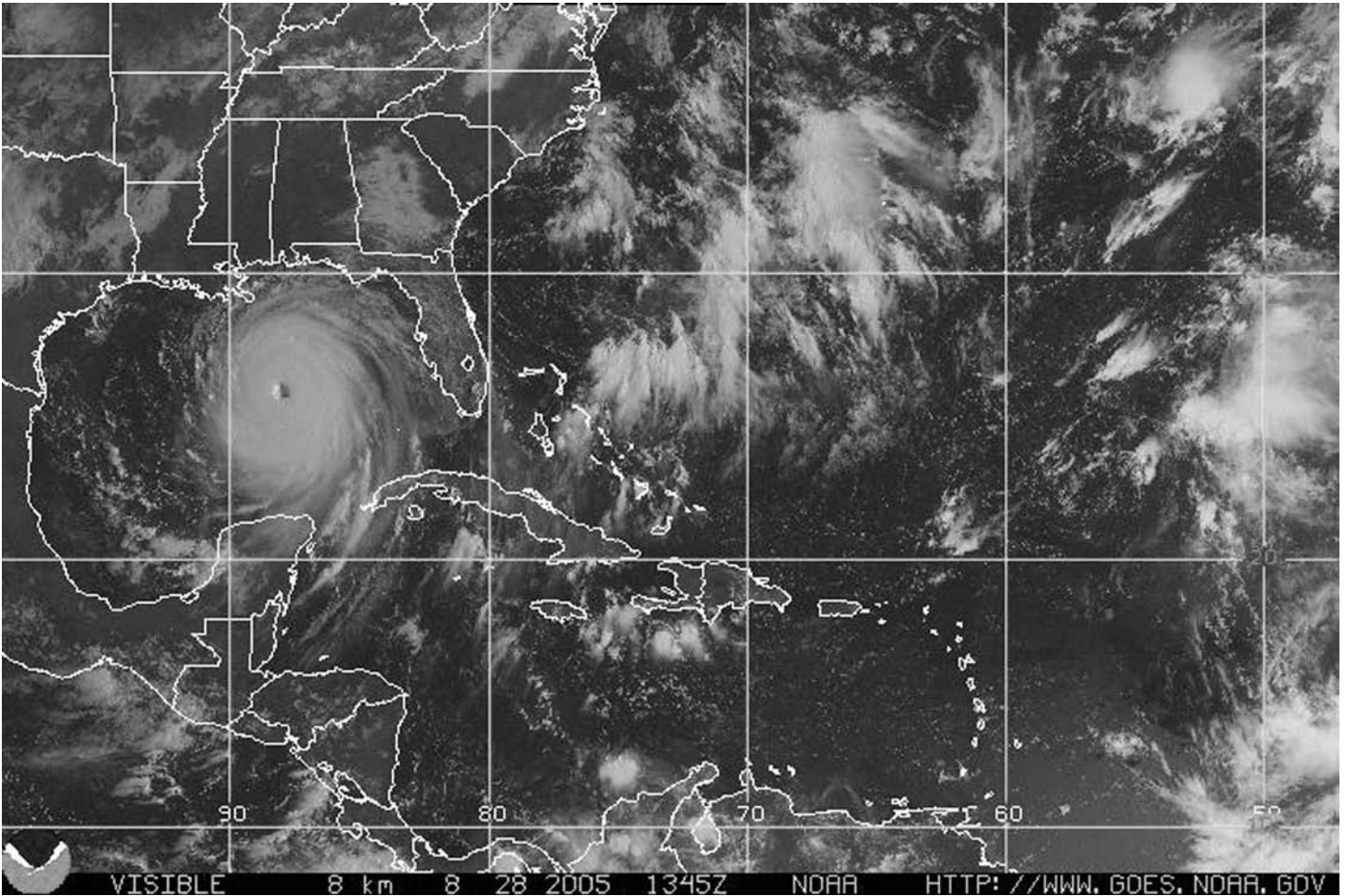
Internet access may not be a basic human need, but it showed itself to be remarkably close to one in these twin disasters. We worked closely with local government CIOs like Steve Jennings of Harris County and Richard Lewis of the City of Houston to establish telephone and Internet connections to more than 25 large-scale evacuee shelters, including 10 in the first 24 hours after Katrina evacuees began arriving in Texas.

This capability was especially critical as the Texas Health and Human Services Commission began the monumental task of processing more than 150,000 new applications for food stamps, Medicare, and other forms of assistance. Web access provided the critical lifeline that allowed the Commission to establish mobile offices at shelters and significantly streamline the intake process to meet the increased need.

The web also played another critical role in our emergency response. While the traditional means of broadcasting disaster information via radio and television can be fragmented and difficult to control, we found that our State portal at www.texasonline.com was a useful tool for rapidly disseminating relief information that did not suffer from those shortcomings. We created a dedicated Hurricane portal, accessible via the home page, and

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State and Local News



assigned a special team to keep it current.

Moving Forward

The Governor's Office continually updates our emergency management plans to reflect new lessons learned, and DIR plays an active role in that

review. While many details of that policy are still being developed, one thing is clear: Information Technology has become a critical component of any emergency response capability.

Larry A. Olson is currently the Chief Technology Officer for the State of Texas. He has had a long career in the public and private sectors, and was formerly the first CIO for the Commonwealth of Pennsylvania. For more information on this topic or others relating to technology in the State of Texas, Mr. Olson can be reached at cio@dir.state.tx.us.





Interstate Mutual Aid Going Farther Than It Has Ever Gone

By Beverly Bell, National Emergency Management Association

“Because major events will undoubtedly have a regional impact, there is no greater necessity than to collaborate on a regional basis to leverage expertise, share specialized assets, enhance capacity, and interoperate cohesively and effectively. Expanded Regional collaboration supports the development of a seamless, national network of mutually-supporting capabilities to prevent, protect against, respond to, and recover from the full spectrum of threats and hazards.”

National Preparedness Guidance
Homeland Security Presidential Directive 8:
National Preparedness
U.S. Department of Homeland Security
April 27, 2005

The importance of regional collaboration and interstate cooperation became painfully clear during the Hurricane Katrina response. While Louisiana and Mississippi residents are still reeling from the devastation, the other 46 states—along with the District of Columbia, Puerto Rico, and the U.S. Virgin Islands—have stepped in with people, equipment, and supplies.

Facilitating and deploying much of this critical assistance is the Emergency Management Assistance Compact (EMAC), a state-to-state mutual aid agreement that paves the way for support across state lines in an emergency. In the months since the hurricane hit, EMAC has deployed

more than 61,000 personnel as well as other resources, totaling approximately \$745 million in aid to the Gulf Coast.

The Compact's significant role in the Katrina response underscores why the Federal government considers mutual aid a cornerstone in preparing the country for either a natural or man-made disaster. No government—local, State, or Federal—has all the resources to respond to all disasters.

Mutual aid Compacts help bridge the gap. The National Preparedness Goal is a document that identifies capabilities the U.S. should have to prevent, respond to, and recover from a major disaster. In the most recent draft, expanding regional collaboration is cited as a national priority. The Goal says that all government entities should have mutual aid agreements in place in order to undertake necessary preparedness tasks and use existing resources more efficiently.

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EMAC is a leading example of such an agreement. Ratified by Congress in 1996 as law (Public Law 104-321) and administered by the National Emergency Management Association, the Compact has well-defined operations for coordination and deployment. It uses established protocols that allow reimbursement from the requesting state to all assisting states. EMAC also has procedures to resolve workers' compensation and liability issues.

Each member state is required to get state legislative approval to become part of EMAC. Currently, 49 states, the District of Columbia, Puerto Rico, and the Virgin Islands are members. Because of its location, Hawaii has not joined the Compact, but membership discussions are currently underway in the state.

EMAC provides assistance in a disaster only after two things happen: the governor of the affected state declares a state of emergency and the affected state asks for help. Often, the state of emergency is done before the actual event [don't understand?], allowing EMAC to pre-stage resources and be in position.

Once the state requests assistance, an EMAC response begins:

- The extensive EMAC database, with a notification/tracking system, communicates information about the event among member states.
- An EMAC A-Team, the lead group assigned to a disaster event, works with the affected state to determine its needs.
- Other EMAC member states are contacted with these requests.
- The A-Team helps the affected state determine the availability of requested resources and the costs.
- The affected state completes requisition orders and finalizes cost negotiation.

- Resources are sent to the requesting state.
- Fulfilled requests are communicated to all member states as they are met.
- The assisting state asks for and receives reimbursement.
- Throughout the process, various EMAC leadership teams interface and coordinate with state, regional, Federal jurisdictions, and other government entities.

The scale of the disaster determines the level of the EMAC operation. The Katrina response demanded a Level 1 operation, the highest activation. Level 1 can include an EMAC National Coordinating Team, which is co-located at the National Response Coordination Center in the Washington, D.C. headquarters of the Federal Emergency Management Agency (FEMA), and Regional Coordinating Teams, which are co-located at FEMA regional response coordination centers. All levels of EMAC operation include an A-Team and the EMAC National Coordinating Team, which provides oversight and is a key player in the overall governance of the Compact.

There are several important distinctions to remember about EMAC. It is not a Federal program or part of the Federal government. EMAC is a state-to-state agreement. Assistance is coordinated through the state emergency management agency. Local and county governments that want to offer aid must work through their state emergency management offices and should not directly contact the state asking for assistance. Also, EMAC does not deploy individuals acting on their own behalf.

Ironically, it was another hurricane—Andrew—that precipitated the formation of EMAC. Considered one of the most destructive hurricanes in U.S. history, Andrew struck in 1992,

causing 26 direct deaths and more than \$25 billion in damages.

As Florida—the state most affected—struggled to rebuild, then-Governor Lawton Chiles suggested that the 19 members of the Southern Governors Association establish some type of formal mechanism for states to provide help to one another in times of disaster. Originally known as the Southern Regional Emergency Management Assistance Compact, the agreement grew and, in 1993, evolved into EMAC. After the Compact was signed into law, EMAC became the first national disaster-relief agreement to be ratified by Congress since the Civil Defense Compact of 1950.

For the Katrina response, EMAC deployed everything from National Guard troops to nurses. The Compact has facilitated coordination among representatives from many different disciplines such as law enforcement, firefighting, public health, transportation, and human services. Equipment provided runs the gamut as well, from Medevac helicopters to diapers, boats, and water purification systems.

Given the scope of the Katrina disaster, it's expected that EMAC will continue to deploy assistance for months. In the meantime, the Compact is taking the lessons it has learned and identifying best practices. It is continuing efforts to educate government entities, not only about EMAC, but also about intrastate agreements that allow communities within a state to provide assistance to one another. The end goal is to improve the response to all major disasters while using available resources in the smartest and most cost-effective ways.

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We Need to Talk: *Governance Models to Advance Communications Interoperability*

By The National Association of State Chief Information Officers (NASCIO)
Interoperability and Integration Committee

The Challenge of Interoperability

The inability of public safety officials to readily communicate with one another too often results in unnecessary loss of lives and property as seen in our nation's recent experience with hurricanes Katrina and Rita and their aftermath. Collaboration and coordination is important for government to deliver needed and life-saving services to the public and voice and data communication is integral to these cooperative efforts. The September 11, 2001 terrorist attacks on America and the delayed response in the Gulf graphically illustrate the need for interoperable radio communications between first responders, law enforcement and emergency management officials from every level of government.

Who needs to talk? Besides emergency first responders and law enforcement, there are a number of other State, local and Federal agencies that need to be able to talk to one another. Transportation, public health, utilities, and public works to just name a few. However, these entities are still plagued by communications interoperability problems. The inability to communicate is a problem that is **technical** (due to limited and fragmented radio spectrum and proprietary technology), **political** (due to agencies and jurisdictions and different levels of government competing for scarce dollars, inhibiting the partnership and

leadership required to develop interoperability) and **cultural** (agencies natural reluctance to give up management and control of their communications systems) and must be addressed on all these levels. A well defined interoperability governance model provides the structure needed to bring the players together and promote an environment that helps bridge the gaps created by these obstacles.

Interoperability Defined –

Interoperability has different meanings depending on the context, however, in the public safety arena the term is generally understood to mean “the ability for public safety agencies and public services to talk to one another via radio communications systems and/or share information with one another accurately, on demand, in real time, when needed, and when authorized.”¹

Even in our current post 9/11 political environment where there have been numerous calls for improved interoperability and Federal legislation to free up spectrum for public safety use, there still has been little progress. The aftermath of the recent Gulf hurricanes has refocused the necessity for State, local and Federal agencies to make interoperability a reality. While Congress investigates the causes of the communication breakdown in New

Orleans, and while public officials point fingers at each other, a major issue is being overlooked. The public expects their lives and property to be protected by their governments, local, State, or Federal, without distinction as to who is ultimately responsible. Solutions to this national issue can only be achieved through cooperation between all levels of government.

More than Just a Technology Issue

Although incompatible and aging communications equipment and the availability of radio spectrum are key reasons why public safety agencies can't talk to each other, these technical elements cannot be adequately dealt with until the larger issues of limited funding, lack of planning, and the lack of coordination and cooperation are addressed. Interoperability requires more than equipment – open systems standards, critical incident management, training, and operational policies and procedures that govern interoperable communication systems need to be in place as well.

Keys to Successful Interoperability

Governance – State chief information officers (CIOs) recognize the need for better and more refined governance regarding interoperability. The principles of shared decision making, accountability, business applications and infrastructure must be part of the architecture. Interoperability must also be addressed as part of a coordinated, multi-jurisdictional response plan that involves law enforcement, firefighters, emergency medical services (EMS), emergency management, public utilities, transportation, and public health. To date, many successful efforts have involved individual states working cooperatively with SAFECOM2 to develop interoperability governance

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plans to get all the necessary players together. In other cases, states have developed their own models or worked cooperatively with multiple states as in the case of the National Governors Association (NGA) Policy Academy on Wireless Interoperability.³

Governing body – States should begin by establishing some type of interoperability oversight body to coordinate efforts and provide reports and recommendations to the governor and legislature. These oversight bodies could be established under a state's homeland security agency, directly under the governor's office, or as independent ad hoc committees with representation from all jurisdictions that have a stake in coordinated communications.

Authority – The oversight body should be sanctioned by the governor, by executive order or under statute to give it proper authority. The questions of where the authority is coming from, why are you doing this, who says you can do this, as well as chains of command, should all be clearly articulated in a charter.

Partnerships – States should also recognize the benefit of establishing a partnership with entities that already have planning structures in place, such as SAFECOM, or establishing a mutual aid agreement with a neighboring state. Also, in an enterprised view of interoperability, a partnership with an established solution provider is another key to success that cannot be overlooked.

Benefits to Successful Interoperability

Better coordination among responding agencies – The benefits to developing a successful interoperability communications plan are self evident. Better coordination among responding agencies will increase the likelihood that in the event of a natural or man-made disaster, all entities responsible for delivering lifesaving services will function in a more coordinated manner, thus saving more lives and minimizing damage to property.

Political benefits – When emergencies are dealt with smoothly and efficiently – lives are saved, power and utilities are restored quickly – political fallout like that seen following hurricane Katrina will be greatly minimized. When public officials can look straight into the camera or at a board of inquiry and say confidently that everything that could have been done, was done, and first responders testify that they had adequate uninterrupted communication with all agencies that were necessary, then any shortcomings of an emergency operation can be addressed as lessons learned or factors beyond human control.

More efficient law enforcement and fire protection – With all the talk of the importance of communications interoperability for the mitigation of natural or man-made disasters, the day-to-day practical benefits to law enforcement, fire and emergency response personnel

cannot be overlooked. Every day, members of these communities risk their lives to protect the public from criminal activity and other dangers. The need for more efficient interoperable communications in high-speed chases that may cross jurisdictions, or extreme crimes like the March 1997 North Hollywood bank robbery and shootout that was witnessed live on television, or multi-alarm fires that may require the coordination of several fire departments from multiple districts or even across state lines, illustrate the need for these entities to have reliable multi-jurisdictional radio communications.

To read this document in its entirety please go to the NASCIO website at www.nascio.org or click on <https://www.nascio.org/nascioCommittee/s/interoperability/index.cfm#publications>. For additional information, please contact Drew Leatherby, NASCIO Issues Coordinator, at dleatherby@AMRms.com or (859) 514-9187

- 1 Source: NASCIO's Interoperability & Integration Committee. Influences from the National Task Force on Interoperability.
- 2 SAFECOM is the overarching umbrella program within the Federal government that oversees all initiatives and projects pertaining to public safety communications and interoperability. The program is managed by the Department of Homeland Security, and is housed within the Science and Technology Directorate. <<http://www.safecomprogram.gov/SAFECOM/>>
- 3 The NGA Policy Academy on Wireless Interoperability, within the NGA's Center for Best Practices, and in association with the U.S. Department of Justice's (DOJ) National Institute of Justice (NIJ), selected five states to participate in the Wireless Interoperability Policy Academy to provide expertise, information, and resources needed to prepare a plan for statewide wireless interoperability.

USA Services Delivers Vital Citizen Assistance After Hurricanes

By Teresa Nasif, Executive Sponsor, USA Services
U.S. General Services Administration

USA Services is the Presidential e-government initiative created to present citizens with a single point of reference for government, allowing them to receive accurate, timely and consistent answers and information in both English and Spanish.

Managed by the U.S. General Services Administration, Office of Citizen Services and Communications, USA Services provides easy-to-use access points for citizens. These access points include FirstGov.gov, the official web portal of the U.S. government, and the National Contact Center, which responds to email inquiries to FirstGov.gov and to telephone inquiries to 1-800-FEDINFO. Federal agencies' print publications are distributed through an order fulfillment facility in Pueblo, CO.

USA Services proved the value of having multiple integrated delivery channels that were scalable during a national emergency, when the Federal government had to gear up quickly to respond to the mounting needs of the victims of hurricanes Katrina, Rita and Wilma. FirstGov.gov created a Hurricane Recovery page, with answers to frequently asked questions, links to finding loved ones, and links to other agencies' information.

In addition, FirstGov, which hosts other Federal websites and the National Contact Center, expanded operations to 24/7 and doubled non-disaster call rates to 360,000 during the hurricane recovery period. (The NCC had also expanded its services to help U.S. citizens overseas get accurate and consistent government information during the South Asia tsunami in 2004 and the

London bombings in July 2005.)

In addition to providing information directly to the public, USA Services was able to leverage its capabilities using its innovative multiple award contract, FirstContact, which had been put into effect a year earlier, in July 2004. This contract vehicle allows agencies to acquire their own state-of-the-art contact center services quickly and easily from any of five pre-qualified vendors. Because it eliminates the need for an agency to undertake a full-scale procurement, FirstContact allows an agency to have an outsourced contact center in place quickly, with thousands of customer service representatives answering calls.

FEMA turned to FirstContact when it found itself besieged with questions from the public to its 1-800 621 FEMA hotline. The Agency had a critical need for thousands of additional trained agents to respond to these citizens. Working with FEMA, GSA issued a \$45 million FirstContact task order to provide FEMA with the needed staff resources within days of Hurricane Katrina's arrival on August 29, 2005. The contractor, Teletech Government Solutions, LLC of Englewood, CO, began answering citizens' calls to 1-800-621-FEMA within one week and eventually opened six locations across the country, staffed by trained representatives.

By the time Hurricane Rita hit the Texas-Louisiana border on September 24, FirstContact had 3,200 agents in place and had answered 135,000 calls. By its peak on September 29, 4,000 agents were in place in six locations across the country. They answered 59,911 calls that day. Nearly 780,000 calls had been

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handled by the time Hurricane Wilma hit on October 23, and FEMA's call center was prepared for the 30% spike in call volume. A month later, the six locations closed two days after Thanksgiving, after handling more than 1.1 million calls from needy and desperate citizens.

Citizens' most frequently asked questions were about how to find their friends and relatives; how to get disaster assistance and monitor a claim; how to find housing and other housing-related issues; how to host hurricane victims; how to claim a victim's body; how to get tax relief; and how to get a job. They wanted to know the economic impact of the hurricanes; the impact from state to state; the effects on animals in the affected areas; and the full range of services the government offered. The call center agents provided accurate and consistent information—the same information that was offered on FirstGov.gov—by referencing a single database of information that was constantly updated.

Teresa Nasif is the Executive Sponsor of USA Services and Director of the Federal Citizen Information Center. For more information contact Teresa Nasif at 202-501-1794 or at teresa.nasif@gsa.gov

Federal Web Content Managers Join Forces and Create Internet Lanes to Organize the Response to Hurricane Katrina

By Beverly Godwin
 Director, FirstGov.gov Operations,
 U.S. General Services Administration

The level of cooperation achieved by the Federal web community in response to Hurricane Katrina could not have happened without the existence of the Federal Web Content Managers Forum and the relationships and resources fostered prior to August 2005.

The Federal Web Content Managers Forum is a cross-agency group of Federal web managers that was initially convened in 2002 to meet a requirement of the E-Government Act. The law called for coordination in the control and distribution of government information. When Hurricane Katrina hit in August 2005, Forum membership numbered more than 400 web content managers across the Federal government, communicating primarily through an extensive e-mail listserv.

The Forum was the only group in place with the ability to develop a coordinated Federal web response to Katrina. In responding to the crisis, the beginnings of an emergency web response structure emerged.

When Hurricane Katrina hit the Gulf Coast on Monday, August 29, 2005, the Federal government still used normal information technology and communications channels. The following day, as the levees gave way in New Orleans and the dimensions of the crisis began to emerge, it became apparent these were extraordinary circumstances and that this was a worst-case scenario for Federal emergency communicators.

Earlier, in the summer of 2005, some Federal web managers had participated in a disaster exercise that emphasized the need for collaboration throughout the government. They had discussed how they could work together to improve coordination of emergency communications. And they had exchanged home phone numbers as a basic preparation for just such a disaster. Unfortunately, when Katrina struck, a concrete plan had not been put in place.

By Tuesday morning, August 30, however, an e-mail exchange of questions, answers, and ideas for next steps lit up the listserv. By Thursday, Gwynn Kostin, web manager for the Department of Homeland Security (DHS), arranged a conference call among key members of the Web Forum to coordinate the Federal web response of various

agencies. (DHS had responsibility for implementing the National Response Plan, which called for consolidation of communications in a national emergency.)

During the call, the web managers recognized interagency coordination was essential to ensure individual agencies were not duplicating efforts or disseminating incorrect information. Since Katrina was officially designated a “catastrophic event” and an “incident of national significance,” the National Response Plan was in effect. That gave the Web Forum group the legal structure to proceed.

The group first adopted some preliminary guidelines for Federal government web content managers to follow:

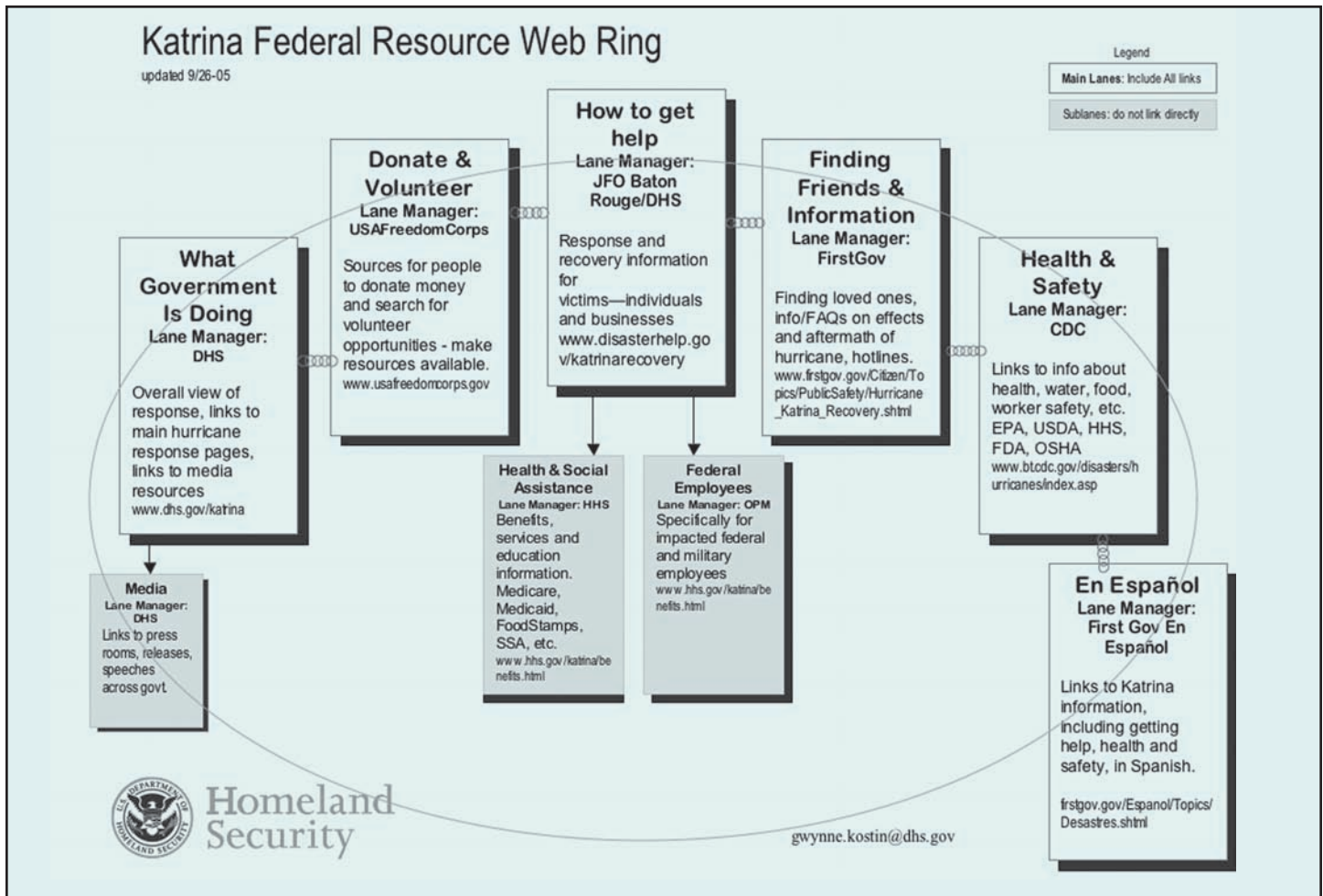
- The priority content posted on Federal websites would be information related to saving life, sustaining life, and facilitating comprehensive recovery.
- Duplication of information would not be helpful to the public and should be avoided.

One of the most successful strategies to emerge from this ad hoc response was the designation of “lane managers.” The Web Forum group determined there was a need for each primary agency to act as a coordinator for communications on one specific topic (or lane). The lanes/links they designated, and their managers were:

The lane managers agreed they would ask all .gov website managers to use specific links with common language for those lanes. Lane managers used the Forum listserv to

How to Get Help	Federal Emergency Management Agency (FEMA)
Donate and Volunteer	USAFreedomCorps.gov
Finding Friends and Information	FirstGov.gov
Health and Safety	Centers for Disease Control and Prevention (CDC)
What Government is Doing	Department of Homeland Security (DHS)
en Español	FirstGov en Español, espanol.gov

Federal News



communicate this and other information to web managers, explaining the strategy, soliciting information, and directing government content managers to use the lanes and links provided. This information was also posted on www.webcontent.gov, the website used by government web managers to get useful information and share best practices. Links to the lanes were posted in the same form across many different agency web sites. The structure of lanes and links is laid out in the chart below.

In considering “topics” for each lane manager, the Web Forum group first looked at sites which already had a clear path to relevant information. For example, FEMA was an obvious choice for “How to Get Help,” because the President was already referring people to that agency and many citizens already associated FEMA with a role in emergency response and recovery.

While FEMA is on the frontlines in any national emergency, it soon became clear there was also a need for a central repository for non-frontline—but still critical—

information about individuals who might have been affected by the disaster. Citizens directly or indirectly affected by the hurricane were desperate for accurate and consistent information about friends and family. FirstGov.gov, the Federal Government’s Official Web Portal and the central point for answering citizens’ questions online about the Federal government, was the obvious choice.

For “Health and Safety,” there were many players involved. But the Centers for Disease Control (CDC) had an abundance of available content and high name recognition. All relevant agencies deferred to CDC and gave CDC the lead for the “Health and Safety” lane.

For three weeks after the disaster, the lane managers were in daily contact via a morning conference call. The calls started with a report from GSA’s National Contact Center (NCC) (1-800-FED-INFO) to learn what the public was asking about most frequently by phone and e-mail. Then the CDC reported on queries coming in to its call centers.

Continued on next page

A Benefits “sublane” was added to the FEMA “How to Get Help” lane early on, because FEMA was overwhelmed with inquiries on this topic. The sublane was managed by the Department of Health and Human Services (HHS).

The lane manager conference calls were a very powerful tool for ensuring that the Federal government was responding to the public’s greatest needs at all times. The continuing communication allowed the Federal web community to react quickly and make adjustments easily as new or changing needs for information were identified.

In the face of this emergency, agency web content managers readily put aside any territorial issues. They worked collectively to provide critical information in the fastest, most direct, and most comprehensive way possible for the benefit of hurricane victims.

For the Federal web content community, one of the greatest benefits to come out of this disaster was the emergence of the “lane manager” concept. Instead of spending valuable time trying to find out what other agencies were doing, the lane management approach allowed each agency involved to focus on its primary area of expertise or responsibility.

The lane concept worked well for the general public seeking information in the storm’s aftermath. There was

less confusion and duplication in the information provided, and the information people needed was easier to find. Also, the fact that major Federal government sites were all linking to the same URLs with the same terminology improved the search results for those pages, elevating their priority in search results lists. This happened because major search engine algorithms take the number of links to a page into account in ranking the page.

One further benefit: In most instances, the lane categories identified during Katrina matched information people would be looking for in any disaster, whether natural or man-made. The Federal web community can now re-use a good deal of the content developed in response to this crisis. The lane concept and lessons learned in Katrina have provided a solid foundation for Federal web managers to build on so they will be even better prepared when the next disaster occurs.

Beverly Godwin is the Director of Operations for FirstGov.gov, the U.S. Government’s web portal, and the executive sponsor of the Web Content Management Workgroup of the Interagency Committee on Government Information. For more information contact Bev Godwin via email at beverly.godwin@gsa.gov.

Español.gov: *The Spanish Gateway to Hurricane Information*

By Shantae Goodloe, Consumer Education Specialist
Federal Citizen Information Center (FCIC)
General Services Administration (GSA)

Español.gov (www.espanol.gov), the federal government's comprehensive Spanish-language web portal hosted by the General Services Administration (GSA), is the only website that provides information and services from federal, state, and local governments "under one roof." With more than 125,000 pages, the site is friendly and easy-to-use. Each month, some 200,000 web visitors come to Español.gov for information on education, health, taxes, housing, consumer protection, voting, and more.

During last fall's devastating hurricanes, the *Hurricanes Wilma, Katrina y Rita* page on Español.gov became a one-stop shop for survivors and government agencies alike. From getting news updates to finding out what services and assistance the government offered, this page was—and is—the gateway to government help for those affected by the hurricanes.

The Creation of the *Hurricanes Wilma, Katrina y Rita* Page

The devastation caused by Hurricane Katrina in September triggered a desperate need for information and resources. Español.gov team members quickly responded to this need by compiling information dedicated to resources for hurricane victims and the organizations assisting them. The first information on *Huracán Katrina* was posted on Español.gov's "Disasters" page, with

links to the Federal Emergency Management Agency, the Environmental Protection Agency, and the American Red Cross.

As more information became available from federal, state, and local governments, the *Huracán Katrina* page was born. It became a comprehensive resource for Web visitors seeking ways to donate to trusted relief organizations, find loved ones in the hurricane's aftermath, locate disaster assistance, and volunteer their time to help victims. The web page also offered answers to the most frequently asked questions about the hurricanes. As two more hurricanes hit the United States, the page was expanded to include information on Hurricanes Wilma and Rita.

Español.gov's Collaborative Response

Español.gov played an important role in assisting people affected by the hurricanes by proactively working with other federal, state, and local government agencies. Among other communication methods, Español.gov team members regularly communicated with other agencies to relay up-to-date hurricane-related information that the public was requesting through GSA's 1-800-FED-INFO hotline. The Español.gov team also offered to review Spanish translations of hurricane information from other agencies that did not have Spanish-speaking staff.

To assist people who lost vital records in the wake of the hurricanes, the Español.gov team asked the U.S. Citizenship and Immigration Services (USCIS) to provide information in Spanish on how to replace documents. USCIS already provided such information in English, so the Español.gov team proofread USCIS's Spanish text once it was translated.

As the federal, state, and local government web communities responded to the growing need for hurricane relief information, some began offering services and information through telephone hotlines for hurricane victims. Initially, some of the hotlines were only available in English. The Español.gov team again took a proactive role, determining which hotlines had Spanish-language capabilities. When they did not, the team worked with the agencies to offer the service. Español.gov created a section on the *Hurricanes Wilma, Katrina y Rita* page that featured the telephone hotlines, which soon grew to a separate page.

The Results

In September 2005, the nascent web page on Hurricane Katrina became the most-visited page on Español.gov. The convenience of being able to find many different resources in one location proved useful for an audience desperate for information. The statistics below speak to the popularity of the *Huracán Katrina*

Continued on next page

page with web visitors that first month:

- The *Huracán Katrina* page was the most-visited page at Español.gov, with 60,000 visitors.
- Español.gov was—and still is—among the first three results when searching for hurricane information in Spanish on Google, Yahoo, and several other commercial search engines.

Even though the hurricane season is over, the *Huracanes Wilma, Katrina y Rita* page is still updated regularly with new hurricane-related information from government agencies. It includes, for example, a link to the Internal Revenue Service's new information on tax questions that hurricane survivors may have as they prepare their 2005 tax returns.

Lessons Learned

While Español.gov responded quickly to provide information on hurricane relief in Spanish, such an effort presented a number of challenges. Agencies did not respond to recovery needs at the same pace. In addition, local and state governments had difficulty keeping their information current. Finally, Español.gov identified a need to strengthen cooperation among all levels of agencies to disseminate crucial information to their audiences.

Government collaboration, however, proved to be the most-important factor in gathering necessary information quickly and making it available to the public. Español.gov's daily conference calls with web managers at other government agencies allowed Español.gov to

coordinate a response without duplicating efforts. The Español.gov team now has a model of what to do and who to contact the next time a disaster strikes. With this model, they are better equipped to provide an efficient online government disaster response to meet the information needs of the Spanish-speaking community.

Shantae Goodloe is a Consumer Education Specialist, and Laura Godfrey and Leilani Martinez are Español.gov Bilingual Content Managers, in the Federal Citizen Information Center at GSA. Godfrey and Martinez are the creators of the Huracanes Wilma, Katrina y Rita page (http://www.firstgov.gov/Espanol/Topics/Desastres/Huracan_Katrina.shtml). For more information, you may e-mail them at leilani.martinez@gsa.gov and laura.godfrey@gsa.gov.



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Información y Servicios del Gobierno de los Estados Unidos

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Public-Private Collaboration for Semantic Interoperability in Emergency Management Information Sharing

By Brand Niemann, U.S. EPA, and Chair, Semantic Interoperability Community of Practice (SICoP), Federal CIO Council's Best Practices Committee and Rex Brooks, President, CEO, Starbourne Communications Design, and Executive Director, Humanmarkup.org, Inc.

Interoperability across multiple levels of government (Federal, State, and local) and the private sector requires solutions to organizational, technical, and semantic issues. Solving these interoperability issues is critical to emergency management information-sharing where saving human lives and critical infrastructure is paramount.

The Semantic Interoperability Community of Practice (SICoP) was established to achieve “semantic interoperability” and “semantic data integration” focused on the government sector. The SICoP is a Special Interest Group (SIG) within the Knowledge Management Working Group (KMWG) sponsored by the Best Practices Committee of the Chief Information Officers Council (CIO Council), in partnership with the XML Community of Practice, among others. The SICoP is communicating its actions and findings to the CIO Council, its Committees, and its member agencies, although its main purpose is to support CoP members in their efforts to make the Semantic Web operational in their agencies (see <http://colab.cim3.net/cgi-bin/wiki.pl?SICoP>).

SICoP is fostering a series of pilot projects in support of the new Federal Enterprise Architecture's Data Reference Model (DRM) and its Implementation Through Iteration and Testing. SICoP is primarily concerned with “sameness” using “scientific

ontology” focused on “instances” by “coordination” across “community” over an extended period to find solutions to “interoperability”. This article describes the very successful evolution of a pilot project in support of the U.S. EPA Region 4, that has been highlighted throughout the community.

The keys to this public-private collaboration are: (1) participation in the Emergency Management Technical Committee (EMTC) of the Organization for the Advancement of Structure Information Standards (OASIS) and additional experience in other technical committees in Web Services, Healthcare, and Service-Oriented Architecture; (2) the use of U.S. EPA logs for the January 2005

Train Derailment and Chlorine Tank Car Rupture and Release in Graniteville, South Carolina, to build an event ontology; and (3) the assemblage of a team of 13 non-government organizations with expertise and products in emergency management. (See listing at end of this article.)

Incident Pilot Architecture

Our hypothesis for this incident is that remote sensors would be placed on all train cars carrying hazardous materials (in this case, chlorine). Additionally, we hypothesize that the very system under development at Sandia National Laboratories is in

place in our scenario. And we further assume that these remote sensors will send out emergency broadcast signals immediately after the incident that will be picked up and repeated by transceivers elsewhere on the train and transmitted to receivers that will be stationed at regular intervals along the tracks where hazardous materials are shipped. The Alerting Framework system represented in our collaboration will, when ultimately deployed, include or require human evaluation to make a determination if the signal is or is not a false positive. If it is not, the system will immediately generate a Common Alerting Protocol (CAP) message that will be transmitted across that Alerting Framework network connecting the Emergency Management Systems in the National Incident Management System (NIMS) of the Department of Homeland Security (DHS).

This system will, in effect, give the rapid first response a kick start. The first EPA Situation Report was sent eight hours after the incident began at 2:00 a.m. In our scenario, the alert would be sent out minutes after the incident begins, and a Situation Report would be possible as soon as two hours after the incident began. An Operations Support Command team would be operating in less than four hours, as opposed to the 12 hours of the actual incident. We refer you to

[Continued on next page](#)

the most recent presentation for more complete details.

Using CAP speeds up first response, but secondary services are also essential. Such services include up-to-the-moment geospatial information contained in maps, reflecting the current situation with any available toxic plume spread information, as well as medical information on the type of injuries or conditions likely to be encountered in such an emergency incident. Such sets of information are also critically important to the overall first response.

Our collaboration improves on this area by using Web Services for Remote Portlets (WSRP), which allows information contained in units usually smaller than a single webpage screen, called portlets, to be delivered together from different sources. In this case, we include geospatial location services and medical treatment information services. The ability to aggregate such disparate content on the same page allows medical technicians to determine road conditions in transit to avoid contaminated areas as they approach the incident scene, while simultaneously retrieving information on the symptoms of chlorine poisoning and pertinent critical triage and treatment procedures. One factor further improved the emergency response: the availability of telephone data for affected residents and businesses based on the specific geographic area identified by the plume modeling and triggering alert notification tools through the DMIS

portal permitted dissemination of the appropriate message—whether to evacuate or “shelter in place.” This specific improvement did not necessarily reduce the overall timeline, but provided an additional outbound message with the effect of reducing loss of life or medical complications.

Caveats and Next Steps

Some of the technology we used in the current pilot was not available at the time of the actual incident and is not quite operational now, but reflects IT standards the team is working to develop and implement. The networked services pilot comprises a de facto Service-Oriented Architecture (SOA), and MyStateUSA’s network accurately reflects the requirements set for the NIMS by DHS in which a coordinated Incident Command System (ICS) will operate. The next step includes the release of the Emergency Management Portal and use of the Oracle 10g R2 Application Server that supports Network Data Model based on the new Semantic Web Standard—Resource Description Framework (RDF).

The Team for Semantic Interoperability in Emergency Management Information Sharing

- RedHat (RedHat Enterprise Linux Operating System)
- Oracle Corp (Database, Application Server, WSRP Portal)

- Humanmarkup.org, Inc. (Public Service Preparedness Portal)
- Starbourne Communications Design (Portal Design Development)
- Broadstrokes, Inc. (Reverse 911 Service)
- Targus Information Corporation, Inc. (Geographically Encoded Consolidated National E-911 Database)
- MyStateUSA (NIMS-ICS Simulated Network)
- WarningSystems, Inc. (Web-based Activation of EAS, Sirens, Radios)
- MCI (Internet Network Backbone)
- Sandia National Laboratories (Sensor Network Simulation)
- NuParadigm (Alerting Framework Network Services)
- Unicorn Solutions, Inc. (Ontology/Data Model System)
- ImageMatters, LLC (Geospatial Knowledge Representation)

Brand L. Niemann received his Ph.D. in Meteorology and Air Pollution Science from the University of Utah and has been with the U.S. Environmental Protection Agency for 22 years. He currently works as a Computer Scientist and XML and Web Services Specialist in the Office of Environmental Information. For more information contact Brand Niemann via email at bniemann@cox.net.

One-stop Access to Geospatial Information During Hurricane Katrina

By Hank Garie, Executive Director, Geospatial One-stop

In the days after Hurricane Katrina devastated the Gulf region, Federal, State and local agencies rushed to provide geospatial information to assist in the recovery effort. Access to detailed geospatial information proved essential to hurricane response and recovery effort. It aided in finding 911 callers and leading rescuers to them. In addition, thousands of maps were provided to responders and government officials coordinating response efforts, mapping potential shelter locations to assist people there, analyzing high water marks and elevation to estimate damage, mapping the proximity of flood water to industrial sites to determine water quality, and imagery to predict the amount of debris to be hauled away.

Yet in the initial rush to respond Federal and State agencies were acting individually and even planning purchases of new data to support hurricane response efforts without coordinating their efforts. As it has done in the past few hurricane seasons since it was launched, GeoData.gov, the online web resource developed by the Geospatial One-Stop E-government initiative, proved that the guiding principles of “one stop” access to geospatial information and relying on a network of partners to gather resources from diverse sources does work.

Within days after Hurricane Katrina hit, Federal and State agencies began turning to geodata.gov for the information they needed. Geodata.gov featured information from thousands of Federal, State, local and private sources on a new Hurricane Katrina community. Updated topographic maps highlighting geographic features and a National Map for the Gulf providing seamless digital information such as elevation, transportation, manmade structures and imagery was posted to the geodata.gov and available to be printed, downloaded, or emailed to those responsible for emergency operations. The second Gulf hurricane hit Texas and Louisiana as the Hurricane Katrina community came online and a new community for Hurricane Rita was added to the portal.

The value of geodata.gov as a “one-stop” source of geospatial information led to an innovative partnership to create an integrated database of all the impacted areas and a “GIS for the Gulf” that includes over 50 different types of information gathered from Federal, State and local governments and the private sector. USGS, the Department of Homeland Security and National Geospatial Intelligence Agency, working with the Geospatial One-Stop contractor ESRI, delivered the combined database to almost 100 users through a password protected site on geodata.gov. As word spreads about the availability of this unique resource, requests for access to this database have come from many non-governmental organizations involved in the Gulf rebuilding efforts.

Geospatial One-Stop was testing a new version of geodata.gov as the hurricane hit and took advantage of the new and improved features of Version 2 to support hurricane response and recovery activities. As the technology improves, the value of geodata.gov is limited only by the amount and quality of mapping services and data available through the portal. To get the full potential from geodata.gov, Department of Interior bureaus and their partners can populate the portal with new web mapping services and data to help further the power of geospatial information to deliver better services and support government programs.

To make your organization's data accessible through the portal, contact Rob Dollison at 703-648-5724.

Hank Garie is the Executive Director of the Geospatial One-stop, one of the 24 electronic government (e-gov) initiatives supporting President Bush's Management Agenda. For more information contact Leslie Wollach via email at: lwollack@usgs.gov.

Historic Disaster, Historic Response

By Steve Cooper,
Senior Vice President and CIO for Information Technology American Red Cross

The combined impact of Hurricanes Katrina and Rita was a defining moment in American Red Cross (ARC) history. Prior to these hurricanes, 1992's Hurricane Andrew set our "bar" for disaster responses, when we assisted more than 68,000 families, and the four back-to-back hurricanes of 2004, when the Red Cross served about 74,000 families. As devastating and as difficult as those hurricanes were, the scale of Hurricanes Katrina and Rita dwarfed those efforts. The statistics were staggering:

- Assistance was provided to more than 1.2 million families - more than 20 times our previous high. During the peak period, we were serving the number of families served during all four of last year's storms combined every two days.
- Nearly 1,100 shelters opened for Katrina and Rita more than double the 488 established for Hurricane Andrew.
- To date, more than 49.5 million meals and snacks have been served in conjunction with our Southern Baptist feeding partners. In one day, we jointly served 300,000 meals on day three-post landfall and 995,000 hot meals on day five-post landfall. The largest number of meals we had ever provided in a single day prior to this was 280,000, which was in response to the four hurricanes last year.
- Chapters opened shelters for Katrina victims in 27 states and the District of Columbia and the 219,000 relief workers who served hurricane

survivors were 95 percent volunteers, which reflected an unprecedented mobilization of every function of the American Red Cross.

The size of the catastrophe required many innovations in Information Technology (IT) service delivery. On September 1st, IT called in all its key technology partners to assess how best to support the Red Cross mission at this unique time. In the course of a few hours, cross-functional teams consisting of personnel from the technology firms, ARC IT and core ARC business units were formed. Each team selected an immediate area of need to examine and agreed to respond with their proposed solutions before the day was over. These teams produced solutions that enabled many new approaches, such as the use of satellite imagery, conducting damage assessment over an area of 90,000 square miles or about the size of Great Britain.

Also, the Red Cross was able to record the level of residential damage and assistance required, as well as to utilize the network of Western Union outlets to make funds readily available for financial assistance to thousands of families each day in lieu of the normal one-on-one casework interview process. An IT Disaster Operations Support Center was formed to coordinate and support these new efforts and others that continued to develop throughout the disaster. Given the number of people needing help, continuous adaptability was essential for success.

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One of the teams was focused on meeting a challenge beyond the traditional welfare inquiry services of the American Red Cross – bringing families back together. Because evacuees were dispersed nationwide with no prior idea of where they would end up, the evacuees and Red Cross faced a monumental challenge in bringing families together again. We initially collaborated with the International Committee of the Red Cross (ICRC) and established a family-linking website (www.familylinks.icrc.org) quickly after Hurricane Katrina struck to enable people to find each other amid the chaos.

We also recognized several critical information gaps and thus the need to centralize data from the multitude of other linking websites being operated by a variety of groups. People were facing the challenge of having to go to multiple websites in an effort to locate their loved ones and thus an immediate parallel effort was launched to create one integrated site: www.katrinasaferg.com.

The Red Cross IT and business team looked to Microsoft (a long-time corporate partner) and the San Diego Supercomputer Center at the University of California at San Diego (SDSC) for help in developing a technological solution that would make this process as simple as possible during this difficult time and proactively bring together data from

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every site that could be found so people do not have to search multiple locations. The work was split up so that Microsoft could concentrate on the core site functionality work and SDSC could use its aggregation and analysis expertise to begin the process of collecting and consolidating data from the rapidly expanding list of public websites trying to provide evacuee information.

The team worked through the Labor Day holiday weekend and by early the following week the site was working well enough to start the data collection process. This was only the first step. Many features (see below) not originally conceived were now seen as necessary due to the initial business experience with the ICRC site and the ARC call center.

- **Automatic notification:** Family members and friends can register for an automatic e-mail or callback notification when loved ones are registered and matched in the database.
- **Toll-free hotline:** The toll-free hotline (1-877-LOVED-1S) helps those who do not have Internet access to search or register.
- **Smart Client:** The application gives field personnel the capability to track people and plug in data.

The system batch uploads all the information to attempt matching evacuees with inquiries.

This unique team of technology partners and business partners could overcome the critical issue of data validation. Due to the tremendous number of sources and formats (Oracle, DB2, MYSQL, XML files, RSS feeds, wiki posts on Linux, etc.) for data, the quality was difficult to control and the need for data mining was critical. The goal was to proactively mine the data for matches between evacuees and inquires from family and loved ones as the data came in. Privacy was paramount, so the teams took care not to store or persist any unique government identifiers. Making the searches work required not only specialized technology such as fuzzy logic and probabilistic matching technology but also continual support from multiple legal support teams.

The site was completely live by mid-September and by the 21st of September all data, even from the original ICRC site, had been consolidated. The site was able to post over 250,000 location records and was able to handle Rita and Wilma with no changes other than expanded messaging. This team effort was so successful that Microsoft and its

partners in support of other disaster operations such as the hurricane in Mexico and the earthquake in Pakistan deployed the core technology.

It is rewarding to note that not only was a superior service provided for the victims of a terrible disaster but also the American Red Cross is now positioned with new core capabilities to support Family Linking activities during disaster responses. IT met a critical need in a crisis and responded with a solution that was rapidly deployed, yet provided a long term platform that enhances the ability of the American Red Cross to support its mission both at present and in the future.

Steve Cooper is Senior Vice President and CIO for Information Technology for the American Red Cross. Prior to joining the Red Cross, he was appointed by President Bush to be the first CIO of the Department of Homeland Security, with responsibility for the information technology assets supporting 190,000 Federal employees of the 22 agencies now comprising the new department. For more information contact Renita Hosler via email at: HoslerR@usa.redcross.org.



The Children of the Storm

The Role of the National Center for Missing & Exploited Children in Reuniting Fractured Families in the Aftermath of Hurricane Katrina

By Ernie Allen

President and Chief Executive Officer, National Center for Missing & Exploited Children (NCMEC)

When it became evident how massive the disruption and dislocation really was after Hurricane Katrina, the National Center for Missing & Exploited Children (NCMEC) was asked by the U.S. Department of Justice to spearhead the effort to find missing persons and reunite families. The Katrina Missing Persons Hotline was established with a special hotline number, 888-544-5475, so that 1-800-THE-LOST, our on-going 24-hour missing children's hotline, would not be adversely affected. The Katrina Missing Persons Hotline went live on September 5, 2005 and has handled 33,615 calls since then. The Center has taken 5,068 reports of children missing or dislocated as a result of Hurricane Katrina and 106 children as a result of Hurricane Rita (5,174 total). To date, 4,983 children have been found and reunited with their families, 96% of the total.

In addition to the hotline, NCMEC's website, www.missingkids.com, served as 'Katrina Central', a place where people could view photos of children and access the list of reported missing children. Perhaps nothing is more

useful in helping to locate and reunite family members than photos. Through the use of digital technology, NCMEC was able to transmit photos quickly; this proved especially useful, since many victims had fled their homes without family photos or identification. Canon provided us with digital cameras, and our partner, the Louisiana Clearinghouse for Missing and Exploited Children, provided with scanners. The NCMEC website, which normally handles one million hits per day, began getting 20 million "hits" per day for weeks.

The media was also played a huge part in the successful reunification effort by providing opportunities to communicate directly to America's families. The capacity of cable and broadcast networks to disseminate information and photos meant that people could be found quickly. NCMEC partnered with CBS, CNN, and CourtTV to run posters of missing children, our website address, and our hotline number. Other networks ran stories and posted information to aid reunion efforts.

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Having teams of professionals alert and ready to go also enabled NCMEC to track, and find, many missing persons. Members of NCMEC's Team Adam are law-enforcement professionals chosen on the basis of their expertise and geographic home base to minimize response time and travel costs. Teams may include retired FBI Agents and police officers, and active state and local police. NCMEC provides intensive training to ensure that each specialist is prepared to perform the tasks required in a uniform and consistent manner. NCMEC sends Team Adam to the scene in serious abduction and sexual exploitation cases—deployed to affected areas even before the storm, and they remain on the ground, visiting shelters, searching homes and neighborhoods, and working with local law enforcement and other agencies to locate missing family members. Project ALERT (America's Law Enforcement Retiree Team) members were immediately available to answer NCMEC's Katrina hotline phones. Moreover, because of their years of experience, these certified professionals knew what questions to ask and in some cases were able to orchestrate reunions by phone. Also, NCMEC's case analysis staff worked long hours to provide support to the effort beyond their regular case loads; our IT professionals wrote new programs to search hundreds of databases for information; and other staff volunteered time to enter data and answer phones.

By mid-October, NCMEC and local law enforcement were able to identify and reunite the last unaccompanied children in the shelters – the most critical case and vulnerable children. We believe that the remaining 190 children are not typical missing children cases, but are better described as fractured families.

Sadly, we suspect that a small number of these missing children did not survive the storm. NCMEC is working closely with our law-enforcement partners and monitoring the process of identifying the deceased. The U.S. Department of Justice asked that we assist with our forensic imaging technology and specialists in this process. The forensic artists routinely do facial reconstructions from skeletal remains or morgue photos of unidentified deceased children. As the process of identifying the unidentified deceased continues, we suspect that we will find some of those for whom we are searching.

Our commitment to these families is that no case will be closed until we either find the child or know with certainty what happened.

What We Need Next Time

In the days immediately following Katrina, many organizations began creating databases to track victims of the storm. In the absence of a central facility where victims could search for loved ones many hours were spent

searching the maze of databases and creating software on the fly that made such searches possible. Clearly, however, the process would have been streamlined by the designation of a single, centralized database for missing persons.

In many cases, finding people missing after Katrina was hampered by privacy issues and the reluctance of some agencies to share information. In the coming months, NCMEC intends to work with both government and private relief agencies to develop memoranda of understanding to facilitate information sharing in times of crisis.

Instead of creating a new hotline each time crisis strikes, NCMEC is also seeking to create a multi-purpose hotline facility that is ready to go and can be adapted to a variety of situations.

While people in shelters had some access to public and cell phones, the scarcity of phones made it difficult to track and contact storm victims. In a future crisis, immediately establishing phone banks in shelters would make the reunification process simpler.

In the absence of phones, the U.S. Postal Service created zip codes and post office boxes in shelters for communicating with individuals, which helped enormously with the tracking effort.

Just as law enforcement and social service agencies need to plan for the next event, so, too, do families. We live in a time in which families are separated and disjointed every day. Nonetheless, we are saying to families that particularly when a storm or similar catastrophe looms, take it seriously, have a family emergency plan, know where to go, how to reconnect, and make sure that your loved ones are close by. We are urging parents to have current photos of their children on their person at all times, and that children have some sort of identification with key descriptive information and preferably a photograph.

The challenge of bringing families back together in the wake of Hurricanes Katrina and Rita was overwhelming. The situation tested the readiness of public and private organizations to deal with crisis. But we are proud of the role of the National Center for Missing & Exploited Children and the demonstrated ability to reunite families with the children of the storm.

Ernie Allen is President and Chief Executive Officer of the National Center for Missing & Exploited Children (NCMEC). He is co-founder of the private, nonprofit Center, which has helped recover more than 99,500 children, while increasing its recovery rate from 62 percent in 1990 to 96 percent today. He has spearheaded efforts to touch the lives of children worldwide, and is an active spokesperson for the cause. For additional information contact Joann Donnellan via email at jdonnellan@ncmec.org.

Hurricane Katrina Emergency Response: *Lessons Learned from the Federal-Private Collaboration on e-Prescribing*

By Marc Wine, Health IT Coordination
GSA Office of Intergovernmental Solutions

During and after Hurricane Katrina, hundreds of thousands of people were forced to flee their homes with literally nothing. Prescriptions were left behind; doctor contacts and healthcare identification were destroyed, swept away and scattered. Many of those who arrived in shelters could not identify their doctors, or even what medicine they were taking. Often, they did not have the means to pay for health care services. Within a year after the President identified the need for a national electronic health record, the 2005 hurricanes identified a multitude of issues that must be resolved before such a universally accessible health record will be feasible.

On an ordinary day, millions of patients are seen without the benefit of any medical chart, paper or electronic. These individuals could be unconscious accident victims without identification, new immigrants, newborns, or those whose paper chart simply got lost. Everyday, the health care system misses essential patient information that a nationwide interoperable database would make readily available.

But the problems were magnified, and made excruciatingly immediate as the hurricane relief efforts materialized. Large numbers of medical records were either destroyed or rendered inaccessible by Katrina, crippling the efforts to provide critical prescription medication for patients who are

completely dependent on it. As many as 1 million people fleeing the Gulf Coast region could not provide any medical information to inform the clinicians assigned to assist them.

Many residents of areas hit by Katrina who were displaced from their homes are living in shelters or temporary housing across the United States. Neither the evacuees nor their current health care providers have access to their paper medical records or, significantly, to their prescriptions. Emergencies of this size and magnitude underscore the critical need for real-time access to the most up-to-date medical history information at the point-of-care, regardless of where individuals are being treated.

A Kaiser Family Foundation-Washington Post survey found that over 40 percent of Katrina evacuees were taking prescription medications before the storm—and many more need new or additional medications afterwards. Many medical records can never be recovered and have literally been washed away by the total devastation of their usual sources of care, according to congressional testimony.¹

The Office of the National Coordinator for Health IT (ONC), the Markle Foundation, and 150 other organizations collaborated to create an on-line database of prescription medication records for evacuees (www.katrinahealth.org). This Internet portal provides records from a variety

of government and commercial sources. These sources include electronic health record data from Medicaid, the Department of Veterans Affairs, the Department of Defense and private insurers, and electronic databases from pharmacies and pharmacy benefits managers in Mississippi and Louisiana.

This case marks the first time the Federal government has used private health records from retailers to compile an electronic database. The database includes prescription information for more than 800,000 individuals located in 150 ZIP code areas affected by the hurricane. Authorized users can go to katrinahealth.org to view patients' prescription histories, drugs prescribed, any refills available, prescribing physicians and the pharmacies that have information about the prescriptions.

To maintain patient privacy, the American Medical Association (AMA) provided authentication services to ensure that only registered physicians gain entry to the information. In addition, the National Community Pharmacists Association provided authentication services for independent pharmacies, and SureScripts, a pharmacists' network linking physicians and pharmacies to exchange prescription information, provided authentication services for chain pharmacies.

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“Privacy, security and ease of use were central to the design of *katrinahealth.org* as top priorities for the entire team,” said Zoë Baird, President of the Markle Foundation. “Particular care was taken to ensure that only users authorized by the AMA or an appropriate pharmacy organization would gain access to the site. Consistent with many state privacy laws, we filtered out highly sensitive personal information.”²

However, as one senior executive put it, “*katrinahealth.org*” is a 60-to-90 day solution, a temporary fix, as it cannot be used for future catastrophes or to build out a national e-prescribing solution. Dr. David Brailer, then National Coordinator for Health IT, also made it clear that *katrinahealth.org* was not intended to be a long-term project. “It’s possible that an after-action analysis would say that there is something here that is valuable,” he said, “but I think we have the onus today to make sure we can get it into use and that it can add value.” He added that “there is a lot to be learned from this effort” and that there are “many other efforts that are going forward.”³

The database currently allows medical personnel to access the health records of hurricane evacuees, but they cannot add new information to the records. Although the Federal government planned to discontinue the database after hurricane relief efforts were complete, others involved with the database already are discussing ways to enhance the system and create personal health records for individuals who might need to move frequently in the near future.

While the President has pledged \$200 billion to rebuild in the aftermath of Katrina and Congress and the Administration have begun to take the critical first steps, more can be done to help citizens like the hundreds of thousands of 2005 hurricane evacuees with no medical records. The creation of a single national entity to set standards and policies in partnership with industry will help government build a sustainable medical record for all citizens and specifically an e-prescribing system. Government and private sector organizations need to improve current healthcare and prepare for future emergencies by

planning, budgeting and developing the key elements of information technology infrastructure without delay. All health information that is now stored in digital form must be made readily available to those who need it for improved quality, safety and access to healthcare.

Marc Wine is a Program Analyst on health information technology with the GSA Office of Intergovernmental Solutions. Previously, he was with the U.S. Veterans Health Administration where he worked in the areas of health IT and healthcare facilities policy and planning.

- 1 Prepared Statement by Carol D. Diamond, MD, MPH Managing Director, Markle Foundation Chair, Connecting for Health Committee on Government Reform U.S. House of Representatives Engaging Americans in their Health and their Health Care through Health IT September 29, 2005
- 2 September 22, 2005 *www.katrinahealth.org* will provide prescription medication information for Katrina evacuees to authorized health professionals and pharmacists http://www.markle.org/downloadable_assets/bush_recommendations_090705.pdf
- 3 September 22, 2005 *www.katrinahealth.org* will provide prescription medication information for Katrina evacuees to authorized health professionals and pharmacists http://www.markle.org/downloadable_assets/bush_recommendations_090705.pdf

KatrinaHealthSM

AUTHORIZED USERS
LOG IN HERE

FOR PATIENTS | FOR DOCTORS | FOR PHARMACISTS | PRESS MATERIALS | FAQs | SUPPORTERS | RESOURCES

Welcome to *KatrinaHealth.org*, an online service to help individuals affected by Hurricane Katrina work with their health professionals to gain access to their own electronic prescription medication records. Through *KatrinaHealth.org* authorized pharmacists and doctors can get records of medications evacuees were using before the storm hit, including the specific dosages. Having this information will help evacuees renew their medications, and help healthcare professionals avoid harmful prescription errors when prescribing new medications, and it will help them coordinate care. Evacuees are spread out across the country, therefore this information may be accessed from anywhere in the United States through *KatrinaHealth.org*.



Swedish Government Team Recommends a National Mobile Phone Alert System

By Anna Lundbergh, Advisor
Statskontoret, the Swedish Agency for Public Management

In the past year, since the Christmas 2004 tsunami in South Asia revealed some shortcomings in its crisis management system, the Swedish government has been re-evaluating its emergency-response capabilities. The resorts and beaches of Thailand, India and Sri Lanka were holiday favorites for Scandinavians. As many as 20,000 Swedish tourists were in the area as the massive tsunami came ashore; 543 have been reported dead. In the immediate aftermath of the tsunami, the surviving tourists looked to their national government to help them find one another, to reassure worried relatives, to help them find food and health assistance, and to get them home. But they had problems using their mobile phones and the government had to contact the mobile operators that localized Swedish people in Thailand to get text messages to them, which took over 10 hours.

This and the holiday-related delay in the government's response have been roundly criticized and led to the establishment of the Swedish Tsunami Commission and review teams to determine the causes and to find ways to improve the situation.

The Commission discovered that the communications issues raised by the plight of the Swedish tourists in the tsunami-affected areas were handled by using technology to avoid the shortfalls of the traditional communications media (including the government and the press). In its

December 2005 report, the Commission found:

Publication of information on the Internet, broadband and third generation mobile telephony is a feature that totally changes the preconditions both for the dissemination of information and communication between private individuals and authorities. After the tsunami, there were very soon what are known as blogs and wikis where any Internet user could post information with, for example, names and pictures of those missing. In some cases, this took place in direct response to the fact that it was considered the Ministry for Foreign Affairs was not giving adequate information about missing and injured persons.

Meanwhile, the Swedish Emergency Management Agency, the Rescue Services Agency and the National Post and Telecom Agency were tasked to study the communications situation and make recommendations on how different communications services provided by mobile telephone systems could be used to alert and inform citizens in the event of emergencies and accidents. The mobile telephone systems would complement the nationwide civil emergency system, called *Viktigt meddelande till allmänheten*, or *Important Message to the Public*, which alerts citizens via radio and television messages and air horns situated on top of buildings. A system that would enable the

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government to reach most of its population en masse via text messages on their mobile phones would round out its ability to contact citizens with important information in the event of an emergency. The fact that Sweden has more cell phones than people, and that many of those people travel outside the country, suggests that this will be a key notification medium.

The team's recommendations were issued in a report dated December 1, 2005, which identified three possible choices, with varying capacity to quickly send alert and information messages nationally and internationally using mobile phones, Short Message Service (SMS, or "texting") and/or Cell Broadcast Service technology. Following are the three alternatives identified in the report, their perceived benefits and drawbacks.

1. Using existing SMS technology SMS relies on existing technology, which is known and used by many. An alert system built around SMS technology could be implemented quickly. On the other hand, SMS takes a long time to find out which users are in a certain area and messages take a long time to transmit when there are many receivers. Another disadvantage is the delay that can occur depending on the charge in the mobile net.
2. Using existing SMS technology along with additional "pull" technology The advantage of using

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this enhanced SMS technology is that subscribing units can get information rapidly. However, it doesn't collect information about whether the receiver is in the area, and the database must be continuously updated.

3. Using Cell Broadcast Service technology Cell Broadcast Service offers area coverage instead of targeting mobile units. The message is delivered using a separate channel in the mobile net, even if the net is charged or busy. It provides fast, immediate and simultaneous service. Unfortunately, CBS will not be available in Sweden until 2007 or 2008, mobile telephones must be activated to receive it and some mobile telephones will not use CBS.

The Swedish Rescue Services Agency report laid out the three alternatives without recommending one over another. The report did present a number of

recommendations for creating a national cell phone-alert system. These include the following:

- Create a methodology for a centrally-operated system by the end of 2006 through collaboration among authorities and operators.
- Centralize responsibility for planning and operations in a single agency; which agency remains to be determined.
- The system should be able to handle simultaneous information messages from different agencies that need to deliver information at the same time and place
- Access to the system must be tightly restricted to ensure that only authorized messages are permitted to be broadcast and that the integrity of the system may be trusted.

The reviewers also suggested that additional work is required to

- Clarify when and for what purposes the emergency notification function can be used
- Allocate roles and responsibilities among agencies and suppliers
- Determine requirements for distribution
- Determine relationships and coordination with other existing and upcoming channels for alerts and information.

The government of Sweden has clearly taken to heart the lessons of the communications lapses during the tsunami disaster. Whatever solution they choose, it is likely to be put in place before long and to serve as a model for others.

Anna Lundbergh is an Advisor for Statskontoret, the Swedish Agency for Public Management. For more information contact Anna Lunbergh via email at: anna.lundbergh@verva.se.



Texting to Alert Citizens to Danger

Other countries around the world are also developing disaster-warning texting systems, but most notably those in the area directly affected by the tsunami.

Among them is Indonesia, which is planning to use SMS (text) messages to warn people of impending natural disasters. It is expected that such a system would allow more than 80 percent of mobile phone users in a given area to be informed quickly and that it would generate a rapid response from government officials.

Thailand's information and communications ministry is seeking dedicated radio spectrum for emergency communications services

and is working on a framework that would join all mobile phone operators in a disaster-warning system. It would allow the operators to broadcast streaming text messages to between 100,000 and a million users a minute, less time than to send an SMS message.

Sri Lanka, too, plans an emergency texting system that will use text messages to alert police officers, village chiefs and other important officials to warnings, and can also send a blanket message to all phones in an area through "cell broadcasting" — more versatile than a normal text or phone call.

One of the most successful uses of SMS text messaging to create a

community alert network recently won the prestigious Hein Roethofprijns prize for the most effective and innovative crime prevention project in the Netherlands. This successfully piloted SMS alert system allows local residents to subscribe according to their zip code and to receive SMS text alerts from the police regarding criminal activity in their community. The system helped locate several missing children and led to the arrest of several burglars. Dutch officials suggest that this system could have been very helpful for alerting Americans in advance of Hurricane Katrina.

Coming, Ready or Not

By Greg Adams
Editor, Tuanz Topics
New Zealand

Schools, universities and public libraries have closed indefinitely. Public gatherings are prohibited. People are advised to avoid crowded places and work from home. Forecasts indicate up to 1.5 million people, 40 per cent of New Zealand's population, will become sick over the next six weeks, resulting in 50,000 deaths.

A sobering few lines, aren't they? It's a scenario for an influenza pandemic in New Zealand, the worst among a handful played out in two detailed 'how to' influenza pandemic plans, Planning Guide for Infrastructure Providers and Business Continuity Planning.

A health pandemic will happen and, when it does, the Government's advice to employers is "as many staff as possible should be set up to work from home." But how well prepared is New Zealand's telecommunications infrastructure to cope with the demands and social upheaval this or a similar emergency would cause?

Quarantines would put limitations on air and road travel, meaning an even greater reliance on telephone calls, video-conferencing, faxes, emails, and the like. Telecommunications will become a lifeline: the guide advises everyone to "avoid meeting people face to face – use the telephone, video-conferencing and the Internet to conduct business as much as possible – even when participants are in the same building."

Compiled in October by the Ministries of Health, Transport and Economic Development, the 60-page document for telecommunications networks and other infrastructure companies sets out a range of information to help them prepare for the impact of a possible influenza pandemic on their business. Along with police, fire and health authorities, these are called 'lifeline utilities' and are considered "vital to maintain social and economic conditions."

It's widely accepted that New Zealand telecommunications networks are generally up to the physical challenges. Built with layers of redundancy, major networks are diverse, with most signal routes having more than one path to travel and are able to bypass any 'breaks'. Exchanges are built to last, and have more than one source of electricity.

A health pandemic, however, will not be like a typical, physical disaster, where network disruptions are almost entirely localised hardware failures (towers down, cables

cut, exchanges destroyed, that sort of thing). We're talking widespread, probably nationwide disruption, and little outside assistance.

New Zealand network operators readily admit a pandemic will change the rules of the game. How? The issues appear to fall into four categories: geography, manpower, longevity, and the preparation of end-users.

First is geography. A pandemic will almost certainly mean limits being placed on personal contact, through restrictions of movement, quarantines, and closures of public gatherings. The guide recommends that "as many staff as possible should be set up to work from home." In such an event, the demands on the network would change overnight.

Although overall network usage won't necessarily change, the demands on parts of the network would change enormously. From going about our daily business happily hooked up to state-of-the-art fibre CBD networks, we'll be trying to log-on en masse via the exchanges and infrastructure of suburbia.

However, "we haven't necessarily designed the network so that everyone can go home and do all their normal business functions," said Brian Potter, a telecommunications executive. "There may be capacity issues resulting from the transfer of such a large amount of traffic." He went as far as suggesting the telecommunications 'resource' could need to be shared – or even rationed. "But we don't really want to go there," he added quickly.

Issues around telework services range from simple things like Call Forwarding, which was used by thousands in Auckland during the power blackouts in 1998, to full-access broadband connections to company servers. Potter notes that the situation has changed since the blackouts. "It's more complicated. Customers are far more dependent on the Internet than they were seven years ago. We're working through some limitations. Clearly, people can't expect to do everything from home."

Network stresses won't be confined to landlines, either. Although the networks can cope with significant increases from normal traffic loads and shifts in the geographic

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origins of calls, there is only a finite number of channels available, so cellsites are “the most susceptible part of any mobile network to congestion. It’s a simple flick of the switch to juggle the split between voice and data ratios; a couple of hours to add more capacity on the tower, where possible; but a new base station would take a lot longer.

My second issue is one of manpower. Referring again to the Government’s plan, it says that a key problem is “anticipated to be primarily human resource oriented” – in other words, a lack of people on the ground. The Ministry of Health advises that businesses should plan for up to half of all workers being off work for a fortnight (either sick or looking after others who are sick) at the height of a severe pandemic wave, and for lower levels of staff absence for a few weeks either side of the peak.

Will there be enough engineers and contractors around to fix and maintain the networks – or, for that matter, make the upgrades we’ve just heard about? The DSLAM at my own local exchange went down recently and took four days to fix. I can only imagine the length of time it would take if 40 per cent of Telecom’s staff and contractors were off sick. All the while, my own ability to work efficiently would be severely impeded, if not stopped in its tracks.

Then, of course, there are the contact centres where we’ll all be calling to report a problem – how will they be managing?

Third, a pandemic event would not be short. A typical outbreak could last about eight weeks. And there could be more than one wave of infection—the 1918-19 Spanish Flu had three waves. Not only will everybody have to make do without any outside help, but they’ll be doing it for a significant period of time. Normally, more time would give people the perfect opportunity to get themselves sorted and get home offices up and running. But we’re not talking ‘normal’.

Fourth is preparation. Clearly, there are many issues to consider, but maybe none more so than your own situation. Are you prepared? How would you fare?

The Government offers extensive advice as to what companies can do to prepare. I can’t do it justice here. But some of the key points concerning telecommunications are:

- Identify essential business activities (and the core people and skills to keep them running) and ensure that these are backed-up with alternative arrangements;
- Consider communication needs and how they might be maintained with other business units, suppliers, contractors, customers, and government;
- Ensure that communications management is part of your plan – have systems in place to allow you to communicate in a pandemic;
- If working from home is not a well-established practice in your organisation, encourage staff to ‘give it a go’, say once a fortnight, to aid familiarity and to ‘iron out’ any computer connection/technological issues.

What is your business doing to continue functioning should the worst happen? Would it cope? Do you have a Plan B for your communications capabilities? Can your staff work from home? What about your suppliers and customers – both here and overseas?

“This thing will rock-and-roll on us if it arrives,” commented New Zealand Health Minister Pete Hodgson. It’s something to think about.

Greg Adams is editor of Tuanz Topics, a publication of the Telecommunications Users Association of New Zealand. This article is excerpted from an article in the December/January 2006 issue. He can be reached at Greg.Adams@gmedia.co.nz. The web address for TUANZ: www.tuanz.org.nz.



Disaster Response Pilot Demonstrates Web Services and Semantic Naming Technology

By Ron Schuldt, Chairman, UDEF Forum, The Open Group and
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The Open Group and
Alan N. Slater, CEO, Safyre Solutions

The logistics associated with Federal, State, or local government response to disasters, whether natural or manmade, are nearly impossible to pre-plan completely. There are simply too many variables. In those disasters where a time-critical response is necessary to minimize additional loss of lives or property, the response teams may not have with them all the resources they need. Time-critical resources could include tools, equipment, supplies, consumables, means of conveyance (trucks, row boats, etc.), temporary shelter, clothing, or other products that either the manufacturing industry or the retail industry might have available in the quantities and locations needed to quickly support any given response team. The primary problem is – how does a response team discover nearby resources that are available in a manufacturer's or a retailer's inventory?

Within this context, the Semantic DNS-UDEF Disaster Response Pilot was submitted October 14, 2005, to the Federal Semantic Interoperability Community of Practice as a proposed solution approach. Although the example use case demonstrates the discovery of available 9-volt battery resources, the same approach could be used to discover other resources available within the manufacturing and retail industries. The proposed solution approach was demonstrated

live at The Open Group Semantic Interoperability Conference in Houston on October 20, 2005 and updated to show how the approach could have been used in response to Hurricanes Katrina, Rita, and Wilma.

The approach leverages existing exposed Web Services available from the U.S. Postal Service, Office Depot, and MapQuest. The approach is based on an evolving global standard known as the Universal Data Element Framework (UDEF). The UDEF is a method for categorizing data element concepts (as defined by ISO/IEC 11179) that exist across multiple applications. It assigns each data element concept an alphanumeric tag plus a semantically rich name—that in most cases can stand alone without requiring a separate definition. For example, "Purchase Order Number" found in an invoice from industry to the government is a commonly encountered data element concept. This concept has a UDEF tag d.t.2_13.35.8 and associated UDEF name Purchase.Order.DOCUMENT_Government.Assigned.IDENTIFIER.

The UDEF name and associated ID pair are similar in several ways to the Domain Name System (DNS) used to manage computer-sensible IP addresses in 123.123.123.123 format and to associate them with user-friendly formats such as www.company.com. If adopted on a

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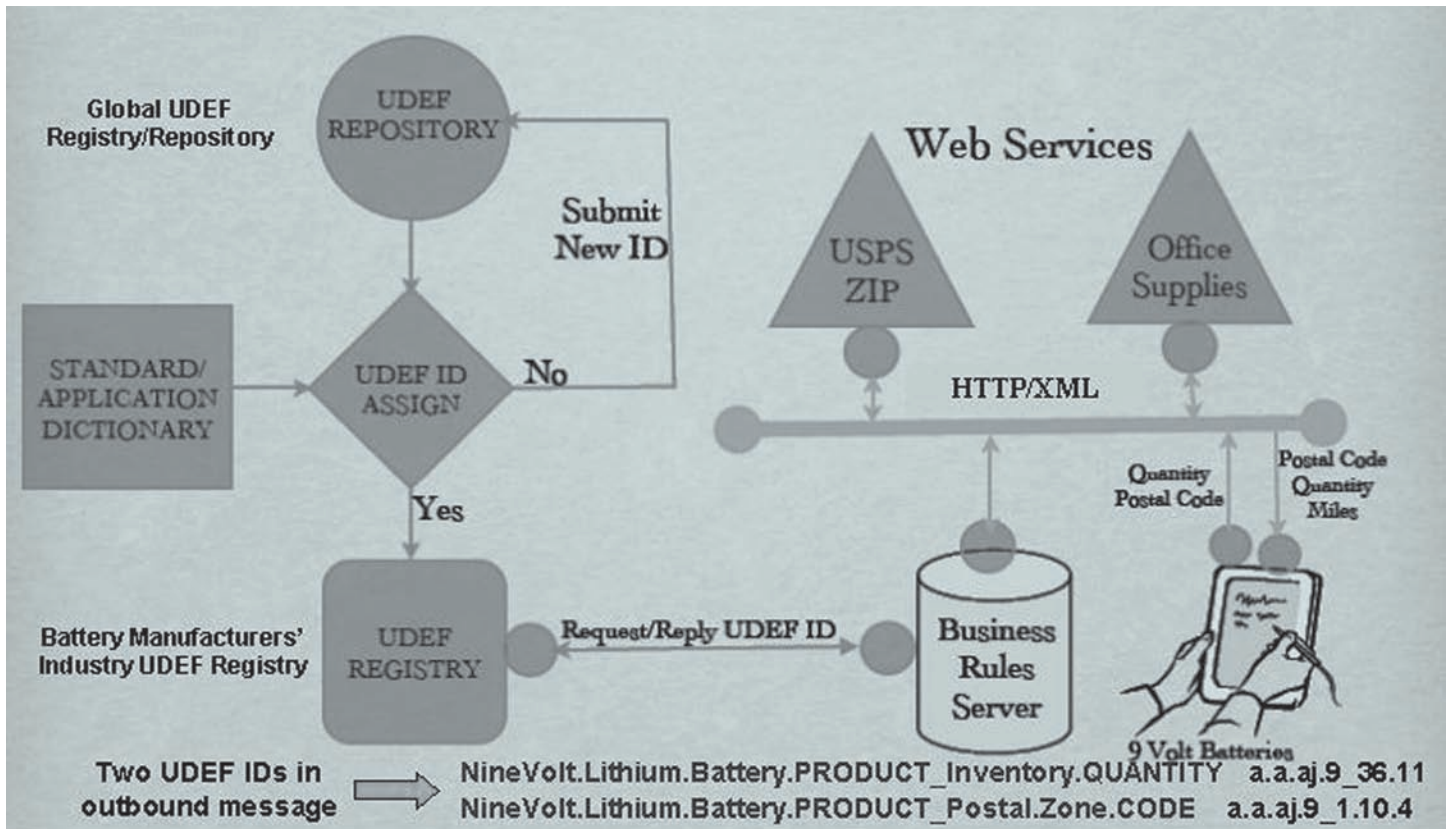
global scale, the UDEF could become a Semantic Name Service.

The UDEF Disaster Response Pilot use case assumes a large-scale natural disaster where search and recovery response personnel need to carry GPS transmitters and portable walkie-talkies so that the recovery operations can be coordinated from a nearby command center. Unfortunately, the 9-volt batteries brought to the disaster site exceeded their shelf life more than four years ago and thus are unable to provide sufficient power. Through the use of two simple UDEF names and IDs and exposed Web Services, the response team discovers the availability of 9-volt batteries in current inventory from nearby retail locations and is able to select the closest location based on distance from the response team. The simple message contains two UDEF tags:

- NineVolt.Lithium.Battery.-PRODUCT_Inventory. QUANTITY a.a.aj.9_36.11
- NineVolt.Lithium.Battery.-PRODUCT_Postal.Zone.CODE a.a.aj.9_1.10.4

The architecture diagram on the next page highlights the major components demonstrated in the UDEF Disaster Response Pilot. In addition to actual inventory levels and zip code locations, the example Office Depot Web Service results shown in the updated demonstration also include the telephone number in case

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the response team decides to have the batteries set aside so they can be picked up later.

In addition to the UDEF, a user interface application that can support the mapping, and a metadata registration of data element concepts mapped to the UDEF during design time, the key component to implement the approach during run time is an exposed Web Service or portal that obtains actual inventory levels from all manufacturers and retailers with products of potential interest to a disaster response team. The Federal, State, and local government-wide Disaster Response Web Service needs to be the hub for any potential disaster response team user. The user interface to the Web Service could be from a laptop, PDA, or cell phone.

The Disaster Response Web Service needs to support three important sub-functions: a Location Service, an Availability Service, and a Route

Service. Each relies on UDEF tags to identify the type of information sought.

- **Location Service (UDEF):** The location service allows the user to establish the current location of the disaster response team and the locations of manufacturers and retailers. .
- **Availability Service (UDEF):** The availability service allows the user to quickly check inventory status of local manufacturers and retailers.
- **Route Service (UDEF):** The route service allows the user to generate routes to locations where resources are available, with driving directions, calculated route representations, and user-configurable maps.

The initial demonstration shows the promise of this approach. Work is now needed on standard message formats

and supporting infrastructure to enable a larger-scale pilot project. A proposal has been submitted to the Federal Semantic Interoperability Community of Practice. Success of this project would pave the way for a Federal, State, and local government-wide Disaster Response Web Service that could significantly improve government response to natural disasters.

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Establishment and Documentation of Remote Treatment Sites – *A Must for Disaster* Medicine*

By Michael G. Brown, Chief Technology Officer
Prepared Response, Inc.

For large-scale disasters with mass casualties, hospitals are not optimal locations for screening the population, initial triage, or treatment. While the hospitals may remain physically intact post-event, the sheer logistics associated with transporting and managing patients would quickly incapacitate the medical facility. With a national average of 3 beds per 1,000 people, it is clear a hospital's staff, treatment rooms, and more importantly, the transportation infrastructure are not capable of independently supporting its surrounding population in the event of a mass disaster.

Those who have attended a professional sporting event or concert or have even commuted in rush-hour are familiar with both the magnitude and potentially erratic behavior of crowds, even when those people are not under the stress of an emergency situation. It is therefore not unexpected that concentrating that same public in a confined area (e.g. a mass staging area at a central hospital) may serve to exacerbate the crowd's behavior and further degrade the situation. Few will quarrel with the notion that, when it comes to crowds, more is not better – especially when individuals in the crowd may be confused, injured, exposed, or frightened

An alternative strategy for the delivery of medical care is to redirect

the population to a distributed series of field treatment sites located throughout the affected area, as well as on its borders. As an initial estimate for the number of sites required, one could use the number of voting locations associated with an area of interest. This technique could arguably under-represent the population in need of medical care, but it is a useful analogy that will assist in establishing a rough order of magnitude estimate once corrected for mail-in voting and the fraction of those who do not vote. This model is advantageous in that the public is known to have successfully accessed these locations all on the same day. Under this construct, it would not be unreasonable for a mid-sized city of 175,000 to designate 75 or more field treatment sites. Because it is not known on a pre-event basis which locations may be available or accessible after a disaster, it is critical to over-select the number of potential locations.

Separate from its geographic location and accessibility, certain characteristics can affect a site's suitability for a particular disaster. Considerations include:

- **Elevation** - in the case of flooding or the release of toxic gas.
- **Access to water** - a key component for decontamination.
- **Slope** - rain or effluent liquid from decontamination will tend to run

downhill. Also, depending on the contamination containment strategy, a slope may prove beneficial for the collection of liquid or may complicate the process. In either case, it is useful to understand where the run-off might collect and how to stage patients to avoid cross contamination.

- **Patient flow** - for communicable diseases, it may be useful to provide separation schemes. Separately, in a mass casualty situation, there may be interest in implementing a self-triage scheme (e.g. station #1 for scrapes, station #2 for bleeding & broken bones, etc.).
- **Transportation infrastructure** – the ability to ingress medical and facility equipment, manage inbound and outbound patient vehicle flow, as well as parking, and transport the severely injured for further care.

Given the variability of the potential disaster—its location, public access, modes of ingress transportation, and capacity of the site to treat and transport—a single location might have five or more architectures, traffic separation schemes, patient queuing plans, equipment formats, and staffing requirements. Applied to the previously described 75 hypothetical sites, a medium-sized city could have 375 distinct site configurations. Failure to select the correct plan, location, or equipment will result in

*The term "disaster" is generalized here to include natural and manmade events, terrorist activity (such as the release of radiological or biological agents), and large scale public health events (such as bird influenza).

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increased confusion and degradation in patient care. Further, failure to properly construct, orient, or deploy equipment will also have an adverse effect on the delivery of medical care. While the efficient delivery of medical care is the obvious goal in a mass disaster, a facts-based site selection, the efficient deployment of equipment, and the expeditious management of the injured population are unavoidable precursors for the delivery of such care.

The keys to the swift and efficient implementation of remote medical sites reside not only in preparation and planning, but on the ability to convey site information to healthcare providers, emergency responders, and government officials. A web-based crisis management system—whereby this information can be collaboratively developed, safely stored, easily updated, and quickly referenced—is fundamental to a sound response. For each site, there should be a data set that addresses the following generalized disaster types:

- **Kinetic** (earthquake, tsunami, flood, etc. that generally yields physical trauma)
- **Biological – basic** (contagion, pathogen, water contamination that generally requires immunization, administration of drugs, but no isolation)
- **Biological – advanced** (contagion, pathogen, or chemical

that requires isolation or a patient separation strategy)

- **Contamination** (radiological or chemical requiring decontamination of sources of water and collection of effluent)

For each general disaster type at each site, the following characteristics should be documented and immediately available:

- Site address
- Site latitude and longitude
- Layout of temporary facility
- Traffic control scheme for: incoming patients
 - medical evacuation (air, ground, and water as appropriate)
 - incoming logistics
 - staff ingress and egress
- Responsible agencies (including contact information) for providing:
- security
 - medical transport
 - medical staff
 - medical equipment.
- Aerial image with site boundaries annotated
- Location, responsible custodian and method of accessing:
 - medical equipment
 - shelters, tents, fences
 - heating or cooling equipment

- electrical generation (assume power outage)
- telecommunications equipment
- medications, food and water
- General characteristics:
 - Hourly capacity to treat selected injuries
 - Time required to setup facility
 - Diversion scheme / nearby treatment locations

In summary, a well-documented and accessible plan for the deployment and management of distributed medical care sites is central to community readiness and its preparedness to respond to a variety of disasters. By directing the population at large to local field treatment locations, the disaster response effort gains operational flexibility throughout the affected area and preserves the main hospital infrastructure for critical cases and service as the medical command center.

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