

EMERGENCY MANAGEMENT

STRATEGY AND LEADERSHIP IN CRITICAL TIMES

JANUARY/FEBRUARY 2013

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AND THE NEW MALL COP



BLACK HOLES

COMMUNICATION GAPS, POWER
OUTAGES AND CHAOS. WHAT WE
LEARNED FROM SANDY.

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EVOLUTION TECHNOLOGY

+ THE POWER OUTAGE:
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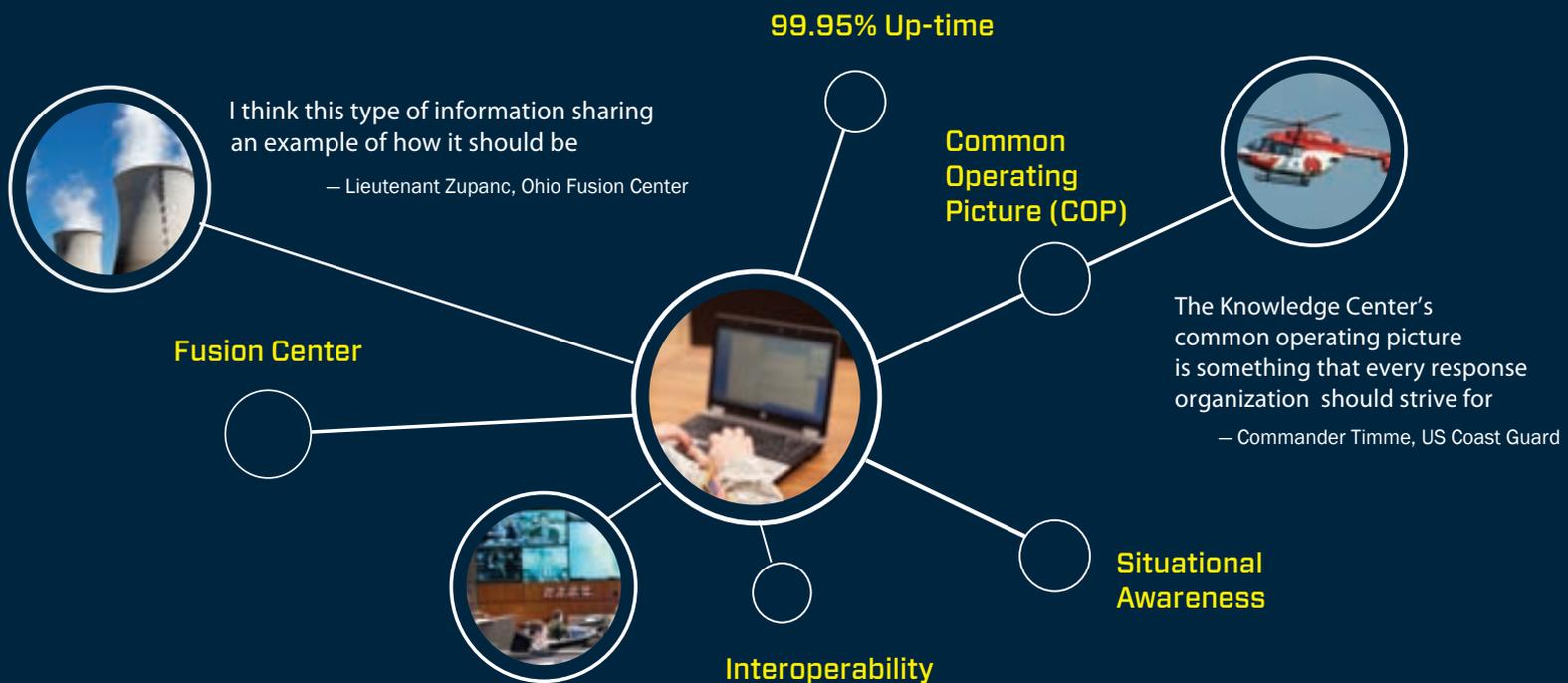


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Preparedness Starts in the Cloud

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The November/December issue pointed out that citizen preparedness isn't what it should be. Many online readers provided their feedback about the *Reaching the Public* article, and we invite you to join the conversation at www.emergencymgmt.com or on our Facebook page at www.facebook.com/emergencymgmt.

It's certainly difficult to find the right combination of suggestions and advertising to get people to consider what they need to have in an emergency. Maybe it might make sense for insurance companies to help by offering more ideas or products to their customers. After all, they will have major losses if we are not prepared.

— Robert

Good article and some great points. As a management-level EM I get it, of course. As a family man and a low-ranking member of the 99 percent, I also get the economic realities of raising two boys living paycheck to paycheck. We need to take the message to the next level. Just like a menu in a restaurant, we are going to have to place a price next to each item on our checklists and show people how they can afford it. We need to get down to the nuts and bolts of the family budget *Suze Orman*-style and show people how they can afford to slide family preparedness from the very long discretionary list back over to the very short daily necessity column.

— Johnny

The city of Dyersburg, Tenn., recognized several years ago that “we as a community” were not being proactive enough at educating the public or implementing mitigating programs to help enhance community preparedness. The Ready Dyersburg campaign was designed and implemented around the theme of “self-sufficient” during a disaster because there probably will not be any government resources available to rescue or assist you. The program includes annual workshops for the medical community, assisted living facilities, industry and business, schools and the general public. It also includes material being mailed to every home [and] radio and TV advertising. The biggest tool

we plan to implement in 2013 is required training for every freshman in high school, each year. For more information you can visit <http://dyersburgtn.gov/emergency>.

— Marc

There is an amazing amount of information out there on preparedness issues. I think that another factor playing into this is the negative stereotypes about preparedness. Many of the online preparedness communities claim to want to help people but those sites are filled with extreme views, conspiracy theories, racism, etc. When people hear the words “survival” or “preparation,” they associate it with these groups.

— Jess

I think that drills are very underutilized. When I was a kid, we had fire drills multiple times a year. Drills force you to stop what you are doing for a few minutes and really focus, not just mentally, but also physically, on what you would do in an emergency. In California, they have recently started the Great California ShakeOut day for earthquake preparedness. It's a day when the whole community is given permission to take a few minutes out to focus, plan and keep emergency preparedness on the front burner. That means a few more items make their way into my “daily life” routine/stockpile to help me be prepared, as the authors above describe.

— Laura

Emergency Management Events

30-31 January

LOCAL SUPPLY CHAIN CAPACITY IN CRISIS
Arlington, Va.
The goal of this event is to work through remedies and promote local supply chain capacity.
<http://conta.cc/WxyavS>

11-15 March

IWCE
Las Vegas
IWCE provides the foundation for the technology, operations, engineering and governance for communications technology networks, systems and services.
www.iwceexpo.com

12-15 March

PUBLIC HEALTH PREPAREDNESS SUMMIT
Atlanta
The summit offers a strategic overview on public health preparedness and highlights research, technical and practice-based perspectives on strengthening community preparedness.
www.phprep.org

19-21 March

WILDLAND-URBAN INTERFACE CONFERENCE
Reno, Nev.
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www.iafc.org/wui

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By Jim McKay | Editor

Lessons From *Sandy*

In some ways Hurricane Sandy, which devastated parts of the East Coast, was an exciting precursor of progress on how disasters will be dealt with in the future. In other ways it wore a look of the past, with communications at a minimum and parts of communities feeling alienated and left in the cold.

Sandy bore down on the coast, hitting New Jersey and New York City especially hard. It killed at least 43 in the city, left 30,000 to 40,000 homeless and caused an estimated \$83 billion in damage. The damage estimates from early December left Sandy at second or third on the list of costliest natural disasters in U.S. history.

THE DAMAGE ESTIMATES FROM EARLY DECEMBER LEFT SANDY AT SECOND OR THIRD ON THE LIST OF COSTLIEST NATURAL DISASTERS IN U.S. HISTORY.

Many are calling Sandy a watershed event, one of those disasters that sets in motion new best practices and offers lessons learned. Many of the lessons have been observed before, and without casting blame, responsibility is shared by residents who didn't heed evacuation orders, by community leaders who should act as liaisons between government and citizens, and by government leaders.

We saw that social media was big during Sandy. As you'll read in the feature story, *Black Hole of Communication*, New York City Fire Department's Social Media Manager

Emily Rahimi spent a day and a half straight comforting frantic citizens and giving out critical information over Twitter. She said the experience will change the way the department uses social media during disasters.

In addition, social media proved to be a good way to mitigate the "disaster after the disaster." That is the flood of goods provided by a caring public that oftentimes becomes more of a nuisance than a help.

And as you'll read in *Black Hole*, some communities felt out of the loop and didn't know where to turn for information, despite the efforts of city leaders to alert communities. *Emergency Management* has written much about communication among emergency managers, city leaders and community leaders, and the efforts that need to take place prior to a disaster that lead to better preparedness. Sandy showed that those efforts need to continue and be strengthened.

Sandy could change the way disasters are funded — for better or worse. Some have said it could put an increased emphasis on mitigation and mitigation planning and thus elevate funding for everyone and possibly reduce the amount of red tape in such matters. On the flip side, Sandy, along with so many other extremely costly disasters of late, may facilitate a raised threshold for FEMA funding, making it more difficult to get a presidential disaster declaration.

As funding becomes harder to get, emergency managers will have to think increasingly about how to streamline processes, reduce overhead, share responsibilities and find ways to improve recovery efforts. These are a few of the lessons from Hurricane Sandy. There will be more, and we will outline them in future editions of the magazine. 



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In the News

Lessons from the Sandy Hook Elementary School shooting in Newtown, Conn., will continue to emerge, but early on it was easy to see that efforts by teachers and administrators at the school were heroic.

Sandy Hook personnel ran toward the gunman after they heard shots and hid students, leaving themselves vulnerable. As tragic as these shootings are, they are rare, but schools should be prepared for any and all emergencies.



“The [instant alert mass notification system] is really designed to give residents tools to be able to use to face those disasters.” — *Jefferson Township, N.J., Office of Emergency Management Deputy Coordinator Ed Mangold*



HURRICANE SANDY PHOTO PROVIDED BY SHUTTERSTOCK.COM

STORM DATA POST-SANDY

Like many eastern seaboard cities, Norfolk, Va., experienced flood waters triggered by Hurricane Sandy in October. But unlike years past, where it could take days to calculate storm damage, a new Web-based application helped the city keep a close eye on Sandy’s impact in real time, making incident reporting more efficient.

Called System to Track, Organize, Record and Map (STORM), the program was launched in 2011, and upgraded in 2012 to incorporate the city’s Department of Public Works’ damage assessment database, reducing the time the department spends compiling an assessment report from three days to less than 24 hours.

That’s good news for local governments as the number of large, damage-inducing storms has steadily increased in recent years, according to the Intergovernmental Panel on Climate Change and other research groups, making accurate damage assessments even more crucial to wide-scale recovery efforts.

FEMA requires cities to file the report within three days following a storm, so the agency can determine eligibility for federal funding assistance. The problem for Norfolk was that the process could go right down to the wire as inspectors and office staff put together the reports manually.



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911 TEXTS IN 2014

FCC Chairman Julius Genachowski announced the Text-to-911 program in 2010, citing the fact that students in the 2007 Virginia Tech shooting unsuccessfully tried texting police for help — and in 2013, that service will launch in some areas of the U.S. Nationwide availability will be in place by May 15, 2014, the FCC said. The program’s part of the FCC’s next-generation 911, which aims to upgrade land-line-era rules and regulations to the current mobile and IP world.

“Access to 911 must catch up with how consumers communicate in the 21st century — and today, we are one step closer toward that vital goal,” Genachowski said in a press release. “This is good progress, but our work is not done.”



IRENE’S LESSONS APPLIED TO SANDY

After Hurricane Irene hit Jefferson Township, N.J., in August 2011, emergency managers there realized they had done some things right and some things wrong. They congratulated themselves for things like making shelters available and getting roads cleared. Unfortunately

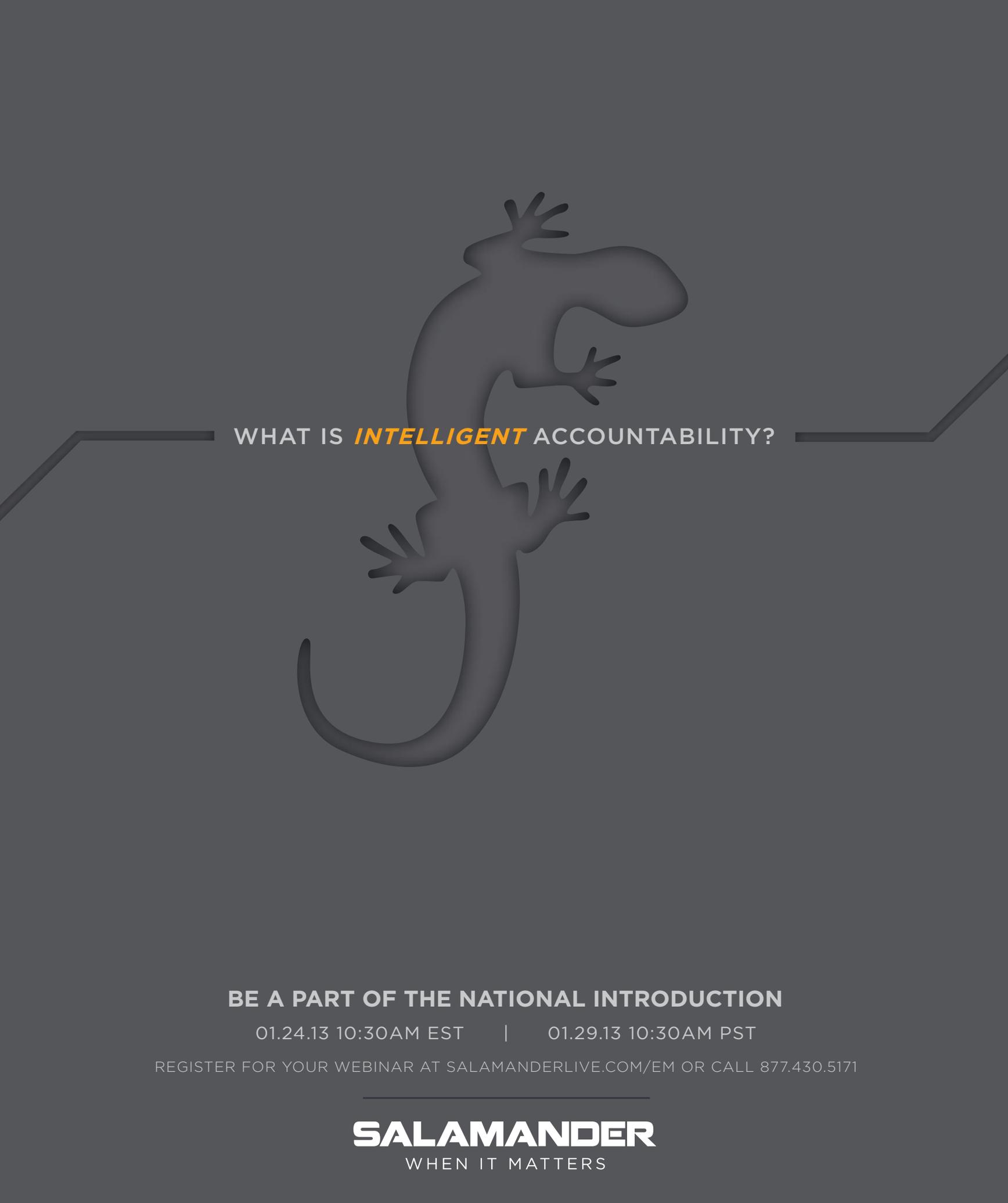
they had no way to communicate that information to the public.

To fix the communication problem, the township deployed Honeywell’s Instant Alert mass notification system. It was put to use during Sandy when emergency managers sent two messages per

day to the nearly 3,000 (of 6,000 township residents) who had signed up.

Office of Emergency Management Deputy Coordinator Ed Mangold sent 34 different messages during that two-week period. Usually there was a

morning message about safety — check on your neighbors, the elderly and people with special needs. The evening message was more information, such as where to locate a “comfort station,” where to get water and where to go for more information.



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WHEN IT MATTERS

A night-time photograph of a city street. In the foreground, a person is walking towards the camera, slightly out of focus. In the middle ground, several cyclists are riding across the street. The background shows city buildings, including one with a 'BARNES & NOBLE BOOKSELLERS' sign. The scene is lit by streetlights and building lights, creating a dark, urban atmosphere.

THE CATASTROPHIC OUTA



The power in parts of New York was out for weeks after Sandy.

IMAGE: APIMAGES.COM

BY ADAM STONE

SANDY KNOCKED OUT POWER FOR WEEKS, BUT WHAT IF THE WEEKS HAD TURNED INTO MONTHS?

When Superstorm Sandy took down the power in the Northeast, the scene looked all too familiar to Keith Stammer. As director of Joplin/Jasper County (Mo.) Emergency Management, he had seen the lights go out in the wake of a tornado that tore a swath through the town a mile wide and six miles long in May 2011. Hospitals lost power, as did the city's water supplier.

"In the short term, people generally had enough food, clothing, batteries, medicine and such for anywhere from 72 to 96 hours. That's generally the time it takes for the cavalry to show up," he said. "Once you get beyond that point, it seems this will turn into a long-term situation, which makes it much more difficult."

GE

Joplin struggled for weeks to recover, just as parts of New York and New Jersey lived in the dark for weeks following Hurricane Sandy. But what if those weeks had stretched to a month or more, reaching beyond one town or state to encompass a whole region?

Such a catastrophic power outage lies not in the realm of science fiction. It's a real possibility, and one that poses significant challenges to the emergency management community.

Catastrophic power loss doesn't get a lot of play in the media or the first responder community. There may be a degree of a head-in-the-sand response, but more likely it's because basic concepts are difficult to grasp.



Long lines, like this one in Brooklyn after Sandy, would be commonplace after a catastrophic outage.

ELECTRA/DE MAZZOLA

"You can't hold a kilowatt hour in your hand. It's this abstract thing about motion and heat, things that can be very hard to understand," said Benjamin Sovacool, senior researcher for energy security and justice at the Institute for Energy and the Environment at Vermont Law School. But the threat is no less real. "I am surprised it hasn't already happened."

Why the likelihood? The entire nation runs on just three power grids. "So this will be not just a power outage in the city or in the Northeast — this will affect six to 10 states," said Garry Brieze, local program integrator for the Wide Area Recovery and Resiliency Program for the Denver UASI.

Brieze has been a nationwide advocate for preparedness in the face of a potential disaster

that many would rather not face. And it *will* be a disaster, he insists. "Everything in our society revolves around the availability of electric power," he said. "We will go from 2012 to 1850."

The U.S. energy grid comprises some 160,000 miles of high-voltage lines, 5 million miles of distribution lines, thousands of generators and transformers, and tens of thousands of other pieces of equipment, *The Wall Street Journal* reported, adding: "It is difficult to imagine hardening so massive a structure against random, natural disturbances; it is almost inconceivable that it could be hardened against deliberate and intelligent attacks."

So there's widespread agreement that such an outage is possible and even likely. So what happens when the lights go out for a couple of *months*?

The social implications of a major outage will happen quickly. Supermarkets will be cleaned out in a couple of days. Fresh water will become scarce. Generators will run out of gas, and gas stations will run dry, too, as was seen in Sandy, where New York and New Jersey instituted rationing to control gas lines that ran four hours long.

As law enforcement knows, dark neighborhoods are more vulnerable to crime, especially when a whole city is hungry and scared. As one source suggested, "people tend to move down Maslow's pyramid pretty fast."

People find personal firearms a tempting proposition. But this doesn't help the professionals keep order.

"The social systems begin breaking down within 72 hours," Brieze said. "People's innate restraint breaks down."

Shelter will become a priority, especially if weather is a consideration. In that case, people will go stay with family and friends for three to five days, Stammer said. They may find hotels and rental properties to be a temporary housing solution, possibly for a couple of weeks.

First responders have to keep order, but they also must be aware of the profound social consequences that will play out as the background to their efforts. Even if citizens are not running riot in the streets (and they may well be), there still will be new and often unprecedented challenges to order.

The problem begins with a structural vulnerability. There are just three grids — east, west and Texas — and just 12 points of connectivity among the grids.

It's easy to imagine how breakdowns at a few key points could cut the flow entirely.

As a further complication, the flow of energy — call it supply — must always be in sync with the demand, Sovacool said. If the two get out of sync, generators implode and devices melt down, much the way U.S. hair dryers have done when plugged into European sockets.

For Terry Jarrett, a commissioner with the Missouri Public Service Commission, the biggest risk comes in the realm of cybersecurity. With virtually all the power grid managed electronically, a disruption to the guiding computer systems could be catastrophic.

"Cybersecurity is a big issue in my field of utility regulation," he said. "We have seen hackers do a lot of damage in the commercial world, in corporations, and there's no reason to think they could not do that in terms of the power grids."

A cyberattack could come from one hacker, or it could be a sophisticated effort by a nation-state, criminal or terrorist. That's one of the big concerns about a cyberbreach: too many variables.

"There are issues that we just don't understand. That's a moving target," said Mark McGranaghan, vice president of power delivery and utilization research at the Electric Power Research Institute in Wash-

JANNIS TOBIAS WERNER/SHUTTERSTOCK.COM

The chance of a catastrophic power outage is very likely, most agree.

“We will go from 2012 to 1850.”

— Garry Briese, local program integrator, Wide Area Recovery and Resiliency Program (WARRP), Denver UASI

A catastrophic power outage could lead to a social breakdown.



LIZ ROLL/REMA

Solar-powered battery chargers are invaluable during outages.



ELESSA JIN/FEMA

ington, D.C. “There’s probably a lot that could happen that we just don’t know about yet.”

The sun could play a part, too, in the form of massive solar storms. Such an event blacked out the Canadian province of Quebec in March 1989, cutting power to more than 6 million people in less than two minutes, Brieese said. The National Academy of Sciences estimates that a massive solar storm could cause economic disruption equivalent to more than 20 Katrina-class hurricanes, costing \$1 trillion to \$2 trillion in the first year and taking more than a decade to recover.

And then there are the squirrels.

- October 2012: A squirrel caused a power outage that affected 500 to 700 customers on the east side of Easton, Md. The animal reportedly touched two conductors on an 8,320-volt, three-phase, high-voltage, overhead power line.
- September 2012: A recurring power outage left 11,000 power customers in Oakland and Berkeley, Calif., without electricity after a squirrel crawled into some equipment at a Pacific Gas and Electric Co. substation.
- November 2012: A squirrel damaged Middle Tennessee State University’s electrical grid, shutting off power and phone service for hours.

Is it likely that a rodent, even one that’s very malicious or clever, could knock out a power grid to the extent that we are talking about? Not very. But these few illustrations serve to make a point. This power system to which the nation is so wedded is vulnerable. There’s not a single aspect of our lives — heating, food, fuel, communications, medical care and the list goes on — that’s not intimately tied to a network of machinery that can be readily disabled by a squirrel.

And if it breaks, we cannot fix it in a timely way. There is very little domestic production of the equipment needed for energy generation, transmission and distribution. The big transformers are made in Korea, Japan, Germany and Israel. Those parts would have to be forged and transported from overseas, should a dramatic need arise.

It’s possible to look at a cataclysmic blackout and think, well, maybe it wouldn’t be that bad. “We forget that electricity is a relatively new phenomenon,” Sovacool said. “Life 140 years

During Hurricane Sandy, we stormed in to provide emergency Internet access.



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Problems associated with a major outage could include the closing of supermarkets.

ago, before Edison, wasn't so bad. People were relatively happy. Life expectancy was 60 or 65. People went to plays."

Realistically we probably won't be going to plays. We'll likelier be forming angry mobs. The mentality will be: "I have what I have, and I need to defend what I have," Briese said.

Emergency responders need to avoid or at least mitigate that scenario. That means, first, educating citizens. Remind them to keep electric devices charged. Urge them to make at least a partial conversion to solar energy in their homes. And alert them in advance about the locations of emergency shelters.

Planning also must play out on the municipal level, with emergency managers taking advantage of all that the latest technologies have to offer, McGranaghan said. That could mean using tax incentives to encourage local utilities to help with the construction of a local solar-and-wind microgrid, or the conversion of municipal fleets to alternative fuels.

"Those technologies might have a role in emergency management in the future that hasn't been possible in the past," McGranaghan said.

To be fully prepared, emergency managers also would have to step up and ask for the most precious of all commodities: money.

Consider the math. If a handful of capacitors and transformers went down, an entire region could go dark, and it might take months for replacement parts to arrive from overseas, Sovacool said. The sensible precaution would be to stockpile replacements, but that is a pricey proposition in the face of a risk that some view as being generally remote. It may be up to emergency management to make the case for investing now, rather than paying the costs of cleanup down the road.

That large-scale municipal picture is only one piece of the puzzle, however. In the most immediate sense, first responders must ensure that they can in fact respond — that their own capacity to function remains intact.

"We still have about 50 percent of our first responder facilities without backup power: fire stations, police stations, city government buildings," Briese said. "We are just now crossing the 50 percent line. So when we ask government to function in one of these critical situations, government first needs to guarantee electricity to itself."

Even as they advocate for spending on the regional level, emergency managers need to be pushing for the installation of backup power in their own facilities — most likely solar and wind, which can operate free of the electric grid.

Then there are the responders themselves. It is understood that in the case of dire emergency, some responders will divert their attention away from the crisis to ensure that their families are safe. To avoid this scenario, it makes sense to create a designated shelter where the families of first responders can be safe and accounted for.

Partnerships are critical. In Joplin, Stammer relies on the American Red Cross to provide shelter. When the tornado came through, some 150 law enforcement agencies rode into town by prearranged agreement.

Those relations expand in concentric circles, with neighboring municipalities, state resources and national resources coming into play as needed. When all that isn't enough — and it may not be in a blackout lasting weeks or months — it may be time to bring in the big guns. Literally. That's what Stammer did, calling in the Missouri National Guard to keep order, with instructions to come armed.

"You are going to have a lot of death; you are going to have a lot of injuries," he said. "There is no question that is going to happen. The only question here is: How are you going to establish law and order? And then you're talking about the military." ⊕

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Hurricane Katrina, photo courtesy of FEMA
Photo courtesy of MDH North Carolina



Ocean Medical Center New Jersey, Hurricane Sandy Response
Photo courtesy of NJ EMSTF

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Black Hole of Communication

Familiar issues, including lack of communication, crop up during Sandy and give lessons for the future.

BY JIM MCKAY | EDITOR

Communication is a fundamental of emergency management and yet an inherent struggle during disasters. Superstorm Sandy was no exception as complaints about a lack of information were common. This came from communities in pockets of the East Coast where information was desperately needed but scarce, according to some community organizers.

Although there were areas hit by the storms that fared well soon afterward, there were “black holes,” where printed paper

and bullhorns were needed to get out the word. Social media was a bright spot, as Newark, N.J., Mayor Cory Booker showed on Twitter, and in New York City where Emily Rahimi chained herself to her desk at the Fire Department for a day and a half, monitoring the department’s Twitter feed and proving heroic to desperate residents.

The lessons from Sandy have been repeated over and over: Communities should be prepared to be self-sufficient for close to 10 days. That means having food, water, batteries and flashlights,

among other things. Batteries were especially important during Sandy or perhaps more importantly, ways to charge them.

The challenges of Sandy emphasized the need for community leaders to become informed about how their communities can help themselves during disasters. Questions about to what degree local, state and federal agencies are responsible immediately following a disaster and which agencies or levels of government were responsible for certain services was a source of confusion for some communities.



The Rockaway Beach area in New York was hit especially hard during Sandy.

IMAGE: ANTON OPARIN/SHUTTERSTOCK.COM

Humanity Road is a nonprofit whose mission is connecting aid providers with those who need help. The organization has volunteers worldwide trained to data mine the Internet during disasters for the purpose of fulfilling its mission.

Humanity Road was asked by Maryland and FEMA to help with projects and assisted the New York Virtual Operations Support Team in Suffolk County. The organization saw areas where public information was scarce



Sandy victims received temporary housing information at a New York City restoration center in the Bronx.

and a misunderstanding among the public about the roles of state, local and federal government functions during an emergency.

Chris Thompson, president of Humanity Road, said she got to 17-mile-long Rockaway Peninsula in New York seven days into Sandy and she was sitting in a “doughnut hole of a total blackout. There was still no communications to speak of,” she said. There was about a 17-mile by 15-mile square that was completely blacked out.

Thompson said residents shared information by congregating at local hubs like churches, community centers and schools. “They would gather around and talk to each other and say, ‘What do you know?’ Information was not flowing.” She said information was shared via fliers but there was just one printer — the one she had brought.

The fliers were marginally helpful but only available in English for the first couple of days until Humanity Road found a volunteer who could translate the information into three languages. Thompson said that when the nor’easter was on its way following Sandy, she and others were out in the storm relaying messages using bullhorns.

She said that although the community understands what a nor’easter is, many residents were still at home waiting for a knock on the door. “You’re looking at a community that, from what I could see, didn’t have

a strong CERT [Community Emergency Response Team],” Thompson said. “There was no FEMA, no Red Cross, no [Voluntary Organizations Active in Disaster], no CERT. I don’t know who they thought was coming.”

The public was not getting information and didn’t know where to find it. “There were services that worked and some that didn’t, and the public didn’t know who to turn to to ask for that aid,” Thompson said.

An example of that was in Chinatown in southeast Manhattan where residents felt alienated. Helena Wong, executive director of CAAAV: Organizing Asian Communities, said residents were told to go to evacuation centers but weren’t well received when they did. “A lot of people who went to the evacuation centers felt unwelcome there, and when they asked for information, they were told, ‘We’re not giving out any information or we don’t have any,’” Wong said. She also said there weren’t interpreters for non-English-speaking residents.

Wong said the only government representatives she saw in Chinatown were police officers and they were giving out contradictory information. “We were also told FEMA was addressing the issue and the city was going to take care of things,” Wong said. After a couple of days her organization began providing its own relief efforts, getting donations and supplies like generators.

Housing Problems Persist in Sandy’s Wake

RUDY MIENERT, a New York City police sergeant, told AOL Real Estate in November that he didn’t know how he’d finance repairs to his property. Superstorm Sandy had just demolished his New Dorp Beach home in October, and he was unsure when, or if, he’d receive relief money to rebuild.

That same month, Sandy caused a power outage that forced Kevin Cordova and his family from their home because they couldn’t use a heater to keep warm.

Funding shortages and bureaucratic logjams complicated housing

repair and relocation efforts. New York City Mayor Michael Bloomberg told CNN that his resources were stretched thin, 30,000 to 40,000 citizens needed housing and there weren’t enough vacancies to accommodate the displaced.

On Dec. 5, Housing and Urban Development Secretary Shaun Donovan told the Senate subcommittee that the White House planned to ask Congress to approve \$45 billion to \$55 billion to finance repairs of wrecked homes.

Sandy, the largest tropical storm recorded along the Atlantic Ocean,

made landfall on Oct. 29, 2012, in the northeast U.S. and dissipated on Oct. 31. Devastating winds spanned more than 1,000 miles and impacted an area the size of Europe.

Suffering continued after the storm’s end. In Long Island’s Nassau County, for example, more than 250,000 people were without power for an extended period of time, and some people died trying to heat freezing homes. More than 10,000 people in nine states spent time in shelters.

Housing for those impacted by the hurricane was the government’s

prime concern, despite challenges supplying food, water and power.

“As we move through energy and gasoline, housing is really the No. 1 concern,” DHS Secretary Janet Napolitano said to CNN.

Nearly 200,000 people in multiple states applied for FEMA assistance, and \$158 million in aid was approved, but struggles persisted regardless. FEMA couldn’t reach all impacted homeowners quickly to determine how much aid they needed to repair their homes, and people couldn’t apply for loans from the Small Business



NEW YORK CITY FIRE DEPARTMENT

New York City Fire Department social media manager, Emily Rahimi, kept citizens abreast of Sandy news via Twitter.

But Thompson said the public had a misunderstanding of which government entities do what. “The public has a general misconception of what FEMA does,” she said. “They believe FEMA is going to come in and help in a physical way. And they don’t recognize the responsibility of the local and state [agencies] as far as who provides things.”

Wong said FEMA did come and distribute Meals Ready to Eat, but she complained that the instructions weren’t provided in Chinese. She said a lot of the elderly Chinese people were reluctant to eat them.

Wong said people were desperately seeking information but the power was out, there was no cell reception and no

signs were posted anywhere. “Cellphones weren’t working and batteries went dead anyway,” she said. “People would leave us looking for reception and use all their battery power just looking for reception.”

She said people desperately needed to feel connected. “They needed to call their loved ones.”

A spokesperson for Mayor Michael Bloomberg’s office said posters in Chinese and Spanish were posted in many areas, including Chinatown.

The feeling of being connected is important during a disaster and in areas with cell reception, the ability to reach a loved one or receive an important bit of information can be critical, said Brian Fontes, CEO of the National Emergency Number Association (NENA).

“Your ability to let your friends and family outside the disaster area, or perhaps inside, know that you’re OK or that you need certain things [is vital],” Fontes said. Social media plays an increasingly viable role in the ability to connect during disasters as well.

Fontes remembered being in an earthquake two years ago and evacuating to a park with other residents. He said everyone

Administration until after they learned if they qualified for a FEMA grant.

And some homeowners didn’t even know organizations like Freddie Mac, Fannie Mae and the Federal Housing Administration had mortgage relief programs for Sandy victims.

Sal Conte, a retired military veteran whose home suffered severe water damage, seemed surprised and excited when a reporter from AOL Real Estate told him about these programs.

“I need to find out about that,” he said.

On the positive side, New York City’s administration worked with

landlords to make 2,500 apartments available for survivors starting the week of Dec. 5, and additional units were on the way. Municipal officials hoped to alleviate crowded shelters and move families out of hotels.

Other remediation efforts have gone less smoothly. The New York City Housing Authority, tasked with alleviating taxpayer stress in Sandy’s wake, was prepared to administer relief right after the disaster, but long-term relief efforts are proving deficient.

According to a Dec. 9 *New York Times* article, the depart-

ment’s been overwhelmed or confounded in the following ways:

- medical supply deliveries to stranded elderly and special needs residents were haphazard or nonexistent, depending on the area;
- basement equipment wasn’t elevated above expected flood levels before Sandy made landfall; and
- standby contracts weren’t completed that would allow the city to secure extra pumps, generators and other equipment in case existing ones were unavailable.

But the government hasn’t taken all the blame, according to some city officials. Some residents didn’t follow mandatory evacuation orders, which would have saved them from harm had they obeyed.

Regardless, Robert K. Steel, a deputy mayor who oversees the housing authority, told *The Times* that relief efforts could be improved.

“If you make a list of 1,000 things we did — we did not do a thousand perfect,” Steel said. “Should we try to learn from this? Sure.”

— HILTON COLLINS, STAFF WRITER



ANTON DARRINS/ISTOCK.COM

Many Sandy victims weren't sure where to go for their needs.

there benefited from those texting or using social media to get information.

That was borne out during Sandy too as the New York City Fire Department's Social Media Manager Emily Rahimi kept citizens abreast of Sandy news and responded to their pleas for information.

Rahimi said she went into work a little early on Monday, Oct. 29, because of the storm and thought she might be a little extra busy. She was right and tweeted right on through until around 6 p.m. Tuesday.

But even Rahimi was startled by the amount of activity on Twitter and the nature of the tweets. "Once the emergency calls started coming in, I was surprised and it took a second to figure out how I was going to handle it," she said. "I didn't think about the fact that with cell service down they'd still have access to Twitter."

She said people were panicking. "It was extremely scary outside. Sitting in my office listening to the wind rushing past the building, it was a crazy sound, and to be out in it and having water rush into your house or even approaching your house is a scary situation."

Rahimi said many people were in shock as water threatened their homes. They didn't know what to do and needed advice and comfort. "Many of them were saying they were trying to stand on furniture or

had rushed to the second floor — anything to stay out of the water. Without cell service, they didn't feel like anyone was able to help them or connect with them."

Rahimi never intended for Twitter to be used in such a way, but sees it as a key for communications during future disasters. "This is a little different from what I expected Twitter to be used for; not only to help people get the help they needed but to dispel rumors [and] share information about what certain people should be doing if something is happening around them," she said. "This has given us a look at how Twitter will be used in the future. And it was a good introduction and a good way to figure out how we can best use it for emergencies in the future."

Thompson saw social media at its best when it came to donations management, always a problem during disasters. As usual, donations were pouring in to the point where there was too much of a good thing. A local church, inundated by the flood of donations, posted on Facebook daily lists of needs, such as flashlights, batteries and cleaning materials like buckets, Thompson said. "Once they started to become more specific about what their needs were, the spontaneous donations still came in but they got more of what they actually needed."

Using social media to glean needed donations and possibly halt the flow of unwanted items could be a good practice. There are other lessons from Sandy as well.

"The preparedness materials say you should have batteries and radios, but when we arrived seven days after the storm struck, those batteries are dead," Thompson said. Preparing for three to five days is old, and "educated" people say be prepared to be self-sufficient for 10 days, Thompson said.

She said a company called Goal Zero arrived with solar-powered battery packs that provided light and power for cellphones, laptops and printers. "Prior to that we were using a 12-volt car battery, which we had to haul out into the street to recharge," Thompson said.

The ability to scale from a disaster to a catastrophe is an important consideration, she added. "We have processes set for disasters. You have disasters, and you have catastrophes. You can't use the same processes for both, you have to think bigger and these Goal Zero folks came in with solar-powered battery packs that were rechargeable on their own."

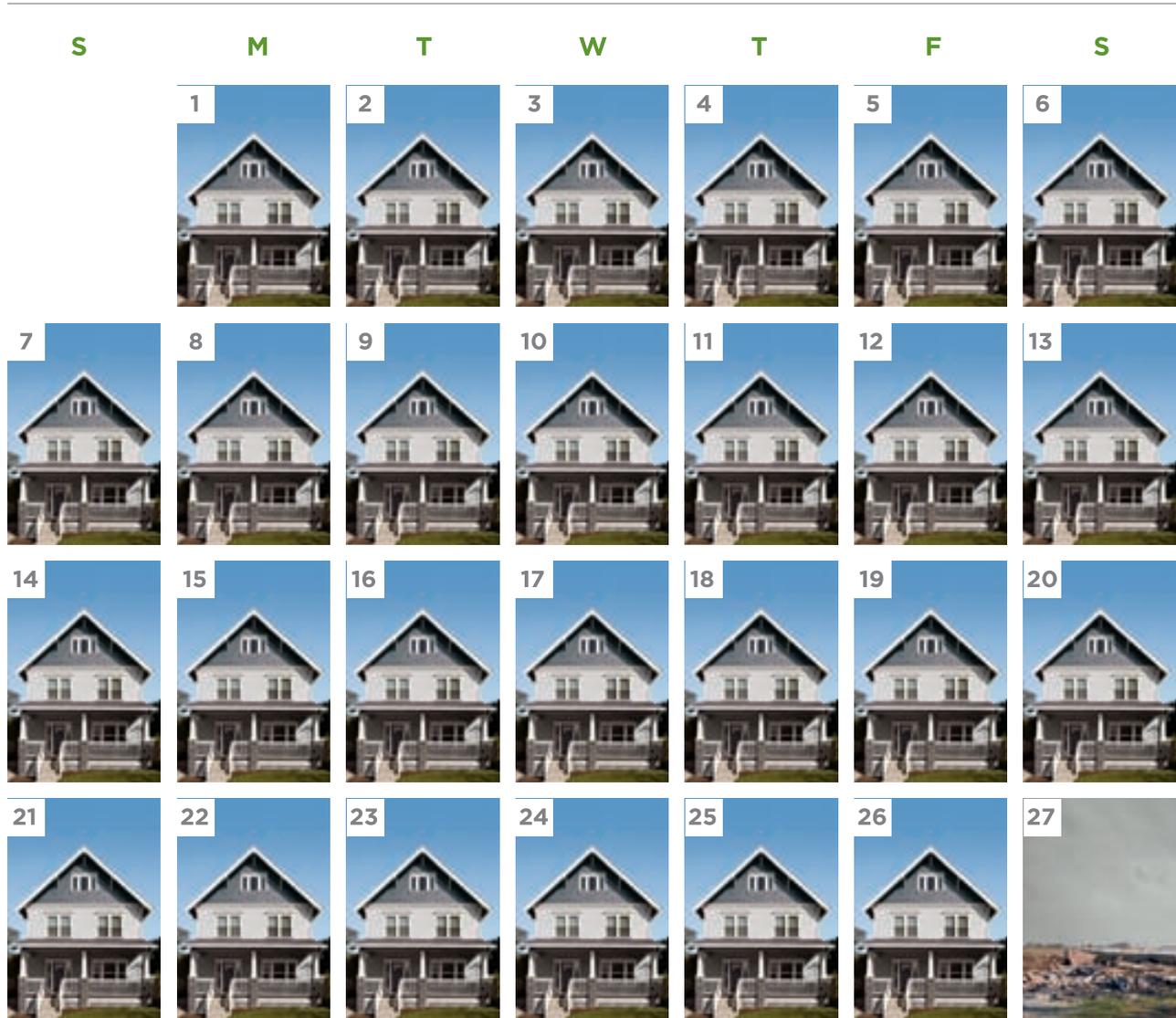
NENA's Fontes said tips on how to preserve battery power on phones, especially smartphones, would be helpful. "How to shut down applications that are running in the background that can drain power," he said. "Those types of tips can help people manage the power on their cellphone."

Fontes said efforts to harden networks like what was done after Hurricane Katrina will likely take place. He said after Katrina businesses moved central offices away from basements and higher up into buildings. "We know there is placement strategically along the hurricane coast of fuel supplies," he said. "We know there are a number of things associated with credentialing both at the federal level and state level to ensure access by personnel in charge of restoring and moving fuel and supplies for communication purposes."

Wong suggested earlier preparation, long before a disaster strikes, such as educating community leaders about what to do during a disaster and where to get certain information. "We're [community leaders] the ones who know who is elderly, who needs medication or who has babies." ⊕

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THE NEW MALL COP

After 9/11, the Mall of America enlisted behavior profiling to increase security at one of the Midwest's most popular tourist attractions.

ELAINE PITTMAN | ASSOCIATE EDITOR





Located near Minneapolis, the Mall of America encompasses more than 4 million square feet, including an indoor amusement park.

THEKICKICK.COM

After 9/11, the owners of the Mall of America handed the facility's security director a blank check. They wanted the mall to be outfitted with cameras and metal detectors, but Security Director Doug Reynolds didn't think that was the right solution. While the tech tools would aid security efforts, Reynolds didn't think they were the best fit for the unique facility that he is charged to protect.

The term "mall" doesn't provide a complete picture of the Mall of America. Located near Minneapolis in Bloomington, Minn., the facility is visited by 40 million people annually and spans 4.2 million square feet. Not only does it house the stores one would expect to find in a shopping mall, but it also features the United States' largest indoor

it actually started in the U.S. through the FBI to do different types of profiling for crimes, such as serial killers, sexual predators, that kind of thing," Reynolds said. "The Israelis — when they were looking for best practices — found the FBI doing it, and they took it on and honed the skills and perfected the science behind it."

A former Israeli Airports Authority security agent, Michael Rozin, was brought onto the Mall of America's security team to help adopt the country's behavioral profiling principles to the public environment at the U.S. facility. Rozin and Reynolds worked to create the mall's Risk Assessment and Mitigation (RAM) program, which instead of relying on technology to help identify a potential security risk, uses trained officers who look

Although the behavior profiling program was adapted to fit the Mall of America's environment, it uses the same three components as Ben Gurion airport: detecting suspicious indicators, security interviewing (which Rozin said is the most important) and operational deployment.

RAM officers look for behaviors or objects that are not considered normal in the mall. And once something suspicious is observed, RAM officers look into the situation further and if it involves a person, they conduct a security interview to get more information. "Here it's very different because in an airport setting you are somewhat expected to answer some questions, especially in Israel where everyone has



The Mall of America is visited by 40 million people annually.

theme park complete with roller coasters, an aquarium and a movie theater. In addition, a hotel is scheduled to open early this year. All of these attractions combine to create an extraordinary environment for a security department.

Reynolds surveyed different security methods and industry standards, but none of the conventional approaches in the United States seemed to be the best fit for the Mall of America. "We thought cameras were good but they were missing an element, which ended up being the human element," he said.

Looking to Israeli security methods, Reynolds learned about how behavioral profiling is used in the country, especially at Tel Aviv's Ben Gurion International Airport. He attended training in Israel to better understand how the technique is used and how security officials there have improved it.

"Most people think that behavioral profiling started in Israel but it did not;

for behavior that isn't considered normal in the mall's setting.

The Mall of America's security department consists of about 150 people with the lion's share constituting what most people consider typical security. RAM personnel make up a small percentage of the department's staff, Reynolds said, but all security personnel are exposed to the program and its concepts. "A handful are given the additional 10 to 12 weeks of training in it," he said.

The RAM officers work in what Reynolds described as "visually undercover" — they wear plain clothes and ear pieces, but visitors can spot the officers if they're looking for them.

"We want people to see them. We want them to know they're out there," Reynolds said. "If it's a person with harmful intentions then they think that this thing, I don't know what it is or how big it is, but it's there, it's a factor and this is not the place to commit the crime."

to go through an interview session before they board a flight," Rozin said. The interview techniques had to be adapted to fit the public environment of the mall including how RAM officers approach people and obtain cooperation as well as the way they ask questions. The principles of interviewing are maintained and what officers are looking for are the same, but the method differs.

Is observing behavior and talking to people more effective than a security measure like using metal detectors? Rozin believes so, highlighting what he said are the two main factors that create acts of violence: intent and means or weapons.

"If you look through the years both in the United States and overseas, you see that the weapon itself as a factor has constantly been evolving and changing," he said. "Bad guys have the ability to outsmart technology like metal detectors, X-ray machines, whatever

is out there and come up with a weapon they can get into the secure environment and use to attack.”

Ultimately the Mall of America’s RAM program seeks to deter people with harmful intentions from coming to the facility. Rozin said technology, like metal detectors, doesn’t necessarily deter someone; instead they just pose a challenge. “What creates true deterrence is an unpredictable system — a security system that is there and looking for intent constantly,” he said.

And this highlights the importance of the security interviews. Asking the right questions at the right time is a problem for anyone with harmful intentions, according to Rozin. In one example of how the right questions can unravel a person’s lies, during a security interview, RAM officers identified a man who had been going onto military bases, although he wasn’t in the military.

Reynolds said that a couple of years ago, two RAM officers were nearing the end of their shift and walking down a parking ramp when they passed a man wearing a Marine Corps uniform who was waiting for the elevator. The RAM officers continued walking down the parking ramp until one said he got a weird feeling about the man in uniform and the other agreed. They found the man still waiting for the elevator, identified themselves and asked if they could talk to him. Reynolds said they asked him if he was in the military and he said he was a sniper. A RAM officer asked what his longest shot was and he didn’t know. They went on to inquire about the rifle he used and he didn’t know answers that they thought he should have. The officers identified the man’s car and saw an Air Force uniform in the backseat as well as a U.S. Department of Defense sticker on the vehicle.

The police were called and the Defense Department sticker was identified as legitimate, but as the interview continued, the man’s story fell apart. “It turned out he was a runaway and his guardians were retired members of the military,” Reynolds said. “As a dependent of a retiree, you’re given an ID card that lets you on military bases and [gives] access to a place called clothing and sales where you can buy uniforms.” The man had created a false identity by going onto bases and listening to the conversations of military members.

Securing the Mall of America isn’t strictly an internal function. The security department has created a “solid” relationship with the Bloomington Police Department, said Reynolds acknowledging that as a private entity, the mall has limitations and must rely on other law enforcement. Local agencies become involved when the security interview reaches a point at which additional information is needed or if someone provides a fraudulent identification card. In addition, the mall has provided awareness training to law enforcement officers on the RAM program and its security procedures, which Reynolds said makes things run more smoothly when they are called to the mall. “Certainly a big piece on that is to be able to articulate to the responding police officer why we called the police over.”

Reynolds also attributes the program’s success to the use of red teaming, where a scenario is created that should get the attention of a RAM officer. Indicators are set up in an area and the officer is watched to see how he or she responds and how the interview process goes. Reynolds said red teaming is critical because the program is relatively new (it’s been in use in the Mall of America for about five years) and the testing process not only helps him know if something isn’t being taught properly, but it also ensures that the officers are always aware of their surroundings.

Another aspect that’s been key to the program’s success has been enlisting the help of everyone who works for the mall — from sales clerks to janitors. Reynolds said they are the subject-matter experts of their areas and notice when something doesn’t match typical behavior in that setting.

“We would not be as successful as we are without utilizing all of the different entities, whether it be other departments or, even to a degree, guests,” he said. “We have guests that come to us and tell us when something doesn’t look right.”

Reynolds has presented the program to a diverse range of groups, and Rozin is now working as a consultant to educate others about behavior profiling and how it could fit into their security processes. “We want people to know about this program,” Reynolds said. “We want this to be the new industry standard.”

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Expanding Strategy

WHEN THE MALL OF AMERICA began its behavior profiling program about five years ago, it was breaking new security ground in the U.S. “When you step outside of what society is used to, there is always risk, and we told folks ... that there are going to be people who don’t know what the program is about,” said Security Director Doug Reynolds.

The risk seems to have paid off. Behavioral profiling is being embraced by other U.S. security officials, and Michael Rozin is using his experiences from helping launch the mall’s program and being a security agent for Ben Gurion International Airport in Tel Aviv where the method is used.

For example, the security director for the Greenway Plaza business complex in Houston adopted the program about a year and a half ago. It’s also being expanded into school systems.

Timothy Kingsley, associate vice president of operations and government affairs for American Security and Investigations, said a good job has been done in academic environments to identify students who may be experiencing a crisis, but an appropriate system must be in place to identify key indicators of a possible future event.

“We have had an unprecedented amount of events in the last decade surrounding active shooters and what I call catastrophic crimes in the workplace,” Kingsley said. “I think it’s time that we really start not looking for the weapon — of course always look for those things — but let’s look for the common denominator. Human beings have similar behaviors.”

American Security and Investigations is in the early stages of rolling out the program in a Minnesota school district. He said key staff members in the company are being trained first, but eventually it could be a districtwide awareness campaign and not limited to security personnel. Kingsley said the company also is looking to use behavior profiling in other environments, including hospitals and commercial real estate.

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Why So Quiet on the Cyberthreat?

Jarno Limnell talks cyberthreats and vulnerabilities in the United States.

Cyberattacks continue to rise and more, albeit not enough, attention is being given to the threats posed by cyberattackers. The United States is vulnerable in many ways, including the energy grid, which comprises 160,000 miles of high-voltage lines, millions of miles of distribution lines and thousands of generators and transformers. Experts say it would be difficult to harden such a structure against a deliberate attack and that power could be lost for weeks or even months, causing regional chaos for which we aren't prepared. We interviewed Jarno Limnell, cybersecurity director for Stonesoft Corp., about the threats facing the U.S. and the world and what can be done about them.

Limnell's background and education in Helsinki, Finland, including working as a lecturer of strategy at the Department of Strategic and Defence Studies at National Defence University, cements his resumé as a spokesperson on cybersecurity issues.

➤ Why has cybersecurity not been given more attention?

That is an excellent question because I have been traveling quite a lot around Europe and having very interesting discussions on these issues with security experts, the media and governments.

During many of those discussions, we have been together thinking about why cybersecurity was not a strong theme in your elections. And one European point of view is that, in many ways, European countries are actually following very carefully your cybersecurity policy and what you have already done and are using your solutions in cyberpolicy as a guide for their own policies.

➤ Where do the main cyberthreats come from?

It is not always about the capabilities. There has to be intention to use those capabilities, and I think the same logic goes to the cyberdomain as it goes for the physical world and thinking about who has the main intentions to harm your society.

At this moment I would say that the threat comes from Iran and possible terrorist groups. But at the same [time], I have to say when we are so concentrated on cyberwar problems, I would announce strongly that thinking about the security of the U.S., the main threats in the cyberdomain are cybercrime and cyberespionage, especially espionage against your country. That is very evident and something China is doing

very strongly at this moment. All the nations are dealing with the same issue against each other, but I think China is the main source concerning cyberespionage. When talking about cybercrime, Russia is the main opponent at this point.

➤ What about an attack on the infrastructure of the U.S. power grid?

I don't want to cause too much fear or put too much emphasis on this threat, but I have to be honest, especially referring to my research background. If I would like to harm your nation, I would not use any physical power. I would use cyberweapons against your critical infrastructure, affecting your power grids, for example, and transportation systems. The U.S. has become much more dependent on the functionality of the digital world, which I call cyberdomain and cybersecurity, everything in the physical world nowadays is controlled digitally.

If I wanted to harm your society, I would take your electricity and water away for a while. And I think from a military point of view, this raises a new question because usually when we are talking about war, it is between armies fighting in the air and on the sea and so on. But when I think about cybersecurity and the possible targets, they are not military, they are against critical infrastructure because you are so dependent on it.

Because of this, it is very important to raise the concept of resilience. When I think

of my own country's security from a comprehensive point of view, the main thing that Finland has as a strength is the resilience of the whole society, meaning whatever the threat is and however badly Finland society would be harmed, damaged or even paralyzed, we have other options to work and continue to function and plans and the capabilities to re-establish our systems.

You have to have resilience, meaning whatever happens, you're not paralyzed. You [must] have other systems to continue, so whatever happens you can continue functioning. You have to show the attacker that, if you are attacking us, we don't paralyze, we have the resilience. And secondly, we will find you, wherever you are attacking from.

And you must have offensive cybercapabilities. This is a very sensitive issue. For example, in France, there is no discussion at all on this and the same goes for Finland. You must give others the feeling that you have the offensive cyberabilities, and if you are attacked, when you locate your enemy, you are ready to use your offensive capabilities.

➤ How do you develop that resilience?

That is something we are thinking about a lot these days. When I think about the future of security, especially defense, we have so many different threats you can't be prepared against them all. The main starting point is to build and strengthen your resilience.

That starts mentally — thinking that whatever happens you don't paralyze. Many times I have used this as an example: We had a very bad storm last winter and my house almost ran out of water and electricity for three days. So there were no lights, no heating, no water to use in the whole area. We were not able to get money from the banks for gas, and we couldn't go to the store because it was closed. People panicked.

They didn't have fireplaces in their homes; they were 100 percent reliant on electricity for heat, and when the electricity went off it got cold. But many of my neighbors moved on the second day to other cities in order to have electricity. I think this is a good example of resilience, that whatever happens, you have to be prepared for different situations and you must have the options to build your resilience. ➤

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When Hurricane Sandy struck the East Coast last October, Len Bundra knew the community's needs were bigger than his department's mission alone.

As the lead of IT and GIS operations for the Toms River, N.J., Municipal Utilities Authority, he integrated his department's existing Esri-based GIS mapping system with the National Oceanic and Atmospheric Administration's (NOAA) satellite shots to create a map of the local damaged areas with layers from multiple organizations.

Utility authorities use this operational intelligence to deploy resources efficiently to hard-hit locations. The map is free and public, so law enforcement and emergency management personnel also use it for their relief efforts.

This single, central Web app, Bundra said, puts every agency on equal footing because they have the same information, and the synergy enhances cross-department coordination.

"In this rebuilding effort, we need to all work together off a common map," he said. "It doesn't really make sense for one utility to go

out there, dig up a street, fix pipe, fill it in, and then have the gas company out a week later and do the same thing."

Features give users a bird's-eye view of the damage. Once they zoom in close enough, the map allows them to switch a layer on or off called Post-Sandy NOAA Imagery, which shows them before and after aerial photos of the affected area. They can also click the circular "map identify" tool and use it to select a parcel and generate additional aerial photos showing the area from a different angle. Other layers include those that sort data by sewer, highway and apartment layers.

Sandy struck on Monday, Oct. 29, and Bundra had the map ready to go exactly one week later, on Monday, Nov. 5. He used Amazon and Esri's integrated, hosted Web services to create the map, and he couldn't have come close to where he is today without them.

"If this would have happened five years ago, I couldn't have done what I just did," he said. "The data sharing that's happening now via these Esri-Amazon hosted services — I couldn't have created this Web map without that, so I think it's helping with collaboration from the federal to the county to the municipal level on down."

"In this rebuilding effort, we need to all work together off a common map."

Sandy clean-up efforts will likely last for the foreseeable future, but Bundra expects his map to remain in place indefinitely. Other disasters may strike, and regardless, multiple agencies can use it for their own purposes no matter what the situation.

There are 33 municipalities in Ocean County, N.J., where Toms River is located, but departments in multiple municipalities use Bundra's map for their own needs.

"I think this is a paradigm shift in GIS technology. I think Esri and Amazon are the two big players in creating the shift," Bundra said. "In the end, it'll allow GIS to be more ubiquitous. It won't just be rich municipalities or the municipalities with large populations that can afford GIS." +

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Bird's-Eye View

Amazon Web mapping tool aids Sandy relief efforts.

By Hilton Collins | Staff Writer



Volunteers serve food to New Jersey residents affected by Hurricane Sandy.

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Glimpse of the Future

LTE test at the Republican National Convention provides insight into the future of public safety communications.

By Margaret Steen | Contributing Writer

As communications technology advances, the public safety community is looking to capitalize on the changes.

“By history and tradition, we have many thousands of separate communications systems for emergency responders in this country,” said Jon Peha, professor of electrical engineering and public policy at Carnegie Mellon University and former chief technologist with the FCC. “That

means we have systems that don’t interoperate, are more prone to failure when we need them, and are vastly more expensive than they ought to be. We pay more and get less.”

Traditional public safety communication systems don’t provide services that commercial users take for granted, such as data communication and the ability to send pictures or video.

A system tested in August at the 2012 Republican National Convention (RNC) in the Tampa and St. Petersburg, Fla., area gave a glimpse into the possible future of public safety communications. Public safety agencies in Pinellas and Hillsborough counties worked with commercial vendors to test a Public Safety Long Term Evolution (LTE) network, which ran under special temporary authority from the FCC.

The companies involved were Cisco, Raytheon, Nokia Siemens Networks, Reality Mobile and Amdocs. Cisco provided most of the networking equipment, while Raytheon provided project management and systems engineering.

The partners set up a temporary network that included commercial off-the-shelf technology. A suite of applications provided security and let users share video directly from one smartphone to another, and to

see the location of the video on a map. The devices had push-to-talk capabilities that allowed officers to communicate with more than one person at a time without dialing a number. Officers could also see which of their colleagues were available at any given time, said Kevin McFadden, public safety solutions architect at Cisco.

Setting up the network was not easy. It had to be done quickly — although planning started in October 2011, most of the work was done in the few months before the convention. And funding also was tight.

This meant it was challenging, for example, to find a spot to install a portable antenna tower in Tampa. It needed to be in a secure location, preferably on city-owned land. A good location was found at the Port of Tampa, but required coordination with several government offices quickly to get permission to use the site, said Bob Meyer, an executive in Raytheon's Public Safety and Security business.

Advantages of an LTE Network

The LTE network that was tested at the RNC provides several advantages over traditional law enforcement communications.

- **Security.** Police officers sometimes end up using their personal smartphones to, for example, send a photo of a suspect to someone who can verify if this is the person they're searching for, McFadden said. This can be risky since the communications aren't secure or regulated.
- **Dedicated bandwidth.** For big events, commercial services can become saturated and can't guarantee priority service for law enforcement or emergency management users, said Capt. Mike Baumaister of the Tampa Police Department Criminal Intelligence Bureau. The dedicated LTE network made sure that public safety officials had access to service.
"Everybody all of a sudden turns their cellphones on and you can't get coverage. This offers us a way to be separate from that," Baumaister said.
- **Advanced technology.** Typical police radios offer only voice communication and sometimes very low-speed data communication. The LTE system offered data communication, including the ability to send pictures and video.

Challenges Ahead



(WiGiT) Lab and Madison County Sheriff's Office.

THE TECHNOLOGICAL ADVANCES and plans for a national network do raise concerns for some.

- ⊕ **Loss of local control.** A few years ago, "many people in the public safety community argued against having a nationwide network," said Jon Peha, professor of electrical engineering and public policy at Carnegie Mellon University. But many people realized emergency response will be more effective and efficient if agencies can communicate with one another.
- ⊕ **Dislike of change.** "This is a disruptive approach," Peha said. "It's not just a new technology, it's a change in the way we organize, a change in equipment suppliers and the role of city versus federal government. Big change always brings out big arguments."
- ⊕ **Civil liberties.** The new technology makes it easier for law enforcement to gather information about people, which makes some nervous. But Peha and others say the new technology just gives law enforcement the same capabilities that most consumers already have.
"It's appropriate to have a serious discussion about when law enforcement or anybody else can use these capabilities," Peha said. But concerns about possible misuse shouldn't prevent public safety officials from using the technology.
- ⊕ **Interagency communication.** It's great to work toward a network that lets public safety agencies communicate easily. But this also changes traditional communication and can get confusing. "When you involve police, fire, EMS, citizens and public utilities, it's really hard to manage," said Joe Treglia of the Syracuse University Wireless Grid Innovation Testbed

"The police have a chain of command, and it's very important that they follow that," said Lee McKnight, professor of information studies at Syracuse University. "Now on the spot they're supposed to be interacting in a new way. It does require some rethinking of policy."

- ⊕ **Possible vulnerabilities.** If everyone moves to the same network, no one can communicate if that goes down, McKnight said.
- ⊕ **Backward compatibility.** Not every local agency can swap its current technology for new standards immediately. "No matter how wonderful 4G is, you don't want to focus just on that," McKnight said.

"Look at backward compatibility," said Roberto Montoya, CEO of VRC Corp., a WiGiT partner. "There's always a county, unit or one of our allies that was a little slower. You have to reach back to make sure you can still communicate with them."

Focusing on the human factors — how it'll be used and how to get users on board — will be critical to the success of whatever network is developed, Montoya said.

"Though hardware, software and our technology will move us forward, until you get the mindset of these communities to change, and then come up with standard procedures that all can agree to, you won't take full advantage of the great work that's being done," Montoya said.

— JIM MCKAY, EDITOR

In the past, officers have used their radios to transmit descriptions of what was happening: "I have a group of 50 people gathering, now growing to 100. They're moving eastbound," said Sgt. Dale Moushon of the St. Petersburg Police Department Criminal Intelligence Unit. "Based on your description and their interpretation of your descriptions alone, they would manage resources." This could involve sending in more officers, reducing the number of officers or sending specialized equipment.

Live video gives much more detail. "There's nothing like seeing it as opposed to having somebody describe to you what they're seeing," Moushon said.

Having a faster, more accurate picture of what is going on can in some cases lead to less police intervention rather than more.

In one case, officials in a St. Petersburg command center were watching a wall full of screens with video feeds. At one point, people in a crowd started putting bandanas over their faces — "generally a precursor to criminal activity," Moushon said.

Officials in the command center watched the feed from the cellphone video, but the people's actions did not escalate. "They actually did not commit the criminal activity we expected," Moushon said. "Because we could see it second by second — 'They're putting on bandanas at this point but they're not doing

anything else but walking up the street”— we had no intervention with them at all. There was no need to.”

- *Ability to blend in.* For undercover officers, the ability to use a regular smartphone instead of a police radio helps them not draw unwanted attention.

For undercover officers, being able to use a commercial cellphone is a big plus, Moushon said. “There’s nothing worse for an undercover officer than when you need to transmit to somebody and you have to pull out a portable radio. We were able to use push-to-talk over off-the-shelf devices, so an officer with an iPhone in his hand could communicate over our regular dispatch channels to officers using portable radios.”

Supporters of the new technology hope it will also lower costs.

“Using technology that was developed for a commercial market to meet public safety needs means we’re going to have a

huge reduction in costs to taxpayers,” Peha said. “We get to ride the wave of innovation.”

However, whether costs actually go down will depend on how the technology is deployed: Do the new systems replace old ones, or are they used in addition to older technology?

“It may offer a cost savings, but that’s hard to predict,” Baumaister said.

Some say the way of the future will be for this type of communication — off-the-shelf devices with dedicated applications that do what public safety officials need — to replace traditional police radios.

“We still have these 3- to 4-pound radios on our hips,” Moushon said. “The advantage to them is every time we push that button, 99.9 percent of the time it works. It’s huge for officer safety and public safety for that to happen. But that’s all it does.”

Many of these decisions are now in the hands of FirstNet, which was created by Congress in February 2012. FirstNet, or

the First Responder Network Authority, is supposed to build and operate a nationwide interoperable wireless broadband network for public safety agencies. The test at the RNC was not part of FirstNet, but many players hope and expect that the LTE test exemplifies the type of technology that FirstNet will advance.

A Successful Test

The system worked well, with no “significant operational problems,” Meyer said. “It worked the way it was supposed to when it was supposed to. It provided the communications and the video shots they were looking for.”

The LTE system was used on a small scale, Baumaister said. About 30 officers used cellphones and also carried a small pack, about the size of a modem, to make them work with the network. (If this type of network became a fully developed system, the extra equipment could be built into the phone.)

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“We had backups ready to deploy if it failed,” Baumaister said. “But we didn’t need to do that because it didn’t fail.”

A key question stemming from the RNC test is whether it represents the future of public safety communications.

The thinking about its future has changed in recent years, Peha said. “Now it is generally believed that there ought to be a network of nationwide reach that operates in that band and that uses LTE technology.”

Having a national network would allow a police officer in Atlanta, for example, to contact an officer in Florida, confirm the officer’s identity and get help with whatever was needed. Currently agencies in local areas can often communicate with one another, but when there is a large event or a need for information from other areas, it’s not as easy, said Moushon.

In the future, it’s possible that the communication system could connect to office phones, computers, cellphones or the police records system, Baumaister said.

However, Peha said some questions remain such as what form the network will take and who will pay for it.

There is more than one model for how the network will be built out. It could be a dedicated public safety network, separate from

“Using technology that was developed for a commercial market to meet public safety needs means we’re going to have a huge reduction in costs to taxpayers. We get to ride the wave of innovation.”

a commercial network. It could also be part of the commercial network. Or it could be a hybrid, with some parts dedicated and some parts piggybacking on commercial networks.

There are two major costs to implementing a nationwide network, and they will depend on the approach the government takes, said T.J. Kennedy, director of Raytheon’s Public Safety and Security business. One is the initial cost of building the network, and the other is

the ongoing maintenance costs. Building out a dedicated network would cost more up front, but leasing towers from commercial carriers would create more ongoing costs.

“At least so far, the amount of money that the federal government has put forth is

nowhere near enough,” Peha said, referring to the type of network envisioned by many.

“The new FirstNet entity will make a number of critical decisions,” Peha said. “They control the budget that Congress has given for the federal contribution, and they make decisions about other aspects as well.”

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U.S. search and rescue teams are among the best in the world but success often depends on the equipment available.



Tech Rescue

How emerging technology can assist urban search and rescue teams.

By **Mark Stevens** | Contributing Writer

The world of search and rescue has changed dramatically. As population growth has accelerated and cities have expanded, focus has increasingly turned to urban space, the most complicated and high-risk environment in which such operations are carried out. Urban search and rescue (US&R) presents a unique challenge, demanding both a highly specialized, yet multidisciplinary approach. Modern US&R teams include personnel from police, fire and emergency medical services.

Where previous deployment of US&R teams was confined to natural land disasters such as earthquakes and landslides, they have grown to encompass extreme weather like tornadoes and hurricanes and more recently, terrorist attacks. Events like 9/11, Hurricane Katrina and Superstorm Sandy showed the central importance of US&R teams in emergency situations when attempting to limit the loss of life and locate, stabilize and rescue survivors.

Well Equipped?

US&R teams in the United States are among the best and most highly trained in the world. But often the success and failure of operations is dictated not by training or ability, but rather by the equipment at a team's disposal. The past decade has seen the proliferation of a wide variety of tools designed to enable US&R teams to extricate and stabilize victims. Clumsy and imprecise jacks have made way for sophisticated Kevlar inflatable lifting bags and shoring appliances. Medical science has advanced to a point unrecognizable from the turn of the century, with supplies and vital equipment both more effective and portable than before, a crucial improvement. But in the critical search phase of the operation, technologies designed to locate trapped persons have proven frustratingly ineffective.

FEMA established the National Response Plan for disasters in 1991 and sponsors 28 national US&R task forces trained to deal

with structural collapse. These provide a supporting role to local and state emergency systems. FEMA publishes a 60-page list of more than 2,000 recommended items for teams. In this comprehensive document, the list of devices recommended as “technical search specialist equipment” consists of just a fiber-optic cable camera, snake-eye camera (or equivalent), portable electronic listening device and GPS receivers used with mapping software.

It's widely acknowledged that existing methods of victim detection are less than ideal and that any improvements will likely come from technological breakthroughs. US&R teams rely on physical void search, audible callout, electronic viewing, electronic listening and canine search. Even if all are used in conjunction, experienced searchers know that the techniques and equipment at their disposal are often insufficient. Physical searches and audible callouts involve the mass deployment of teams using grid patterns to ensure full coverage. Aside from being unable to detect hidden and unresponsive victims, and therefore those most in need of attention, the tactics are grossly inefficient.

Electronic viewing devices — including search cameras, infrared devices and fiber-optic cables — can augment physical searches, but even small, flexible cameras are often limited in their ability to penetrate into pockets within rubble.

Infrared devices also have drawbacks. Despite allowing operators to see through smoke and dust, they cannot distinguish between heat signature profiles behind obstructions, meaning that it's impossible to tell whether a heat source is from a survivor or a fire.

Audio and seismic units can be used to enhance physical searches. The system works by placing an array of listening devices around the perimeter of a search area and determining which one picks up the strongest sounds. But drawbacks include limited range, reduced effectiveness when probing concrete and susceptibility to interfering signals (as well as the inability to detect unconscious victims).

Have Dogs Had Their Day?

It is somewhat interesting to note that even today, the most effective means of locating uncommunicative or unconscious people is still by using trained sniffer dogs.

Even with the extensive training and excellence of the canine units used in US&R, they come with inherent limitations, particularly when navigating collapsed buildings, rubble and other hazards posed by a typical urban disaster zone. In 2006, in an attempt to surmount these difficulties, a joint task force at the International Conference on System of Systems Engineering explored the possibility of augmenting dogs with existing technology. It proposed that a suite of supporting technologies be used to extend the dog's potential area of operation and allow a greater distance between dog and handler. The team conducted initial experiments with limited success, and although dogs are still thought to represent the most effective search tool, their limitations are well publicized.

Technology Void

This need for new and improved technologies has been recognized with both the private sector and military exploring technologies that might assist US&R missions. The most popular area of research is robotics, with the field promising not only improved capability, but also reduced risk to rescuers. The U.S. DHS Science and Technology Directorate has initiated an effort with the National Institute of Standards and Technology to develop comprehensive standards in the development, testing and certification of US&R robotics. This promises to accelerate the process, but while there

are many promising avenues of research, effective, real-world robotic solutions are still some way off.

Much time, expense and effort are being put into the development of a completely automated technological solution, and while it is the ultimate goal, there are devices emerging right now that could potentially revolutionize the way US&R is carried out.

Cellular Tracking

A summary of the highest-priority needs cited by US&R personnel participating in a FEMA/DHS report concluded that new

being engineered to assist in the difficult task of locating trapped survivors, be they visually obscured in a pile of rubble or partially collapsed building, uncommunicative and undetectable by dogs.

A promising avenue of research is in cellular tracking. Originally developed as an anti-terror and security solution, cell tracking usually works by triangulating the location of a device transmitting wireless signals such as a cellphone, tablet or computer. With statistics showing that nearly every person in an urban environment carries one or more of these devices, the capability to accurately locate

Urban search and rescue presents a unique challenge, demanding both a highly specialized, yet multidisciplinary approach.

technologies are essential if tactics are to improve and evolve. The report seems to acknowledge that "improved real-time data access; the ability to accurately and non-invasively locate survivors following structural collapse; and the development of real-time, portable, multifunction devices that expand on existing detection capabilities" lag far behind the recovery and stabilization of victims. But this is changing with systems

and track these could prove invaluable when searching for survivors in a disaster zone.

Mapping Disaster Zones

The possibility of a central map containing the probable position of survivors, in addition to the actual location and movements of search and rescue operators, is a tantalizing one for commanders on the ground. Such a solution would not replace any existing equipment or search techniques, but rather could be used to improve both the locating of victims and the tactical overview available.

US&R officials are beginning to recognize the vital and increasing role more sophisticated technology is going to play in emergency situations. In the future, perhaps robots will be advanced enough to replace human rescuers entirely, but at the moment a more integrated and balanced approach is called for. Organizations that embrace emerging systems will maximize their capability, enabling them to give victims the best chance of survival. 🚀



Man's best friend will, ideally, be replaced by technology.

DAVID FINE/FEMA

Mark Stevens is a leading UK expert on security technology and managing director of DNA Tracker, which develops and provides mobile tracking applications related to crime reduction and public safety.



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CRITICAL CONTACT

While storing in case of emergency (ICE) contacts in cellphones is catching on, many people password-protect their phones, making it hard for emergency responders to access the data. To bypass the barrier, Acadian Ambulance developed the Acadian I.C.E. app, which creates an emergency contact banner on the phone's home screen or lock screen. The app lets users store data about medication allergies and health conditions, which is accessible only after the phone's unlocked. The app is free for Apple and Android devices.

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By Eric Holdeman

Doing Less with More

The full impact of the continued reduction in federal homeland security funding has yet to be felt. We know that the funding available in 2013 will be less than half of what it was even just a few years ago, and we can also expect that those funds will continue to decrease in future years.

For those who entered the emergency management and homeland security fields professionally following 9/11, this is a new era in austerity that they're not familiar with. This "downturn" will be the first in their professional lives.

Others who have worked in the disaster field for a generation or more will recognize this continued economic downturn as part and parcel of the normal cycle in the rise and fall of emergency management fortunes. In reality, we have been very

vengeance. Yes, the economy is getting better, but tax revenues are one of the last things to climb. Governments, except in North Dakota, can expect to stay in a recession mode for several more years. Where I live, county employees had to forgo any pay raises in 2013 to save four patrol officer positions in the Sheriff's Department. These types of sacrifices in different forms will continue.

The challenge then is determining our response to decreasing funding with increasing hazards that come with global warming, population density, a fragile public and private infrastructure and diminishing natural resources.

The answer is doing less with more. Decreased funding must drive us to do what we should have been doing all along, which is working together with anyone and everyone who is willing to partner with our agencies.

We must dump government-centric thinking and actions. We have a role to play, and it is as conveners of coalitions of people and organizations. This includes other governments, businesses of all types and sizes, the nonprofit community, and yes, the general public, special needs populations, etc.

In the end this might be a blessing in disguise. By not having a bundle of funding, we will develop the relationships and plans needed to share information before, during and after an event; processes that cause us to be generous with the resources we do have when there is a need for them elsewhere; and the ability to find common cause with people and organizations we have not worked with before.

Lastly, don't worry. The funding cycle will rebound eventually. When funding does bounce back, let's bring to the process a new host of relationships and capabilities that have come about by all of us learning to work together as a team. 

WE MUST DUMP GOVERNMENT-CENTRIC THINKING AND ACTIONS.

fortunate to have been buffered from the Great Recession due to the availability of federal homeland security funding.

I led the King County, Wash., Office of Emergency Management through the dot-com bust at the turn of the century. It was not a fun time. We were lucky to have been given capital funds for a new Emergency Coordination Center early in 2001 before that recession became evident and the operational funding dried up. Back then, grants were few and far between with a typical Superfund Amendment and Reauthorization Act Title III Exercise Grant being about \$3,000.

It was in that era that the phrase "doing more with less" was popularized. My interpretation of that was, "We are getting so good at doing more with less that we will eventually be able to do everything with nothing." This type of belt-tightening era is coming upon us again with a



ERIC HOLDEMAN IS THE FORMER DIRECTOR OF THE KING COUNTY, WASH., OFFICE OF EMERGENCY MANAGEMENT. HIS BLOG IS LOCATED AT WWW.DISASTER-ZONE.COM.

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By Purvis J. Morrison

Preparedness Starts in the Cloud

Scott, La., is a vibrant, welcoming community of more than 8,000 people. It's a growing city experiencing economic and residential growth where Cajun and Creole French music and dancing are very much alive, along with gumbo, jambalaya and the world-renowned boudin and cracklins. As a suburb of Lafayette, Scott's proud community spirit is evident in everything we do.

We are a positive and optimistic community of families and individuals, located 39 miles north of the Gulf of Mexico. And, yes, we are in a hurricane zone.

While Scott has been spared from significant hurricane damage in recent years, sadly we don't have to look far away to neighboring cities to see the consequences of nature's violence and understand the risks of being unprepared. As a result, disaster preparedness is something we take seriously to protect our citizens, as well as the data and services that we need to keep our

city running. When Hurricane Isaac was on our doorstep in August 2012, we didn't close City Hall. We didn't even leave early. Our citizens need to know that we are here for them.

State government employees like us aren't technophobes, but we use what works. It sometimes takes a while to convince us to make a change, however, being in a hurricane zone forces us to be more forward thinking. After our city clerk attended a government-oriented disaster recovery seminar, we realized that we needed to do more to protect our IT infrastructure, data and services.

Like many cities in these challenging economic times, Scott also is keenly focused

on how to maximize its budget and minimize overhead time and costs. Our technology solutions must be easy and manageable for our small staff, as well as cost-efficient. Our disaster preparedness plan boils down to three main steps, relying heavily on cloud services:

1. Backup electric generators so that City Hall can remain operational in case of a disaster.
2. Instead of an Exchange server located onsite, our staff uses Google Apps for email, calendaring and file access, and staff use their iPhones to stay connected from any location.
3. We use the cloud to back up all of our data, instead of storing it on premise or on a tape backup. MozyPro lets our IT staff monitor our backups and ensure that all users are up to date. It's an easy, reliable system.

By shifting to a cloud backup system and iPhone calendars instead of an Exchange server, all of our data is protected by global data centers that can restore data from any Internet connection. Even if all of our computers are destroyed, because our data is no longer onsite, we could be back up and running in no time.

Fortunately we haven't suffered any hurricane damage to test our disaster preparedness system yet, but we know it works. When a staff member lost her hard drive, her data was restored quickly. The longest part of the process was waiting for the IT consultant to bring the new hard drive; less than an hour after, all of her data was restored.

With these simple steps in place, we have peace of mind knowing that our data is secured. And because of that, "laissez les bons temps rouler" (let the good times roll), is still the rule of the week here in Scott. +

OUR DISASTER PREPAREDNESS PLAN BOILS DOWN TO THREE MAIN STEPS, RELYING HEAVILY ON CLOUD SERVICES.



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