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Editorial

From 911 to Katrina: Lessons Missed/Opportunities Gained

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The aftermath of Hurricane Katrina has illustrated that unfortunately the government and business communities have failed to learn the venerability of our technology-based systems and how we have failed to utilize technology in solving problems associated with disaster recovery. One of the key lessons learned from 911 was the fact that our first responders - police, fire, rescue, etc - could not communicate with one another. The reason for this failure of connectivity was that their radios frequencies were not coordinated. This is not a new problem for local, state, or even federal governments, as a matter of fact the US military has been grappling with this issue for years and has implemented a plan to create a common communication system across the Department of Defense. The issue of radio connectivity was a key finding of the 911 Commission and a plan is actually in process to reallocate the analog TV spectrum to the first responders once the conversion to digital TV is complete. Unfortunately, the plan has not reached fruition and the first responders in New Orleans and in other locations along the Gulf coast could not effectively communicate with each other or their command locations.

The fragility of the telecommunications system is a glaring example of what happens when technological systems fail. The hurricane with its high winds and floor waters brought down communication lines, cell infrastructure, and flooded locations containing switching equipment. In locations not as severely damaged by storms, eg the Houston area during the evacuation the cellular system was overloaded and calls could not be completed. Similar problems were encountered in New York on 911. As a result, in late September 2005 a bill was introduced in Congress called the Assure

Emergency and Interoperable Communications for First Responders Act. The bill would establish a new Homeland Security Department (DHS) research program to assess current technological capabilities and evaluate emerging ones that can be adapted within a national framework that promotes interoperability, efficient spectrum use and information sharing.

The bill instructs DHS to develop at least two pilot projects that would evaluate strategies and technologies for providing and maintaining emergency communications when there is a substantial loss of ordinary telecommunications infrastructure and a sustained loss of electricity, as Louisiana and Mississippi experienced after Katrina. Interestingly, some business and governmental agencies seem to be slightly ahead of the curve. Stories have circulated of businesses and organizations establishing wireless networks (Wi-Fi and Wi-Max) that rapidly restored communications in some devastated areas. Once example demonstrated the functionality of Wi-Max when a small ISP was able to reestablish his service allowing users to link to the Internet and send VOIP phone calls. Another example is that of the Naval Postgraduate School's team in Bay St. Louis, Mississippi. The team brought a number of vehicles, including a 33-foot RV loaded with Wi-Fi and satellite gear as well as emerging technologies for carrying high-bandwidth connections over a range of miles.

Within five hours of the NPS team's arrival, anyone with a laptop at their location could send e-mail, surf the Web and send instant messages. With an Internet telephone, they could make and receive calls over the connection that's similar to a low-priced DSL link. The NPS students then set up additional wireless access points and meshed them together to form a single cloud that could extend for more than 10 miles. The military-grade equipment works even if one node goes down. These examples suggest that there are robust technologies that can be employed during disasters and for normal telecommunication transmissions.

During the recovery efforts, I volunteered the Red Cross in one of their Assistance Centers. While I commend the Red Cross and all other agencies who reached out with assistance to the evacuees, I must admit I was demoralized to see how low tech the response was and concerned how we will be able to handle disasters of greater magnitude. During the evacuation many families were separated and sent to different cities, even those who were evacuated from a common center. Even when these people reached an assistance facility in cities like Houston or Atlanta, they were unable in many cases to locate family members. When I heard these stories on the news I could not quite understand this but when I arrived at a Center as a volunteer things became clear. I witnessed an almost complete lack of technology. At the Center where I volunteered and I will assume most others, the Red Cross did not have a single computer. People were "processed" using multi-part forms and carbon paper. Not only did this slow down the process but has created an impossible task to track who and how much aid was received. I personally witnessed and overheard stories of people taking advantage of this system obtaining multiple allocations of donated money and having

duplicate prescriptions filled at government expense. While I understand that in an effort the scale of Katrina relief there will be abuses, it seems that there are potential solutions that could improve the process and limit fraud.

Smart cards could provide one potential solution. These cards are in wide use as identification and in credit cards. If each person had a government issued smart card they would be able to carry with them their personal information and in the future their medical records. These cards can be scanned or read with a chip reader. Imagine if a family boards separate buses to evacuate them from a disaster area. The code of the bus is entered into a system that ties that bus to a destination. As the people board the bus their cards are read. Now a record has been established linking them to the bus and its location. This information can be uplinked from the reader to a wireless network and transmitted to a central database. Once the individuals arrive that their new location their cards are again scanned and the database is updated. Now family members will know the location of their loved ones. In the Assistance Center, smart cards can be read and people can be tracked to improve the quality of care they receive and what assistance they are provided. If medical records are stored on the card, healthcare providers can assist the people with medical needs and medications quickly replaced. A national "standardized" card and associated data would provide FEMA and non-governmental agencies with a tool so they could obtain the readers required to fulfill this vision.

I am not so naïve to believe that a smart card will solve all problems in a situation like Katrina. Nor do I believe that these cards are not without their own drawbacks such as privacy and data protection issues as is the movement of data over wireless networks. The crises of the last several years have illustrated the vulnerability of communication systems as well as our lack of preparation to assist those impacted. It is time that lessons learned are turned into opportunities for improvement.