

The Human Side of Mass Notification

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On February 19, 2009, the National Institute of Standards and Technology (NIST) held a Federal Workshop on Mass Notification Messages. Participants from 12 federal agencies attended to discuss issues surrounding warning the public, building occupants, and other organizations during an emergency¹. The workshop, in addition to being a networking success, brought 37 federal employees and others around the table to discuss different perspectives and ideas surrounding mass notification messages and information dissemination during emergencies.

The purpose of this workshop was twofold: 1) to provide a forum where representatives from federal agencies could exchange ideas and current practices for mass notification in the event of an emergency and 2) to discuss the lack of attention paid to the creation of the messages that are disseminated during emergencies in the United States. During the workshop, agencies learned about the current state of mass notification activities in both research and application, discussed gaps in the current system, and then identified some possible ways forward to close these gaps with current systems and future steps.

Current state of mass notification messaging – the research and application

At present, many buildings and building campuses in the United States are installing mass notification systems to improve communication from the building/emergency officials to the public. Additionally, the 2010 edition of the National Fire Alarm and Signaling Code (NFPA 72) provides requirements for the application, performance and installation of emergency communication (or mass notification) technology. However, there is little guidance or requirements for message providers on the content of emergency messages that are to be disseminated using the range of mass notification technology.

In 1990, over 50 years of disaster-based social science research was collected and the findings were synthesized to determine the appropriate content of warning messages and dissemination techniques for these messages during an emergency². Research shows that the message is one of the most important factors in determining the effectiveness of a warning system. A successful message must provide appropriate content, including information on the danger, guidance on what people should do about it, a description of the location of the risk of the hazard, an idea of when they need to act, and the name or title of the source that is providing the information. Also, the style of the warning

¹ Kuligowski, E.D., Peacock, R.D., Averill, J.D., and Bukowski, R.W. 2009. "Mass Notification Messages: Workshop Proceedings," *NIST Special Publication 1093*, National Institute of Standards and Technology, Gaithersburg, MD. <http://fire.nist.gov/bfrlpubs/fire09/PDF/f09011.pdf>

² Mileti, D.S. and Sorensen, J.H. 1990. "Communication of Emergency Public Warnings," *ORNL-6609*, Oak Ridge National Laboratory, Oak Ridge, TN.

message is crucial, in that a more successful message is one that is specific, consistent, certain, clear, and accurate. And, by disseminating messages frequently and through the correct channels, it is more likely to achieve appropriate public response.

Gaps in message creation and dissemination

While the research effort from 1990 targets more passive notification tools, such as public address systems, television and radio alerts, the President's push for the utilization of Web 2.0 (or web-based) tools introduces the possibility that the traditional research may require adaptation to incorporate these new technological opportunities. For example, the Federal Emergency Management Agency (FEMA) and other agencies³ have begun to embrace the benefits of email, text messages, Twitter, Facebook, and other social networking technologies for mass notification in emergencies. These types of web-based technology present small amounts of information in a dynamic, self-filtering environment, which redefines the way that people are receiving information.

Additionally, there is a gap in information transfer of this research into guidance for message providers to use before and during an emergency. Essentially, the people providing the messages (i.e., message providers) in a disaster do not have the necessary tools, techniques, guidance, and training that they require to provide information to the public when a disaster is imminent. Federal workshop participants identified the lack of canned or standardized messages for specific emergencies and technologies for message providers to use when that emergency occurs. Also, information transfer becomes particularly difficult since message providers are usually local officials or building managers that are extremely busy on a daily basis and do not necessarily have the time and/or institutional support to attend training sessions or perform research on public warnings. In most instances, messages are "created" moments before they are disseminated with little or no reference to the expertise or research on effective public warnings.

Along with the information transfer gap, other gaps were discussed. Participants identified the lack of standardization of the emergency terms that are used in warning messages (e.g., shelter in place, defend in place, lock-down, and other ways to keep people in their homes and buildings). Similarly, the issue of jargon in current messages was raised along with the confusion over how much information should be provided in one message. There was a consensus that while a text message character limit, for example, may not be sufficient to provide an efficient message, message writers must be careful to avoid information overload.

Methods to close the gaps

The workshop ended with a discussion of methods to close these gaps with current and/or future efforts among federal agencies. The overwhelming response from workshop participants was the need for the development of guidelines and/or tools for local message providers (e.g., local officials, building managers, etc.) on how to develop

³ For example, Capitalalert (capitalert.gov) was created by the local governments in the National Capital Region to provide alerts regarding major emergencies, severe weather, amber alerts and other events to a citizen's cell phone, PDA, pager, and/or email.

messages for each type of emergency. The participants envisioned that these guidelines would very clearly translate the research identified in the social sciences and other disciplines on evidence-based messages into guidelines as well as generic templates and canned messages. The implementation of these guidelines into a standard was suggested; however, not all workshop participants were interested in imposing federal guidelines on local officials in the United States. It is important that these guidelines remain relevant, but generic so that local officials and building managers can incorporate regional factors into their message to ensure appropriate public response.

In the workshop discussion, some suggested that additional help should be given to the message providers to ensure better message creation. One suggestion was to provide training sessions and workshops for local message providers, in addition to or instead of a guidelines document. Additionally, the federal government could institute incentives that would accompany the use of guidelines or attendance to training sessions, and these incentives could include providing grants to the local officials or building managers that incorporate certain techniques into their message creation and dissemination program. Last, another suggestion involved creating a metric to measure the efficiency of developed messages in eliciting a certain response from the public. Participants suggested that other agencies were already incorporating message metrics into their projects by actually testing, in a laboratory, the effectiveness of certain types of messages. Once these tests are performed, results should be communicated to the message providers so that current best practices can be improved.

Future work

Through this workshop, NIST has begun the necessary effort of collecting the wealth of knowledge on public warnings in the federal government for local message providers. The workshop identified efforts taking place in a variety of capacities at FEMA within the Department of Homeland Security, the National Weather Service within the National Oceanic and Atmospheric Administration, the Nuclear Regulatory Commission, and the Centers for Disease Control. These agencies are developing resources for message providers for various types of scenarios.

What is still needed, however, is a broad effort to extend and supplement this information with guidance on message creation for the full range of emergencies. Many workshop participants felt that, from this effort, an all-inclusive guidance document should be developed for local warning providers that outlines how to develop messages for all types of emergencies that occur in the United States. This guidance document could include guidelines on how to structure a warning message for different types of technology, guidelines on how to disseminate that message appropriately, and examples of this method through the use of generic templates and canned messages for different types of emergencies. Also, the guidance document could provide metrics to use when evaluating whether messages elicit the intended public response.