TECHNOLOGY

The Changing Public Warning Landscape

by Jon Metzler, Rosum Corporation

Once upon a time in the United States, there was an era of three major broadcast TV networks of ABC, CBS and NBC. On any given night, one could safely assume that the bulk of the U.S. population was hunkered around their televisions, thus creating a ready platform for disseminating public warning. The TV was the perfect delivery platform for what was then called the Emergency Broadcast System (EBS; now known as the Emergency Alert System, or EAS). But times have changed.

With the proliferation of broadcast channels and delivery platforms such as cable, satellite and now the Internet, that simpler era has come to an end. Network news ratings have dropped, and new content delivery platforms have altered the time and place of people's access. Personal video recorders such as TiVo do away with the need to watch programming in real-time. And the Internet makes content accessible pretty much anywhere at any time, via notebook PCs and even cell phones.

From a public warning perspective the advent of new media platforms and more "nomadic" media consumption patterns raise new challenges. If thoughtfully and comprehensively leveraged, however, these new platforms make it possible to touch more citizens with emergency warnings that are both more personalized and more informative.

At the time of this writing, the EAS comprises analog AM and FM stations, analog broadcast television stations and analog cable stations. Digital television, digital audio broadcast (DAB), digital cable and satellite radio systems begin EAS participation on December 31, 2006. Direct broadcast satellite (DBS) services will start participation on May 31, 2007.

Resource: Basic information on the EAS can be found at www.fcc.gov/cgb/consumerfacts/eas.html.

Government Examines EAS, Sees Potential In SMS & Satellite

On June 26, 2006, President Bush signed an executive order directing the Department of Homeland Security (DHS) to create a comprehensive Public Alert and Warning System for the United States. This Executive Order came after multiple other efforts.

In August 2004, the Federal Communications Commission (FCC) issued a notice of proposed rule-making (NPRM) that began a review of the EAS. (To read the NPRM, go to: www.fcc.gov/eb/Orders/2004/FCC-04-189A1.html.) The Commission noted, for example, that as of June 2005, DBS services reached an estimated 25 percent (roughly 28 million) of TV households, but the digital broadcasters did not have any EAS obligations. The FCC moved to rectify this and will broaden the EAS as described above.

In November 2005, the FCC issued an order and follow-on NPRM, which, in addition to incorporating the findings of the first NPRM, also acknowledged shortcomings in how the EAS was applied during Hurricane Katrina, and solicited comment on how the EAS could be improved.

Much of the discussion revolves around whether the EAS should be expanded to include cell phones and, if so, how to extend EAS coverage to cell phones while preserving the robustness of TV and radio-based alerts.

SMS, a popular cellular messaging technique, has its constraints. For instance, the amount of text that can be disseminated is only 160 characters, and SMS sometimes suffers from dropped messages. Additionally, SMS carrier networks may be bogged down if mass alerts are sent out, and cell sites are susceptible to power outage.

That all said, cell phones are near-ubiquitous, and are one of the few devices that are always with the consumer. It is intuitive to look to cell phones as a distribution platform, and further to look to SMS as a quick way to utilize those devices.

A second platform with potential is satellite broadcast, such as SDARS services provided by Sirius and XM Radio. In the wake of Katrina, XM Radio aired the Red Cross Channel on a 24/7 basis. Satellites are inherently removed from local-area disasters and thus provide a natural complement to ground-based systems.

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In October 2004, FEMA announced its Digital Emergency Alert System (DEAS) pilot, conducted in collaboration with the Association of Public Television Stations (APTS). Phase I of the pilot involved a demonstration in the National Capitol Region of how datacasting over digital television broadcasts could deliver enhanced emergency alerts. For example, text crawls could be replaced with full audio and video alerts. Phase II expanded the pilot to stations outside of the Capitol Region, and began the work of integrating DTV-based capabilities with other warning and transport systems, such as satellite.

In Congress, in September 2005, Senator Jim DeMint (R-SC) introduced the Warning, Alert, and Response Network (WARN; S.1753) Act into the Senate, also known as the National Alert System and Tsunami Preparedness Act, as a means of establishing a national hazard alert system. In June 2006, Representative John Shimkus (R-IL) introduced a comparable bill into the House of Representatives. S.1753 notes that a multitude of media should be used so as to maximize dissemination and minimize the risk of having a single point of failure.

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Going Forward – Location Awareness Is Key

Media consumption is a much more nomadic, portable experience today. Consumers may download news on their cell phones while in transit, but as they change location different information may become relevant. With this issue of "where" in mind, what other problems could the EAS solve?

The value of location-aware EAS receivers is apparent. Cellular devices can be coarsely located through cell site-based location technologies, and could thus receive "Reverse 911" alerts – one alert could be sent out to all handsets identifiable as within a certain area. Companies such as SquareLoop are working to utilize location-aware cell phones as an alert platform. Location awareness could also enable addressing receivers in a given locality with specific, geo-tagged instructions. Receivers could then acknowledge or ignore alerts as appropriate, and display evacuation route and navigation information that is relevant to that location.

The EAS currently is a platform for one-way dissemination of information. It lacks knowledge of receipt or a feedback loop. Connected devices, such as cell phones, first responder radios, or WiFi-connected laptops or squad cars could acknowledge message receipt, then feed their response or additional information back to a central command center or database. Tags, such as "Law Enforcement" or "Citizens," could be embedded in alerts, enabling tiering of alerts. In the presence of capacity constraints, law enforcement alerts could take priority.

The self-same TV signals that carry emergency alerts can be used for position location (as Rosum does). The indoor receivability of these signals enables situational awareness in areas where conventional satellite-based positioning solutions, such as GPS, are not effective. This points to potentially wedding the alert capability of the EAS with location-awareness of EAS receivers, enabling greater efficiencies in response deployment and deployment of assets. Only those responders or vehicles near an incident need be routed.

The uptake of cellular telephony and now Internet-based telephony necessitated expanding 9-1-1 to include mobile or nomadic devices. This is both a challenge and an opportunity. Public warning systems, too, have an opportunity to leverage these devices to deliver more relevant, more informative alerts. This will not be an easy challenge. However, it is an opportunity to minimize points of failure in the system and better serve the public, which in the end will save lives. ■

Editor's Note: Jon Metzler is business development director for Rosum Corporation. Further information on Rosum is available at www.rosum.com.

Rosum Corporation • 301 North Whisman Road • Mountain View, CA 94043 • USA
Main: 1.650.230.7200