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## For more information contact

### Michael Tembrina

Lead Associate  
tembrina\_michael@bah.com  
703-377-0543

### Anne Rader

Associate  
rader\_anne@bah.com  
917-359-1361

[www.boozallen.com](http://www.boozallen.com)

## Assisted Technologies and Incident Management

by Michael Tembrina and Anne Rader

*The 5.8 magnitude earthquake on August 23, 2011, surprised people in the mid-Atlantic region. They immediately wondered whether they had actually experienced an earthquake and then considered their next steps: Should I stay in place or leave? Will I be able to get my car out of the underground garage? Is public transit safe to use? Security managers prepare for just such events; some activated PA systems and provided instructions for employees, while others sent information via email or text messages. But did these communications take into account building occupants who are blind, deaf, or hard of hearing? The U.S. labor force has 5.9 million people with a disability<sup>1</sup>, and many have an impairment that limits their capacity to receive emergency communications. Assistive technologies are available to fill this gap.*



## Desktop solutions

### Email

Providing sufficient detail about an incident in an email to ensure that recipients know what actions to take is often an operational challenge. Consider this message: "Protest in front of building, avoid area. Security on-scene." Compare it to this more informative version: "Protest at the main entrance of our building. For

your safety, use the North and East exits through the end of the day. If the situations change, we will update you." Regardless of the quality, email alone will not reach sight-impaired staff unless it has an audio message attached, and these typically require an additional step for audible attachments to play<sup>2</sup>, which delays the notification process.

### Desktop notifiers

Desktop-notifier applications run on workstations and display an intrusive pop-up message when an emergency occurs. They may have additional options that range from displaying a visible message with an audible tone, to forcing the user to acknowledge receipt before continuing work. Some even block access to the workstation until the emergency is over. Common to all are embedded multimedia messages. These enable sending an audible notification to sight-impaired staff via their workstation speakers or headphones and recent improvements in intelligibility make this a viable option.

### Desktop telephones

Voicemail systems can deliver messages to thousands of telephone mailboxes, but having to dial in for time-sensitive notifications is not practical. Advanced systems include an area paging option whereby desktop telephones act as public address (PA) devices—a viable solution for emergency use.

<sup>1</sup> Source: U.S. Department of Labor

<sup>2</sup> It may seem counterintuitive to expect a sight-impaired employee to click on an attachment to listen to an audio-file. However, screen reader programs assist people with sight impairments to read email and multi-media attachments.

## Text-to-speech synthesis

The quality of text-to-speech synthesis has greatly improved. Emergency managers can now issue alerts in easy-to-understand formats. Two text-to-speech applications (VoiceForge®, Natural Voices®) process text into audio files. Text-to-speech also reaches those who are unable to interrupt what they are doing to read a notification.

## Premises-based solutions

### Fire alarms and visible signage

Fire alarms can visually signal via strobes and audibly signal via tones. Alarm systems can also include PA systems, which can be used to inform occupants of fire or other emergencies within a facility, provide details about an event, or tell occupants to shelter-in-place when an external threat exists. These are not adequate for hearing-impaired occupants and should be complemented, for example, by visual messages displayed in public areas. Office buildings are often equipped with visual displays in lobbies that function as general message boards. Integrating these panels into the building's mass notification system accommodates those with hearing impairments.



## Mobile solutions

### Text messaging

Text messaging, or short message service (SMS) via phones, is a widely used, fast, and reliable mode of emergency communication. Employers can add to distribution

lists the email address connected to a mobile telephone. Further, manufacturers now embed accessibility functions in their mobile devices' operating systems. BlackBerry™ settings allow users to modify their home screen, change page color and contrast, enlarge character size, or enable sounds the sight impaired. The VoiceOver™ feature on Apple's iOS devices (iPhone, iPad) allows users to control the device orally and provides audible information on what is displayed. Other products (Oratio, Mobile Speak) cater specifically to blind people and fill in gaps exposed by the un-integrated mobile applications.

## Conclusion

To respond to practical, ethical, and legal obligations, employers must be attuned to the emergency communications needs of all their employees. The new assistive technologies provide innovative and cost-effective ways of meeting those needs. With many solutions leveraging open standards and protocols, integration across communications platforms is now efficient, easy, and affordable.

## About the Authors

*Michael Tembrina is a Lead Associate at Booz Allen Hamilton, a leading strategy and technology consulting firm. His expertise includes emergency alert and mass notifications systems supporting the emergency response missions of U.S. Federal Civil agencies.*

*Anne Rader is also an Associate at Booz Allen Hamilton. She her expertise lies in public health preparedness and emergency management, and is a recent author of Public Health Preparedness and All-Hazards Planning for At-Risk Populations: Harnessing the Power of Health Information and Communication Technologies. Ms. Rader is a Board Member of the National Council on Disability.*

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