Challenges for Warning Populations with Sensory Disabilities

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ABSTRACT

People with sensory disabilities, like anyone else, need access to timely emergency and weather warnings information. Primary information sources, radio and television broadcasts, do not consistently serve the needs of the 28 million people who are deaf or hard-of-hearing, or the 11 million people who are blind or have low vision. Alert systems, services and products are developing text and audio alert capabilities to serve these populations but many inconsistently support appropriate modalities and accessible interfaces. Funded by the US Department of Commerce, WGBH is uniting emergency alert providers, local information resources, telecommunications industry and public broadcasting representatives, and consumers to research and disseminate replicable approaches to make emergency warnings and community-based information accessible. Through research with consumers and the public warning community, and delivery and device testing, an information model is being developed with recommended accessibility extensions to emergency system protocols, technologies and services for cross-platform delivery.

Keywords

Sensory, disabilities, accessible, alert, emergency, warning, information, blind, low vision, deaf, hard of hearing.

INTRODUCTION

The Media Access Group at WGBH and the WGBH National Center for Accessible Media (NCAM)

Work on making emergency alerts accessible grows out of WGBH's three decades of experience pioneering and furthering access solutions to mass media for people with disabilities. WGBH developed captioning for television in the early '70s and brought video description for viewers who are blind or visually impaired to television and videos in the late '80s. Throughout the '90s, these services were applied and integrated by WGBH into other forms of mass media, including movie theaters, Web sites and classrooms. Today, all of WGBH's access initiatives are gathered in one division, the Media Access Group at WGBH.[1] The National Center for Accessible Media (NCAM) is the research and development division of the Media Access Group.

ADDRESSING THE NEED – "ACCESS ALERTS: MAKING EMERGENCY INFORMATION AVAILABLE TO PEOPLE WITH DISABILITIES"

Project Overview

The grant project "Access Alerts: Making Emergency Information Accessible to People with Disabilities"[2] is addressing a most urgent need — to develop and encourage adoption of standardized methods, systems and services to identify, filter and present content in ways that are meaningful to people with disabilities leading up to, during and after emergencies. People who are deaf or hard of hearing and who rely on captioned television news alerts are often left out when emergency broadcasts are not, in fact, captioned. And people who are blind or have low vision watch television to stay informed, but are at a loss when on-screen graphics or text crawls are used to convey information.

When combined with a loss of power, the emergency becomes more severe, as back-up sources of information are not useable by people with sensory disabilities. Radio, telephone landlines or cell phones are not an option for people with hearing loss and TTYs require power. Web-based information and cell phone menus are often inaccessible to people with vision loss.

The use of wireless systems-- the Web, cell phones and other personal devices-- promise greater freedom, independence and even safety when traditional electronic media fails or service is interrupted, but these technologies hit the market with access barriers which present new challenges as well.

There is vital work to be done to ensure that people with disabilities are provided with equally appropriate and flexible methods of receiving information. There is a need for research and suggested structures for tailoring messages to be effective. For example, processing voice mail messages is also more time consuming for blind users which means the volume of information provided must be calibrated to ensure that consumers are well-informed without overwhelming them so much that they unsubscribe from the service in frustration. Further, users with disabilities may not be well-served by terse alerts that direct them to inaccessible sources for further information. And people with disabilities may require evacuation and recovery information that is substantially different than what will be delivered to other consumers.

The Access Alerts project is identifying the gaps that exist between alert systems that deliver information, and the unrealized potential of these systems to serve the entire population.

Access Alerts Project Participants

The WGBH Access Alerts Working Group

With participation from the Partnership for Public Warning (PPW), WGBH established a collaborative national Working Group for discussion of accessibility needs and solutions. The Working Group meets monthly, and is comprised of emergency management personnel, providers of emergency notification products and services, and others from the government, education, and public broadcasting sectors. A web site "wiki" (collaborative editing environment) has been established to facilitate shared development and editing of project documents, as well as to share related documents from project participants, industry and government activities.[3]

The WGBH Access Alerts Advisory Board

Through the participation of the Access Alerts National Advisory Board, the project ensures that consumers are active participants in defining the need and determining how solutions are evaluated. The Advisory Board includes the leadership of the National Organization on Disability, the National Association of the Deaf, the American Council of the Blind, the American Foundation for the Blind, Self Help for Hard of Hearing People, Telecommunications for the Deaf, Inc., and Northern Virginia Resource Center for Deaf and Hard of Hearing Persons. Also on the Advisory Board are the commissioners for the Massachusetts Commission for the Blind and the Massachusetts Commission for the Deaf and Hard-of-Hearing and the directors of three relevant U.S. Department of Education funded-Rehabilitation Engineering Research Centers (RERCS) – the RERC on Telecommunications Access run by Gallaudet University in cooperation with the Trace Center, University of Wisconsin; the RERC on Hearing Enhancement at Gallaudet University; and the RERC on Mobile Wireless Technologies for Persons with Disabilities at Georgia Institute of Technology. Additional members include the Chief of Operations for the Massachusetts Emergency Management Agency and the research meteorologist at the National Severe Storms Laboratory/NOAA who has written extensively on the subject of access to emergency alerts (and who is deaf).

Resources in Development

Public Access Repository

A public reference repository[4] has been established for summary documents of user needs, design requirements for accessible products and services, usability research and subject-related news articles and conference announcements.

Information Requirements

A working draft information model[5] has been developed, to identify the information requirements for a warning message, drawing from: Chapter Six of the NSTC "Red Book" report ("Effective Disaster Warnings", National Science and Technology Council, November, 2000)[6]; the OASIS Emergency Management Technical Committee

warning format requirements, 2003[7]; the World Wide Web Consortium (W3C) Web Content Accessibility Guidelines[8]; and recommendations from the WGBH Access Alerts Working Group. These requirements suggest how to integrate the relevant data needs of the disabled community within related database management, information processing and alert distribution systems to ensure accessibility throughout, including the user interface and multiple output modalities. We will encourage integration of these enhancements in specifications within other industry standards, protocols, and models, as well as within municipal and state alert systems, and proprietary products and services.

Research and Testing

A member of the Access Alerts Working Group, William L. Waugh, Professor of Public Administration, Georgia State University, conducted social science research to compile emergency warning variables.[9] The research notes that "in terms of receiving messages, social science research does not indicate that disabled individuals understand, believe, personalize, or respond to warnings differently from non-disabled individuals. The expectation is that the largest difficulty in providing warnings to the disabled community is providing messages that they can hear, see, or feel. The sensory disabled, i.e., those having vision or hearing impairment, may need alternative means of "hearing" the warning, particularly to the extent that multiple channels may be necessary to convey and reinforce warning messages, as well as to assure that the message is received if some media or channels are not functioning."

Our work is informed from needs assessments within various communities of people with sensory disabilities to define existing needs and preferences for alert notification. Focus groups with deaf, late-deafened, hard-of-hearing, blind, visually impaired and deaf-blind consumers are now being held by Access Alerts board members representing the American Foundation for the Blind, the Northern Virginia Resource Center for Deaf and Hard of Hearing Persons and TDI, Inc. These focus groups, working from a moderator's script, are fielding information about current and potential usage of emergency message alerting systems, including broadcast television, radio, and messages received via personal devices such as cell phones and pagers.

A demonstration model will be developed, and user testing will be conducted to identify key usability factors that must be addressed to serve people with disabilities, including cross platform and cross-environment issues. End-user research will produce findings on device usability and behavioral factors related to information needs and message preferences.

A set of field tests is underway to conduct trial transport demonstrations of emergency messages following the Common Alerting Protocol (CAP)[11], a method for delivering text messages to a variety of receivers. End-user testing will identify key usability factors that must be addressed to serve people with disabilities, including cross platform and cross-environment issues.

Government Policies

NCAM and the Rehabilitation Engineering Research Center on Telecommunications Access (RERC-TA)[10] submitted comments in January 2006 to the Federal Communications Commission, in response to the Commission's Further Notice of Proposed Rule Making concerning the Commission's review of its rules and policies concerning the Emergency Alert System (EAS). The comments recommend that any new EAS rules issued by the Commission must include a cohesive and consistent approach to assuring that people with disabilities are served equally as well as the general population. In addition, the Commission is urged to clarify existing rules where necessary and more firmly enforced when ignored. The comments note that the technology exists, or is on the near horizon, to accomplish these goals in a practical and cost-effective manner.

This is but one example of opportunities for the Access Alerts project to inform, and hopefully, to influence public dialogue and policy.

CONCLUSION

The Access Alerts project concludes in September 2007. Project findings will be shared with the public warning and disabilities communities, as well as with the FCC and the U.S. Department of Homeland Security to help inform an inclusive and universal design for information and emergency alert systems.

ACKNOWLEDGMENTS

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