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# Access to Emergency Alerts for People with Disabilities

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FEMA Urban Hazards Forum V: Conference on Emergency Preparedness for Special Needs Populations

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# In this presentation…

- The Media Access Group and National Center for Accessible Media at WGBH
- Access to Emergency Alerts for People with Disabilities
- Related grant projects: Access to Locally Televised On-Screen Info, Accessible Digital Radio, Captioning Solutions for Mobile Media, Accessible In-Flight Entertainment
- FCC Commercial Mobile Alert Service (CMAS)
- List of related web sites

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# The Media Access Group at WGBH

## The Caption Center (est. 1972)

- Developed the world's first television captioning system
- Captioned first local/national news and children's programs
- Now captions 10,000+ hours/year of broadcast & cable TV, feature films, music videos, DVDs & CD-ROMs, streaming video and teleconferences

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# The Media Access Group at WGBH

## Descriptive Video Service® - DVS (est.1990)

- Inserts audio description of key visual elements during pauses in dialogue that a viewer who is visually impaired would ordinarily miss

- WGBH creates DVS for public, commercial and cable television, and Web-based multimedia

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# The Media Access Group at WGBH

## MoPix® (Motion Picture Access)

- Makes movie theaters fully accessible to audiences with vision or hearing disabilities
- 100 films accessible annually via closed captions, 60% are also described
- 350 MoPix theatres in the U.S. -- including many first-run theatres, the Smithsonian, American Museum of Natural History, and Colonial Williamsburg

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# The WGBH National Center for Accessible Media

## NCAM (est. 1993)

- Research and development facility
- Supports national policy decisions
- Develops technical solutions
- Advances standards development
- Conducts research
- Promotes advocacy via outreach

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# NCAM efforts, to name a few

- CC for Flash for developers to easily add captions to Web Flash video content
- MAGpie (Media Access Generator), free student and teacher-friendly captioning software
- Published “Accessible Digital Media Guidelines for Electronic Publications, Multimedia and the Web”
- Strategic Partners Program, Internet Captioning Forum

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# Access to Emergency Alerts for People with Disabilities

- Four year grant, funded by U.S. Department of Commerce's Technology Opportunities Fund - concludes September 30, 2008
- Awarded to NCAM for its legacy in uniting consumer and industry to influence policy, standards, and technology on behalf of people with sensory disabilities
- NCAM's commitment to accessible emergency information began with the first captioned news broadcasts

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# Access Alerts main deliverables

- In emergency management arena, no other focus on accessible ***notification***
- Not charged with implementation
- Information requirements
- Online information repository
- Recommendations to industry and government
- Significant outreach to federal, state and municipal government agencies, industry, and consumers

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# Access Alerts participation

- ***National advisory board*** includes national and state consumer advocacy organizations, NOAA/NWS, state and municipal government officials
- ***National working group*** includes state and municipal emergency management personnel, providers of notification services and equipment, and others

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# Access Alerts online materials

- Concept map to define the notification landscape (distribution platforms, devices, standards, etc.)
- Consumer and social science research
- Information repository (re-launch Sept. 2008)
- Information requirements, drawn from existing authoritative works and working group:
  - National Science and Technology Council “Red Book” report on “Effective Disaster Warnings”
  - OASIS Emergency Management Technical Committee warning format requirements
  - World Wide Web Consortium (W3C) Accessibility Guidelines

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# Access Alerts draft information requirements

- Be compatible with various transmission systems
- Provide warning message details in:
  - Audio and text form
  - Image or other visual form
  - Multiple languages
- Use multiple forms of presentation appropriate to needs of individual recipients
- Make appropriate use of font size, foreground/ background color and other visual attributes in image and text
- Use appropriate language for comprehension by the at-risk audience
- Allow extension of info format to meet future needs
- Facilitate delivery of message to all recipients thru multiple channels

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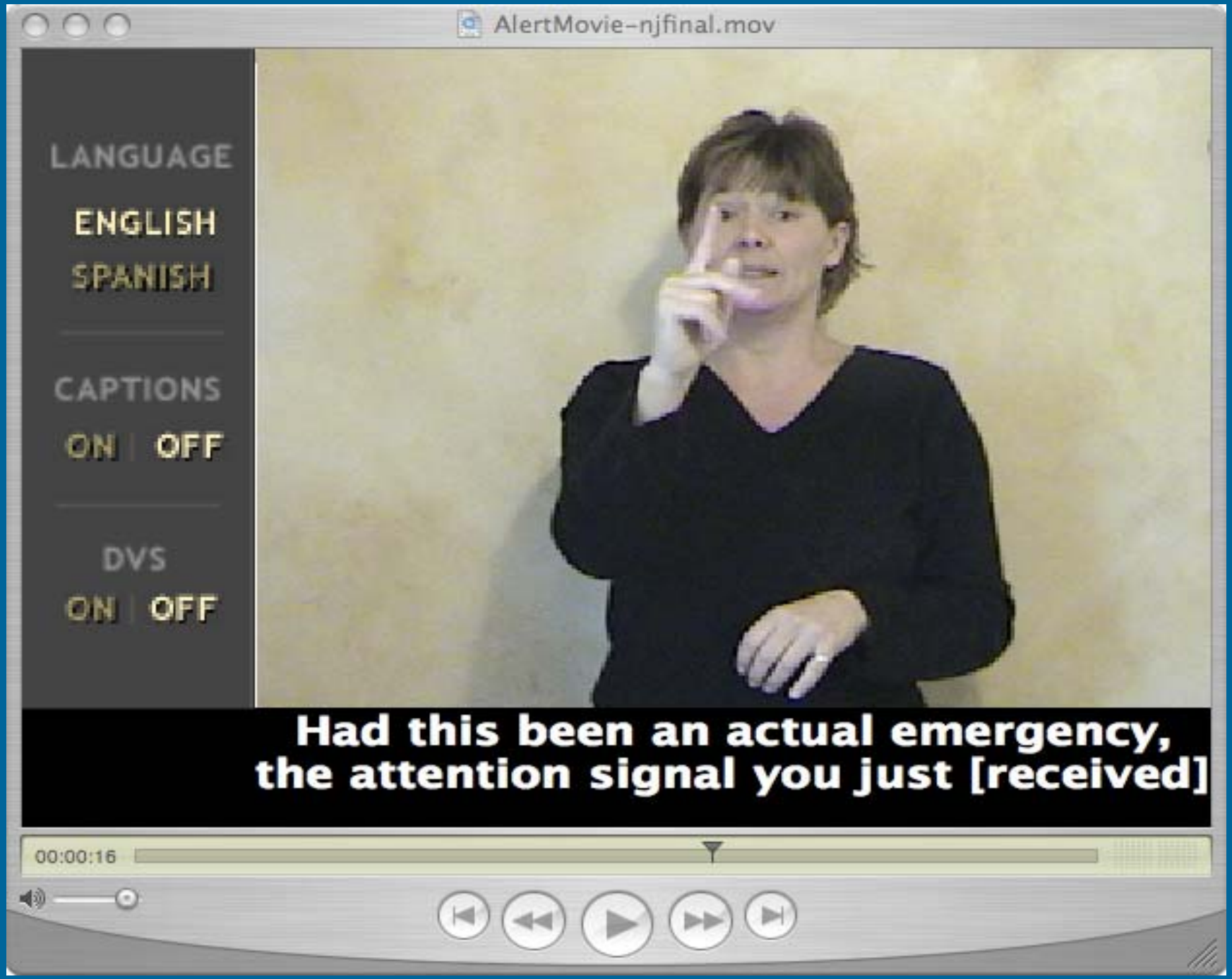
# Access Alerts local EAS accessibility concept demo

- DTV datacasting transmission of sample EAS RMT accessible message (QuickTime movie of bilingual audio/text, video ASL)
- Used free and low cost authoring tools
- Triggered variety of alerting devices
- Used Common Alerting Protocol (CAP) to facilitate interoperability across disparate systems


AlertMovie-njfinal.mov
LANGUAGE
ENGLISH
SPANISH
CAPTIONS
ON | OFF
DVS
ON | OFF
Had this been an actual emergency,
the attention signal you just [received]
00:00:16

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# Access Alerts consumer focus groups

Round 1, January 2006:

- How emergency messages are received
- The content and usefulness of messages
- Satisfaction and/or frustration with above
- Ideal delivery mechanisms and message content
- Participants self identified as tech savvy or not

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# Access Alerts consumer focus groups

Round 2, February 2007:

- Tested five emergency messages representing varied scenarios (sudden/predicted disasters) and contexts (home, work, transit)
- Weighed aspects of credibility and utility for each
- Successful messages will have both

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# Access Alerts usability testing

(Final) Round 3, April-May 2008:

- Informed by focus groups and FCC Commercial Mobile Alert Advisory Committee (CMAS) recommendations
- One-on-one testing:
  - With broadcast media, participants' own devices and donated BlackBerries
  - Similar scenarios from focus groups (sudden/predicted natural disasters, etc.)
  - Text messages with varied character lengths
  - Order of information, unique audio attention signal and vibrating cadence per CMAS

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# Access Alerts usability testing

- Report to be published August 2008
- Preliminary findings:
  - Mobile devices are nexus of where most people want emergency notification, *even with frustrations about the level of device accessibility*
  - People approve need for unique attention signals they cannot change for severe, urgent alerts
  - CMAS straw-man attention signal (EAS) is good
  - Vibration cadence: temporal pattern OK, strength needs work (device dependent)

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# Access Alerts social science research

- First published late 2006, to be updated September 2008
- Disabled individuals do not understand, believe, personalize, or respond to warnings differently from non-disabled individuals
- Social networks relay warning messages, confirm disasters, convey information on risk, etc.
- In general, the impacts of warning source, message, context and of recipient demographics and experience should be the same or very similar regardless of disability

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# Access Alerts social science research

- While disability may complicate the receipt of warning messages and make it more difficult to pick up important cues concerning the hazard and the responses of others...
- ...most of the variables affecting the understanding, belief, personalization, and response to warnings is the same for all.

*Source: "Access To Warnings by the Sensory Disabled Community", William L. Waugh, Jr., Professor, Georgia State University*

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# Access Alerts survey

- June-July 2008 national survey of emergency management and those who have responsibility for accessibility initiatives for emergency notification
- Respondents: 267 people started, 159 finished (60%)
- Who:
  - 53% from 911 centers
  - 20% from EOCs
  - 20% from local OEMs
  - Others: state OEM's, local health departments, governor/mayor's offices, state DHS, consumer agencies and more

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# Access Alerts survey

Preliminary findings:

- Systems used for notification:
  - by far, TV and radio most used
  - NOAA systems, EAS follow
  - More people listed sirens than either web/e-mail, landline phone and mobile devices
- 36% ***don't know*** how people who are deaf/HOH are notified of emergencies in their jurisdiction
  - Those who know rank captioned TV highest
- 40% ***don't know*** how people who are blind or have low vision are notified of emergencies
  - Those who know rank radio highest

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# Access Alerts survey

Preliminary findings:

- 77% ***don't know*** if content for people with sensory disabilities (PWSD) is added to emergency alerts in their jurisdiction
- 40% ***don't know*** what programs/initiatives are offered to provide information access to PWSD,
  - but 34% are educating first responders to needs of PWSD
  - 30% coordinate with local media
- 41% ***don't know*** if their EOPs/SOPs make specific provisions for PWSD

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# Access Alerts survey

Preliminary findings:

- 55% ***don't know*** if their agency/organization requires vendors of notification equipment/services to provide accessibility features
- By far, insufficient staff resources and funding are biggest challenges to creating or maintaining a program to provide accessible emergency information to PWSD
- Good news:
  - Survey response indicates awareness of importance of issue!
  - 63 people provided more info about initiatives in their jurisdiction to reach PWSD
  - 42 people provided more info about initiatives in other states or jurisdictions they'd like to replicate

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# Access Alerts - what can be done now

- Answer the many “don’t knows” revealed in the survey and share what you find
- Get more notifications to consumers’ mobile devices
- Make subscription sign-ups for alerts accessible
- Include accessibility as a requirement in bids and contracts with providers of notification equipment and services
- Explore creation of a library of accessible “standard” emergency messages
- Involve PWSD in drills and training sessions

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# Access Alerts - what's ahead

- Publish usability testing
- Publish national emergency management survey results
- Update social science research
- Finalize information requirements and online repository
- Convene final advisory board meeting
- Coordinate with related NCAM projects
- Publish recommendations to Federal government, industry, emergency management and media

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# Captioning Solutions for Handheld Media and Mobile Devices

- Three year grant from U.S. Dept of Education's National Institute on Disability and Rehabilitation Research (NIDRR) - began October 2007
- To research and develop technical solutions for delivering captioned content to hand-held media players, cell phones, PDAs and other mobile devices
- At <ncam.wgbh.org/mm>:
  - Samples of captioned media for hand-held devices
  - Comparison chart of devices and demos

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# Access to Locally Televised On-Screen Information

- Exploring solutions to enable local TV stations to convey both emergency and non-emergency information to meet the needs of people with sensory disabilities
- Develop prototype software utilities that import information from various sources, then transform and prepare it for text display or for speech output
- Demos online at <ncam.wgbh.org/onscreen>

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# Access to Locally Televised On-Screen Information

- Demos show how multiple streams of visible information (sports score, stock, weather) can be prioritized
- Text-to-speech audio of visual elements is coordinated
  - Program audio is faded down
  - Other audio streams fade up - differentiated by multiple voices
  - Prioritization is currently manual, but can also be handled by metadata
- Now working on way to automatically move captions to accommodate when something more important comes on screen

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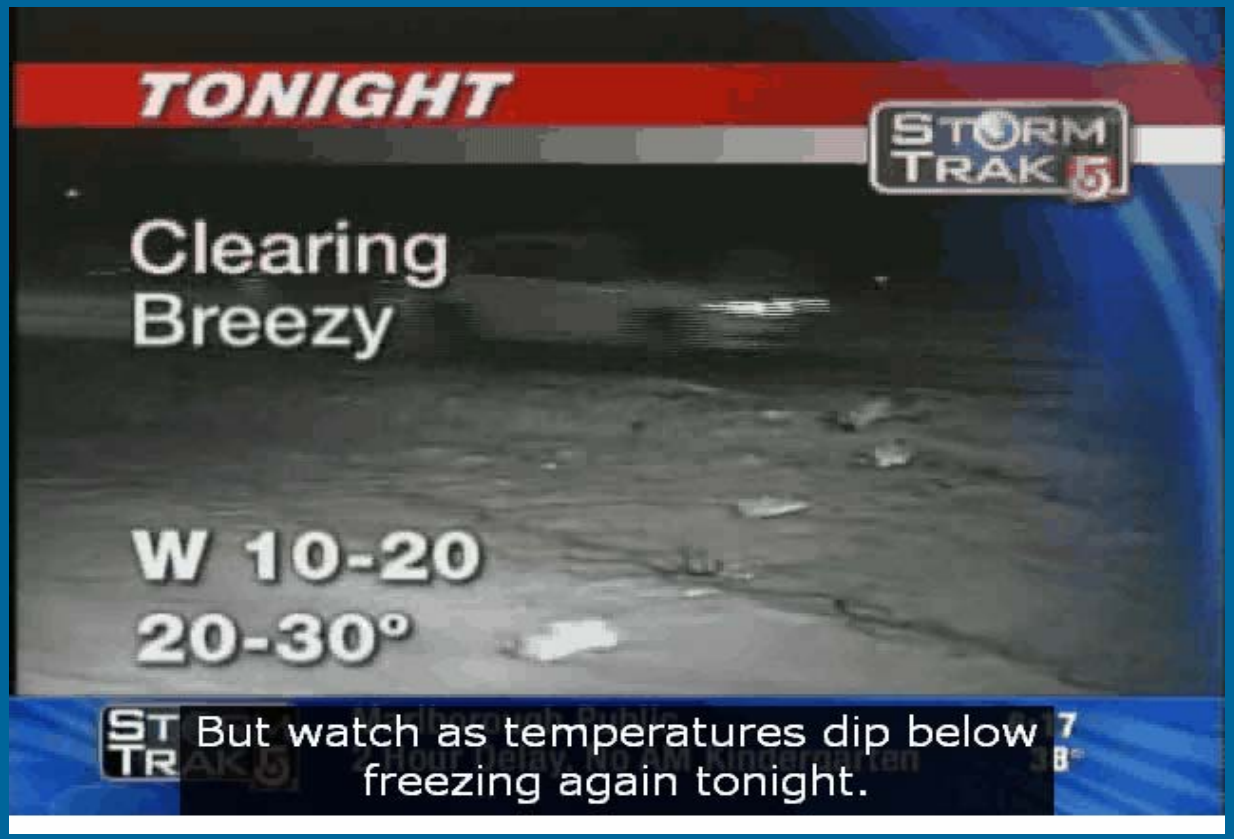
# On-Screen example of current practice



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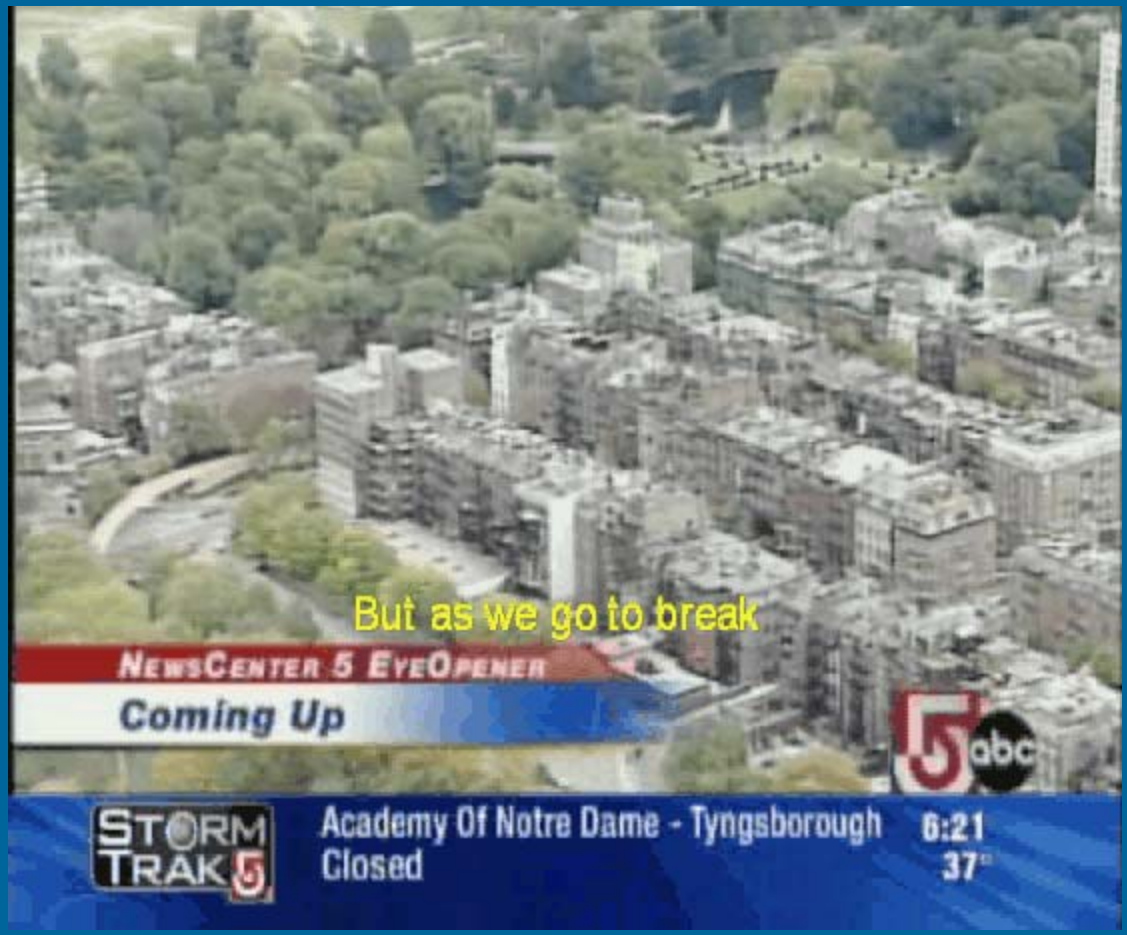
# On-Screen solution: captions and DVS



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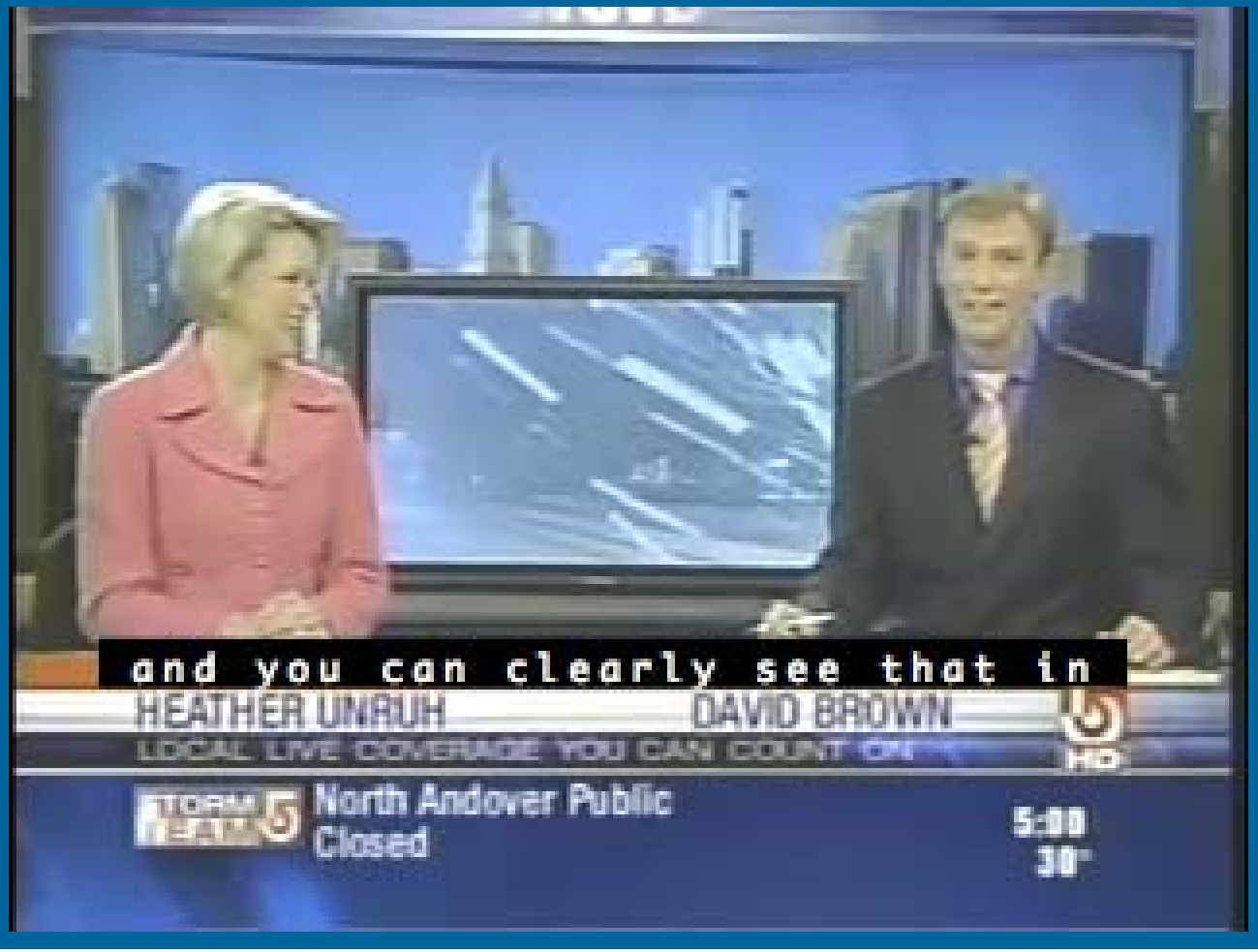
# OnScreen captions placement



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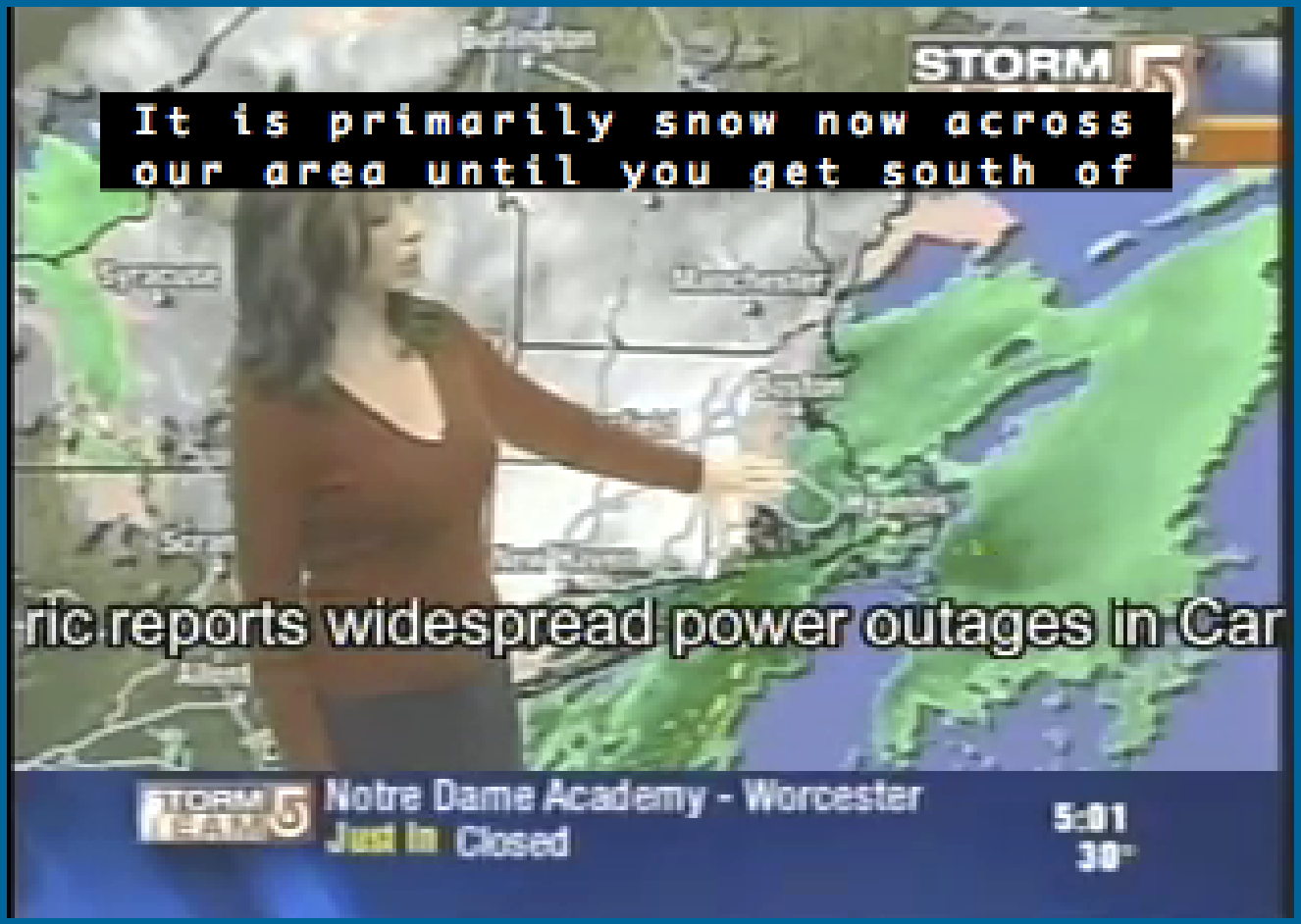
# OnScreen captions placement with text crawl



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# Accessible Digital Radio Broadcast Services

- Grant awarded to National Public Radio (NPR) and NCAM by the U.S. Department of Education's National Institute of Disability Rehabilitation and Research
- Three-year research and development project to prototype, field test and assess cutting-edge radio technologies to serve the needs of people with sensory disabilities

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# Accessible Digital Radio Broadcast Services

- Overall goal: guide the design of prototype digital radios for evaluation by consumers with special needs
- Design criteria -- to be developed with input from a representative cross section of consumers with disabilities -- will be turned over to receiver manufacturers as best operating practice

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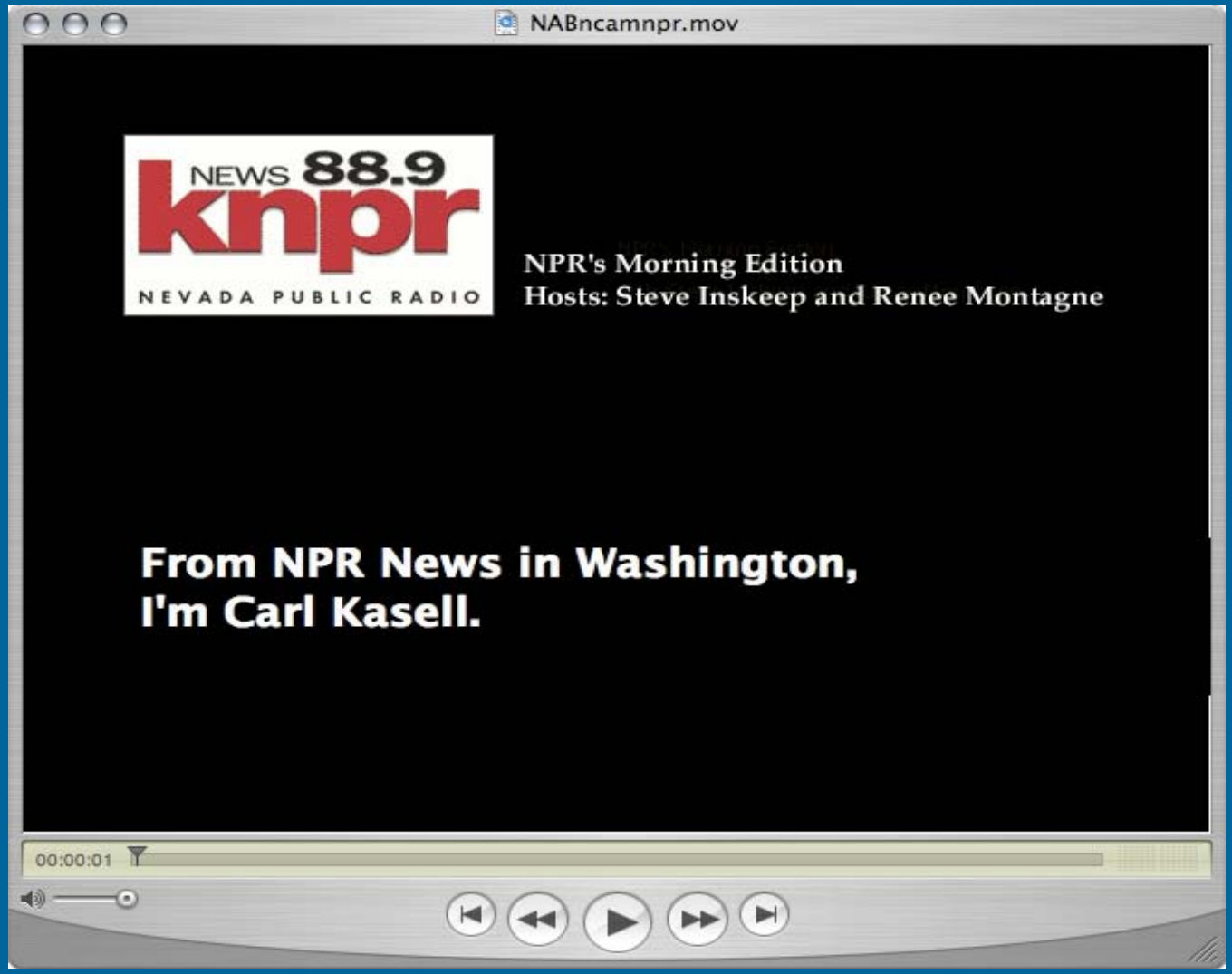

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# Making In-Flight Communications and Entertainment Accessible

- Three-year grant from U.S. Department of Education to make airline entertainment, communications and information accessible to flyers with sensory disabilities
- Solutions and resulting recommendations will include integration of captioning for video and audio, descriptive narration for visual images and audio navigation for system menus and interface design

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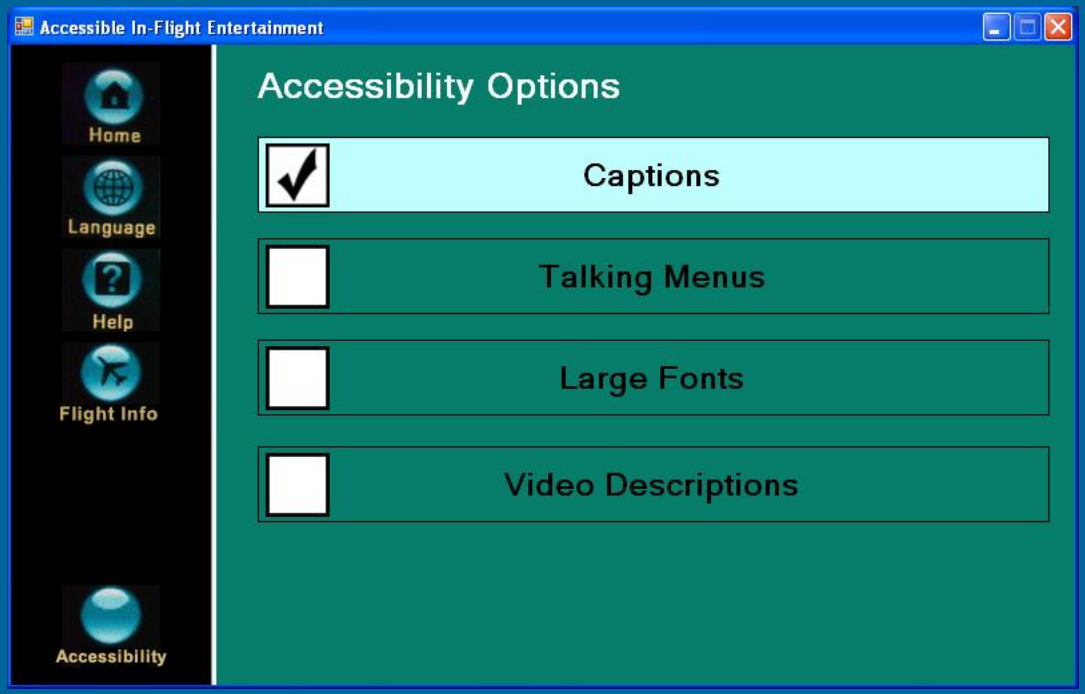
# Making In-Flight Communications and Entertainment Accessible

## Accessible menu



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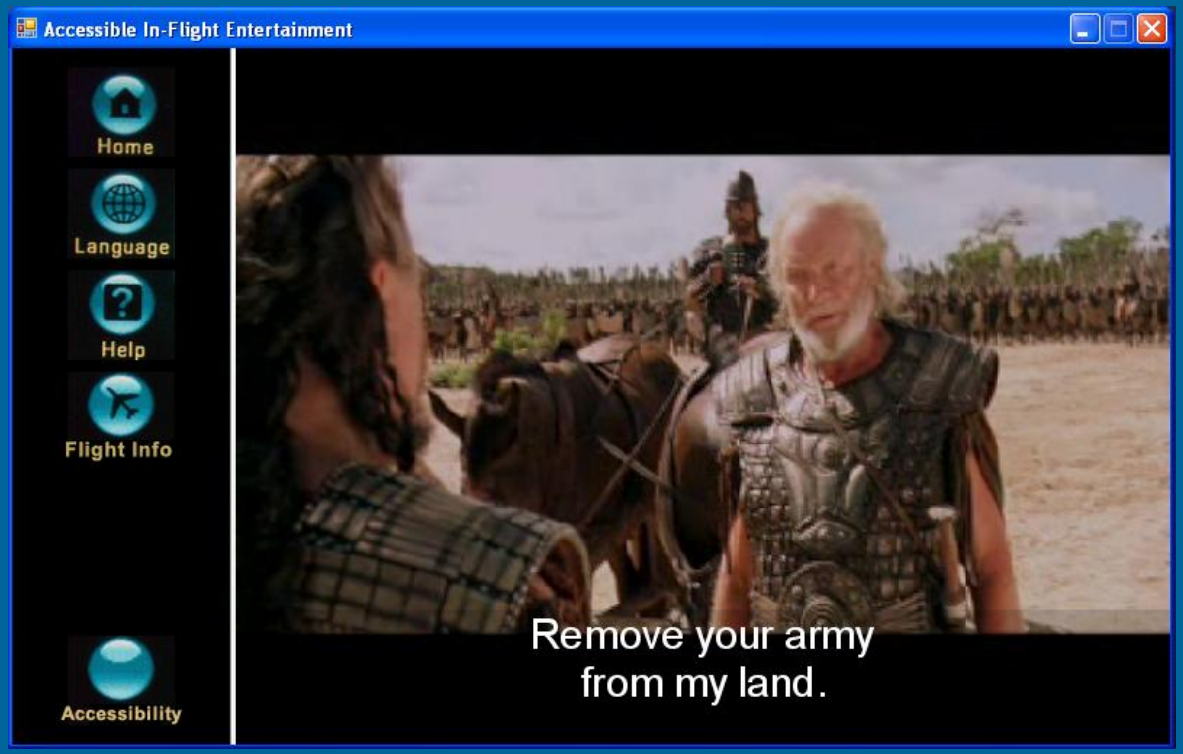
# Making In-Flight Communications and Entertainment Accessible

## Captioned movie



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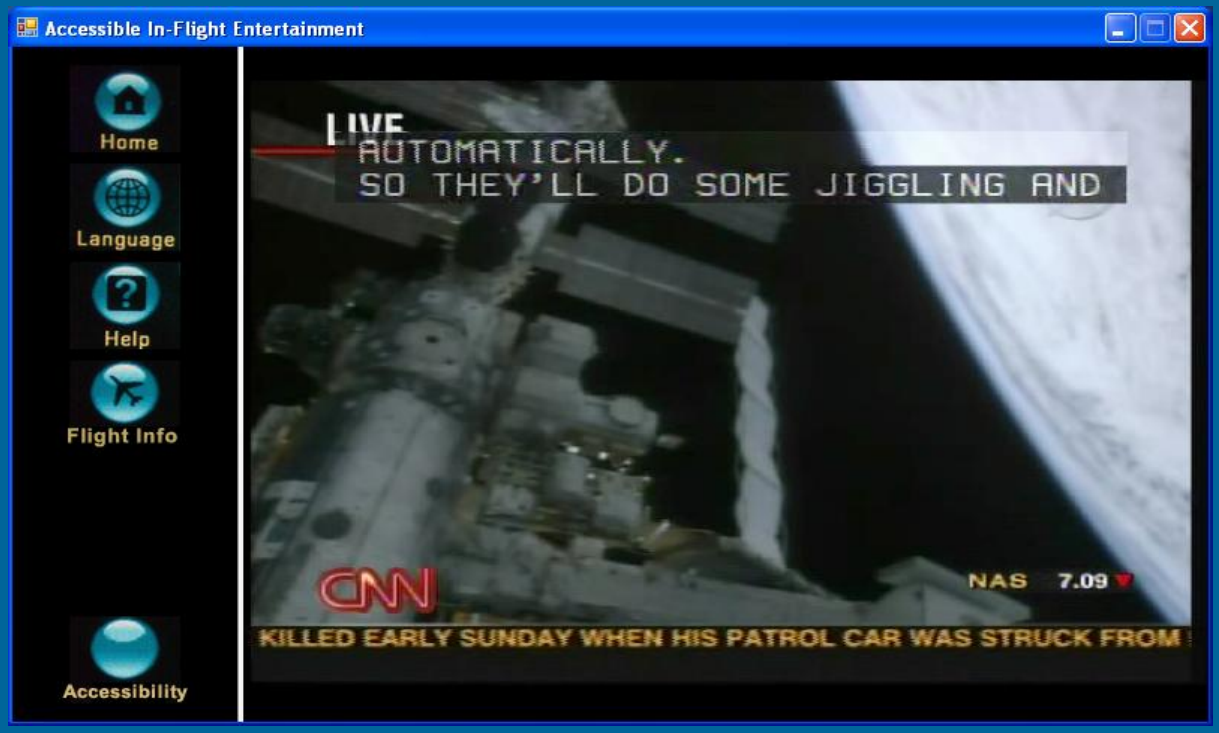
# Making In-Flight Communications and Entertainment Accessible

## Captioned TV



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# FCC - WARN Act/CMSAAC

- Warning, Alert, and Response Network Act federal law enacted on October 13, 2006
- Commercial Mobile Service Alert Advisory Committee (CMSAAC) established within 60 days of enactment
- Purpose: develop a nationwide system for cell phone and pager alerting
- Establish standards, protocols, procedures, other technical requirements and associated FCC rules to enable CMS providers that voluntarily elect to transmit emergency alerts to subscribers

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# CMAS: What types of emergencies?

- Must be imminent threat to life or property
- Amber Alerts (child abduction emergencies)
- Urgent, severe situations only
- Observed or certain
- Messages will come from government (Federal, state, county) -- just carried by the wireless companies

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# FCC - CMSAAC participation

- Experts WARN Act called for included “national organizations representing individuals with special needs, including individuals with disabilities and the elderly”
- Judy Harkins, Gallaudet University and I represented these citizens’ needs to the User Needs Group (UNG) & other working groups

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# FCC - CMSAAC User Needs Group

- Defined emergency message format, addressing non-English speaking users and special needs groups
- Made recommendations for
  - consumer subscription management
  - consumer notifications re: full, partial and non-participating service providers
  - consumer education

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# FCC - CMSAAC User Needs Group

- Developed accessibility considerations for CMAS text service for consumer profiles including:
  - deaf/hard of hearing
  - blind/low vision
  - cognitive
  - manual dexterity
  - elderly
- Recommended use of unique attention audio signals and vibration patterns for CMAS messages

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# FCC - CMSAAC User Needs Group

- Use of Common Alerting Protocol (CAP) supports audio, video, text, images and Web URL's, but CMAS will initially be text-based to the county level
- Text-only especially raises concern for ways to accommodate people who are blind/visually impaired
- Based on user's location when message is sent
- Recommended:
  - FCC consider how CMAS infrastructure accommodate alternate distribution of text for ASL and text-to-speech
  - Carriers offer fully accessible phones

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# CMAS messages

- Required message elements in this order:
  - Event Type or Category
  - Area Affected
  - Recommended Action
  - Expiration Time (with time zone)
  - Sending agency
- 90 Character limit
- Common Alerting Protocol (CAP) value field mapping to defined text

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# More about CMAS

- System would “broadcast” a brief text message to subscribers in an area (e.g., county)
- Not interactive; user is passive recipient
- Not email, not SMS - a very short alerting message
  - For example: Tornado warning, Take Shelter, San Mateo County til 5:30 pm NWS
- Secure system -- avoiding spam
- If phone is turned off, would not receive message
- Next: Fall of 2008, CMS providers must inform FCC of intention to participate in CMAS

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# Web sites

**Access to Emergency Alerts Project**
ncam.wgbh.org/alerts

**The Media Access Group at WGBH**
access.wgbh.org

**The WGBH National Center for Accessible Media**
ncam.wgbh.org

**Accessible Digital Media Design Guidelines**
ncam.wgbh.org/publications/adm/

**Other NCAM projects**
ncam.wgbh.org/projects

**FCC Commercial Mobile Alert System**
www.fcc.gov/pshs/services/cmas.html

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# *Thank you!*


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