



Speech in a Digital World

The transition to digital television presents new opportunities for TTS

February 17, 2009, is the completion date for the transition from analog to digital broadcast. Public-service announcements explaining the switch are becoming more visible, but many people are unaware of the challenges the transition may create for people with disabilities.

Among the concerns for people who are blind or sight-impaired are whether there will be access to on-screen menus, access to other information that appears on-screen only as text, such as news crawls or emergency information, and continued availability of video descriptions.

Current laws require that manufacturers provide varying levels of accessibility for consumers who are disabled, but some legislation applies to analog transmission, not contemplating the usability of digital or Internet media at all. Other legislation simply has not kept pace with technological advances, making it increasingly difficult for the disabled.

The result is that many people with disabilities are precluded from enjoying activities most of us take for granted. For example, decoder circuitry is required only for televisions with screens at least 13 inches in size. Because it is now common for people to watch television programming on small devices like cell phones, the current law does little to ensure accessibility to this medium for people with vision disabilities.

The 21st Century Communications and Video Programming Accessibility Act establishes new safeguards for disability access, ensuring that manufacturers do not abandon people with disabilities as technology migrates to Internet-based and digital communication technologies. "The wizardry of the wires and the sophistication of software programs do little for those who cannot...effectively use them. This bill is an opportunity to ensure that all Americans are offered equal access to these exciting and innovative new technologies," said Congressman Ed Markey, who introduced the bill.

The legislation, in part, requires that video programming be accessible on all video devices, including iPods, DVD players, and battery-operated televisions, effectively eliminating the accessibility exception for devices with small screens. Similarly, the legislation requires easy access to closed captions using on-screen menus and to television controls and program selection menus. "Blind consumers cannot do this at all right now," says Madeleine Rothberg, project director at the National Center for Accessible Media.

Speech recognition technology may ultimately play a prominent role in providing accessible programming for people who are blind or sight-impaired. For example, the menu screens that are used to program functions, such as the clock, time zone, and font colors and sizes for captioning, are really just text. Rothberg's team is building a prototype using an open source media viewer, Myth TV, to illustrate the feasibility of using text-to-speech (TTS) in consumer television products. Each menu item is given an audio tag, and, using the keyboard to manipulate the on-screen menu, menu items are read by the speech-to-text engine.

A Prototype Exists

The prototype uses the speech synthesis software Festival and runs on a Linux-based computer media center with a digital TV tuner card. Availability is anticipated by the end of this year, at which time users will be able to set it up on their computers, attach it to their TVs, and start navigating menus with TTS. The product acts as an antenna, allowing users to bring it with them on vacation to access television programming.

It is hoped that manufacturers will embrace the use of speech technology to make accessible on-screen menus the rule instead of the exception. "Why should people have to carry their own antennas with them?" Rothberg says. "No one else expects to walk into a hotel room and not be able to use the TV."

Using speech technology is a differentiator for manufacturers, maintains Larry Goldberg, director of media access at TV station WGBH in Boston. "Aside from potential requirements," he says, "the use of speech technology tends to make consumer electronics more user-friendly."

Speech technology typically helps people with the user interface, and the general population is getting used to having speech input and output. As a result, we're seeing more of it being built into cars, GPS devices, and the like. Using speech to make television menus accessible is a logical step.

With speech technology, manufacturers have the tools to make their product interfaces accessible. The legwork is being done. The prototypes illustrate the hows. Legislation addresses the whys. The only question left to answer is when. ☐

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Robin Springer is president of Computer Talk (www.comptalk.com), a consulting firm specializing in the design and implementation of speech recognition and other hands-free technology services. She can be reached at (888) 999-9161 or contactus@comptalk.com.