

New & Emerging Technologies in Media Accessibility

By Gary D. Robson

When I was asked to write an article about emerging captioning technologies, my first thoughts were of the cutting edge: high-definition television (HDTV) captions with adjustable sizes, captioned video on the Internet, and eyeglasses that show captions to you (and only you!) in a movie theater. Then I had a discussion with Bill Stark of the Described and Captioned Media Program (DCMP).

Bill had just spoken to a reporter who was doing a story about a “new” technology called “open captioning,” which was being used in a movie theater near her. The reporter was excited about the technology, since she had an 88-year-old father who had significant hearing loss. Neither the reporter nor her father was aware of television closed captioning; this happened this year—55 years after Closed Captioned Films for the Deaf was founded to supply open-captioned feature films, 33 years after closed captioning of *Mod Squad* was demonstrated at Gallaudet University, 25 years after home caption decoders were first offered at Sears, 15 years after the Television Decoder Circuitry Act was signed into law, and 9 years after the Telecommunications Act of 1996 started the clock ticking on mandatory closed captioning.

Even after all these years, captioning itself is still an emerging technology. As sad as this is in some ways, it is hardly without precedent. Remember when fax machines first appeared on the scene? When was that? If you’re like most Americans, you’ll put it somewhere in the 1980s. In fact, the first intercity fax was a photograph transmitted electronically from Munich to Berlin in 1907, over a hundred years ago.

Before a technology can really become commonplace, it must be affordable, reliable, and available. Most importantly, however, people must know about it. The good news is that public awareness of closed captioning is growing by leaps and bounds. The vast majority of you reading this know where closed captioning of broadcast television is today. Let’s take a look at where it’s going in the near future and when the movement started that’s taking it there.

“Old-Fashioned” Analog TV



Once the Television Decoder Circuitry Act took effect in 1993, every new TV set had a decoder in it. The chips going into those TVs had capabilities the original caption decoders didn’t. It has since become common to put rollup captions somewhere other than the very bottom of the screen. Captioning in mixed upper- and lowercase is spreading. Few capabilities in traditional captions are going unused now.

Colored text is one exception. So far, the only place we see colored captions is in the credits at the end of the program. I can remember putting on a demonstration using colors for speaker identification (as the British Broadcasting Corporation [BBC] does in Teletext) over ten years ago.

I think the biggest changes we’ll see in traditional captioning over the next few years will be quality-related. The Telecommunications Act of 1996 has dramatically increased the amount of programming

that must be captioned. Captioning companies—and sometimes the broadcasters themselves—are hiring and training captioners at a dizzying pace, but they simply can't train new people fast enough.

Professional sports broadcasts used to be handed out to the top captioners in a firm. Now, as often as not, trainee captioners are used for regional games. Even prerecorded programs, which are “offline” captioned in the studio, are often far below the quality standards of yore. Offline captioners have the time to research and proofread their captions, but it's frequently not happening.

Over the next few years, as the amount of captioning stabilizes, the industry will be able to get its collective feet under it once again, and we should see captions building up to the quality level of the audio and video. Already, quality standards are being planned by the Accessible Media Industry Coalition (AMIC) and others.

Digital TV (DTV)

I wrote a series of articles in 1998 describing the wonderful world of DTV/HDTV closed captioning. The first draft of the standards document was out, and a lot of new features had been added: a caption “volume control” that allowed viewers to make the text larger or smaller, more colors, more fonts, more symbols, better multilingual support, colored and translucent backgrounds, shadowed and edged letters, and much more.

When developing the standard, we assumed that captioning would be done very differently by now, using all of these new features to enhance the viewing experience. Before any of the software companies had a chance to build new HDTV captioning software, several companies designed “transcoders,” devices that converted old-style captions for use on digital televisions.



Today, virtually nobody is using these new features. HDTV uses transcoded captions that look just like what we've been seeing for the last two decades. As digital televisions continue to proliferate, we can hope to see some of these new features come to light at last.

DVDs and the Internet

Today, the law requires that most broadcast TV shows be captioned. There is no such law, however, for the DVDs and videotapes you rent at the store. The majority of them have captions (or at least subtitles), but there's no recourse when they don't.

Similarly, captioning of Internet media isn't required by law. Unlike DVDs, however, very little Internet media has captions. The capability is there, but few people are using it. There are two competing standards for what's known as “streaming media” captioning: Synchronized Multimedia Integration Language (SMIL, pronounced “smile”) from the World Wide Web Consortium and Synchronized Accessible Media Interchange (SAMI) from Microsoft.

Producing captions for Internet broadcasts is extremely simple. The National Center for Accessible Media (NCAM) created a computer program that lets you caption computer video—and audio—files

using both standards. The program is “MAGpie” (Media Access Generator), and NCAM gives it away for free. A reasonably technical person can even produce SAMI and SMIL captions without the aid of a captioning program.

A few organizations provide captions on streaming media, most notably the DCMP, which has hundreds of hours of captioned streaming video available online at www.dcmp.org.



Captioning in Movie Theaters

When closed captions were introduced for television, there was a single standard. The Federal Communications Commission (FCC) set aside a place in the broadcast signal for captions in 1976, and a cohesive group of broadcasters built standards that they could all agree on.

In theaters, unfortunately, we’re faced with a jumble of competing technologies. Subtitles and open captioning have been around for decades, and large LED caption signs in the front of the theater were introduced in the 1980s. NCAM pushes its reflective captioning system called “Rear Window Captioning.” Cinematic Captioning Systems has a similar reflective system called “Bounce Back.” Personal Captioning Systems has a “palm-captioning display” and eyeglasses that display “floating” captions visible only to the wearer.

Having the choices is a good thing, but all the possibilities have created confusion in the theater chains. They don’t know what their deaf viewers want, and some are afraid to put in a system for fear they’ll waste money on the wrong one.

This proliferation of competing technologies is common in almost all young industries. The stronger systems will survive, and as they spread and mature, costs will come down. The movie theater will be the next legal battleground for accessible media.

How We’ll Get There

Making media accessible requires not only technological innovation, but concerted and coordinated advocacy. Twenty years ago, people only dreamed of the level of broadcast TV accessibility we have today. We achieved it because a group of strong, like-minded people pulled together to make it happen. Massive hurdles were overcome. Federal legislation, technology, and public opinion all had to be brought into agreement, and amazing things were accomplished.

There are still hurdles to be overcome. The spread of captioning from television to the Internet and theaters can be accomplished by the same kind of single-minded enthusiasm that brought it to TV in the first place. I believe that if we continue to work together, we’ll see amazing changes in the next ten years. Then it will be time to look for the next new frontier in media accessibility.

About the Author



Gary Robson is a captioning writer, consultant, and advocate. He received the Andrew Saks Engineering Award from Telecommunications for the Deaf, Inc. (TDI) in 1997 for his contributions to accessibility for deaf and hard of hearing people. He has written three books and over 50 articles about captioning, including the definition of closed captioning in the *World Book Encyclopedia*. His most recent book is *The Closed Captioning Handbook*. He has designed a variety of captioning systems and equipment and given accessibility seminars for the U.S. Department of Education, U.C. Berkeley, the International Television Association, and many other groups. He currently lives in Montana with his wife, Kathy, who is a real-time captioner.