

2006 da Vinci Award Nomination: Motion Picture Access[®]/"MoPix[®]": Rear Window[®] Captioning and DVS Theatrical[®]

Introduction

In 1972, WGBH, now the largest producer of programs and Web content for the Public Broadcasting Service in the United States, made television and video accessible for the first time for people who are deaf or hard-of-hearing by providing program dialogue as text or "captions" on the lower third of the television screen.

WGBH next developed a technology to enable people who are blind or visually impaired access to visual images. The result was the introduction of Descriptive Video Service[®] or DVS[®] in 1990. DVS provides narrated descriptions of key visual elements during pauses in the soundtrack of a program. Video descriptions created by WGBH have long been available for a number of programs and movies airing on PBS as well as on CBS, Nickelodeon, Fox and Turner Classic Movies cable network, and on videos distributed through the DVS Home Video[®] service, which for many years was funded by the U.S. Department of Education and is now supported by the private sector. Together these technologies, captioning and video description, enable thirty-six million people in the U.S. to fully enjoy television and video programming independently.

Background: Access to Movie Theaters

The Americans with Disabilities Act does not require movie theaters to provide captions or description for films for patrons with sensory disabilities. The ADA does require movie theaters to provide assistive listening systems (ALS) in all auditoriums, with a number of headsets available based on the number of seats per auditorium. Unfortunately, ALS does not address the needs of patrons who are deaf, those that have too little residual hearing to utilize an amplified soundtrack, or those with hearing aids or cochlear implants that are incompatible with ALS.

The ADA specifically stipulates that theaters are not required to provide open captions. At the time the ADA was written, open captioning (films with captions etched in like subtitles) was the only means of providing access via text to patrons who are deaf or hard of hearing. A limited number of subtitled prints were shuttled from city to city, and accessible screenings would be available weeks or months after a film's release, and then on a midweek day or evening during slow periods at theaters. The ADA does not address description for patrons who are blind or visually impaired.

Motion Picture Access/MoPix

Building on its past successes in pioneering access solutions, and in response to consumer demand, in 1992 WGBH's Media Access Group (captioning and description services and its R&D arm, the WGBH National Center for Accessible Media) began researching discrete captioning and description technologies for movie theaters to enable independent access to films. From the outset, we heard a consistent message from consumers: Equal access means that movies should be available with captions and descriptions on the same day and at the same time as they debut for general audiences, for every show, not just special screenings. Consumers expressed a strong desire to enjoy films with their families and friends, and to

participate fully and without delay in the conversations, debates and cultural touchstones the "latest, most-talked-about" films provide.

At the same time, industry representatives we consulted made sure we understood that open-captioned screenings, for each and every movie for each and every screening, would never be acceptable to the Hollywood studios and theater owners. The potential of open description for blind or visually impaired patrons never even made it into the discussions.

As a result, WGBH developed two innovative technologies that make it possible to provide hidden closed captions and descriptive narration for deaf and blind patrons, without the need for special prints or screenings or altering the experience for the general audience. Collectively these systems are known as Motion Picture Access or "MoPix."

The systems are now permanently installed at more than two hundred and fifty first-run and specialty theaters (large format/IMAX theaters, national park service visitor centers, Disney theme parks) in the U.S. and Canada. Theater chains currently welcoming patrons with sensory disabilities into a number of their theaters include AMC Theatres, Carmike Cinemas, Clearview Cinemas, Consolidated Theatres, Crown Theatres, Cineplex Theatres (Canada), Malco Theatres, Mann Theatres, Megaplex Theatres, Muvico Theatres and National Amusements Showcase Cinema Theatres.

At the urging of WGBH and of consumers, chains are also adding information about accessibility of films in their daily online and print film and showtime listings, which increases awareness of the systems and of access considerations in general. Negotiations with additional theater chains regarding new MoPix installations are ongoing.

How the Systems Work

The patented Rear Window Captioning system displays reversed captions on a light-emitting diode (LED) text display that is mounted in the rear of a theater. Deaf and hard-of-hearing patrons use transparent acrylic panels attached to their seats to reflect the captions so that they appear superimposed on the movie screen. Design principles for the development of the Rear Window Captioning system reflect input from the film and theater industries and from consumers, and include the following:

- The system should be as unobtrusive as possible, to both deaf and hearing audience members;
- It should be as user-friendly as possible and require as little training as possible;
- It should work from every seat in the theater, or as many as possible, including auditoriums with stadium seating;
- The system should allow consumer access on the first day and first showing of a new movie and all subsequent showings thereafter;
- Devices should be unbreakable, not be worth stealing and as simple and inexpensive as possible;
- The device should be usable by patrons using wheelchairs;
- The device should not require wiring at individual seats.

DVS Theatrical delivers descriptive narration via infrared or FM listening systems, enabling blind and visually impaired moviegoers to hear the descriptive narration on headsets without disturbing other audience members. The descriptions provide narrated information about key

visual elements such as actions, settings, and scene changes, making movies more meaningful to people with vision loss. Both systems run from a server developed by Digital Theater Systems, or DTS.

The Systems Debut, More Progress Follows

In November 1997, closed captions and descriptive narration were available for the first time, as part of a regular feature film presentation in a movie theater. The systems made their debut at the General Cinema Theater in Sherman Oaks, California, during the presentation of the Universal Pictures film, *The Jackal*. (Note, General Cinema Theatres has been acquired by AMC Theatres). This pioneering effort has led to accessible presentations of more than 250 major motion pictures, most recently "The Inside Man," "United 93," "Ice Age 2: The Meltdown," "The Da Vinci Code" and "Curious George" for the day and date of their general release in theaters. Films to be released in the summer of 2006 include "X-Men 2: The Last Stand," "Cars," "Superman Returns" and "Pirates of the Caribbean: Dead Man's Chest." The Media Access Group at WGBH is on track for delivering over 80 films with closed captioning and description throughout 2006. These are in addition to the closed captioned and described films now playing at equipped IMAX and other specialty theaters.

Many film studios including Buena Vista Pictures, Columbia Pictures, Sony Pictures, 20th Century Fox Films, Universal Studios, Warner Bros. Pictures and The Weinstein Company release closed captioned and described films.

In the summer of 2005, WGBH worked with Boston Light & Sound, manufacturers of the Rear Window reflector, and Multi: Design for People, an industrial design firm that specializes in inclusive design principals, to update the reflector design. This new model, which takes advantage of materials developed and readily available since the original design, was tested with focus groups in Boston and is now ready for shipment to theaters. (An illustration of the new reflector will be provided with other application materials to the da Vinci Award Committee.)

Feedback from the Community

The Media Access Group hears literally every day about the positive effect these access systems have had in the lives of deaf and hard-of-hearing, blind and visually impaired movie fans, their friends and families. Here are two recent messages:

I wanted to tell you how wonderful it is that our 13 year old son is able to see movies at the same time as his friends. While he has always had the option of seeing movies with captions on dvd or vhs, these always come out months or years after his friends have seen them. Young people with hearing loss have enough problems communicating with their peers without being left out of conversations about current movies. It is great for him to see them at the same time as his friends so he can feel a part of what is going on with his friends. Seeing a movie may not seem like a big deal to those who can do so whenever they want, but movies are an important part of teen culture and a vital part of my son's connection to others. Thank you so much for the investment in rear window captioning and for the experience you make possible for my son and others like him.

-D.T. via e-mail

I recently saw the movie "Kingdom of Heaven" in DVS and was stunned at the experience. The narration filled my mind with so many visual images that when I recall the movie it is like I actually viewed it. It makes it hard to go back to a movie theater and just listen.

-W.U., Moreno Valley, CA

We are forwarding to the da Vinci Award Committee a videotape which demonstrates the Rear Window Captioning and DVS Theatrical systems in use, comments from users, and from members for the production/distribution and exhibition industries here in the U.S. It will provide the panel of judges a more effective introduction to the systems than text alone can offer. One of the newest MoPix installations will be up and running in the Detroit area very soon, at the AMC Livonia 20 (Estimated install date is June 2006).

Rear Window Captioning and DVS Theatrical- The Cost and Installation Procedure

At present, the one-time cost to an exhibitor for the Rear Window and DVS Theatrical systems is approximately \$12,000 per screen or auditorium. Some theaters have chosen to make the system portable for ease of movement between auditoriums in a multiplex. The cost for theaters of all the components of the systems will continue to decrease given economies of scale and volume discounts. All other costs of providing closed captions and descriptions are born by the studios which produce and distribute the films.

While WGBH developed these access systems, we do not sell the system components. Theater chains can contact a single systems integrator to assemble the various system components, provide guidance on placement of technology based on auditorium layout, to schedule installation and to provide any follow-up on questions or routine maintenance over the life of the installation. Once a movie has been captioned and described, conventional theaters can obtain the captions and descriptions on CDs. A reader attached to a film projector reads a timecode track printed on the film and signals the DTS-CSS player to play the audio synchronous to the film. For the Motion Picture Access efforts, DTS adapted its technology to include the caption and descriptive narration tracks on a separate CD-ROM, which is downloaded into the DTS-CSS player. A theater's projectionist simply instructs the player to play the programs desired—film audio, captions (data output to the LED display) and descriptions (data output to the infrared or FM emitter).

Measuring Results

The Media Access Group answers to many masters on its MoPix efforts—Hollywood studios, exhibitors and consumers. While initial development of the systems was funded by a grant from the U.S. Department of Education and outreach efforts were funded for some time by the NEC Foundation of America, the efforts have for years been wholly funded by the private sector. The number of films being released with closed captions and descriptions has grown dramatically over the years. This speaks to the ease with which studios can integrate access features into their post production process, and more importantly to film distribution departments which monitor every marketing and distribution cost very closely, it speaks to an acknowledgement that this is money well spent. That the captions and description tracks can then be utilized for subsequent distribution windows—videos and DVD, pay cable, broadcast television, etc., is a point not lost on entertainment conglomerates.

The number of new theater installations speaks to the popularity of closed captioned and described films. Theater chains, under enormous pressures themselves to show a profit with a

minimum of expense, are installing additional systems in more locations as a result of requests from members of their communities. While there is an initial introduction phase— introducing patrons with disabilities to the systems, introducing local theater staff to a new clientele with varying communication and mobility needs— the feedback the theaters and we have had has been very positive. Several installations have come about as a result of fundraising by local movie fans to provide matching funds to local theaters. One such story is documented on the MoPix Web site as a "how-to" for other patrons (see One Advocates Journey at www.mopix.org).

The Future: MoPix and Digital Cinema ("d-cinema")

When theaters start employing digital distribution and projection, the caption data and the narrative descriptions will be easily embedded into the digital signal being projected. The Rear Window concept will still be viable and practical: the data will be sent to a datawall which displays the captions in reverse on the rear wall of the theater and a reflector at the seat of the deaf or hard-of-hearing moviegoer will reflect those captions. The moviegoer will then continue to have their private caption-viewing experience. Similarly, d-cinema will allow multiple audio tracks on a single film. Patrons will likely use settings on their headsets to choose between narrative descriptions, and the film's audio track in Spanish, French, German or additional languages. Rear Window and DVS Theatrical systems are based on very flexible data formats that can be adjusted to change with whatever new display and audio reception technologies emerge.

WGBH, at the forefront of developing solutions for providing captioning and description services for digital television, is also closely monitoring the development of d-cinema. We received funding from the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education to research and develop solutions for access to digital cinema. We participate in working group activities of the Society of Motion Pictures and Television Engineers (SMPTE) around both DTV and d-cinema. While widespread adoption of both technologies are on the horizon at varying distances, access services won't appear automatically when current broadcast and film distribution methods are converted. Several years will likely pass before d-cinema is fully in place, and we are working hard within the industry to assure adequate bandwidth and appropriate data standards in the bit stream for captioning and description.

da Vinci Award application submitted by:

Mary Watkins, Outreach Director
Media Access Group at WGBH
125 Western Avenue
Boston, Massachusetts 02134
617 300-3700 voice, -2489 TTY
mary_watkins@wgbh.org
<http://access.wgbh.org> and www.mopix.org