Expanding Access with Wireless Technology

Disability Access Workshop

WRITTEN STATEMENTS

May 13, 2010

Remarks of Judy Harkins, Ph.D.

Gallaudet University, Technology Access Program

RERC on Telecommunications Access

Thank you for the opportunity to comment on technology trends and recommendations.

I have been working with deaf and hard of hearing people for nearly four decades. Years ago, I would get questions from hearing parents of deaf and hard of hearing children about how to "call" their kids home. In those days, it meant literally yelling from the house for the child to come home. Today, I don't get those questions. Wireless technologies and pricing strategies, including family plans and flat-rate pricing, have eradicated this problem for many families, regardless of whether the children in the family have or do not have disabilities.

This is one small example of how mobile devices can help people with disabilities, their friends, families, and communities. Today, the utility of wireless technologies is skyrocketing as convergence takes some of its most advanced forms.

Promising Trends

There are many promising trends in wireless telecommunications that on their own can support the accessibility, usability and utility of devices for people with various types of disabilities. As the functionality of wireless technology increases through convergence, it is virtually impossible to mention every possible benefit, given the wide array of disabilities.

- Open platforms offer third-party developers the opportunity to develop both niche and broad-market applications that may benefit people with disabilities by providing new uses and accessibility tools.

- Increases in bandwidth and spectrum are desired both by industry and people with disabilities to provide more functionality on the go to more users, without the industry finding it necessary to sacrifice quality in such important

communication functions as voice quality and two-way video quality for signed communication.

■ Even where the highest bandwidth is not available, the merging of wifi and cellular functions into a single compact device provides users with more opportunity to access broadband from hotspots without carrying bulky equipment.

■ Increasing processing speeds in smartphones can likewise be used to "crunch" the video data in the handset and mitigate the need for high bandwidth for such applications as two-way signed conversations. The MobileASL project at the University of Washington has developed software for optimizing ASL in phones using that software, to control (minimize) the amount of bandwidth needed for two-way conversation. Will this approach be adopted in mainstream devices?

■ Making the Internet mobile and accessible brings the communication and information resources on the 'net to people with disabilities wherever they are, and this is particularly important because other sources, such as stopping by a gas station to ask directions, may not be possible if there are communication barriers present.

■ Third party access services, such as relay services, have been and will continue to be improved for mobile use. Other remote services could also be used for remote translation or transcription for face to face situations – interactions with police officers, for example.

■ Front-facing cameras (where the camera and screen are co-located for video communication) are becoming available on a few models and hopefully this is a trend and not a temporary situation, as it is necessary for two-way video conversation.

■ Global positioning technologies and tracking technologies provide convenience in way-finding and new resources for personal and public safety.

■ The Commercial Mobile Alert Service, planned for rollout in 2012, will provide location-based short text alerts to serious emergency – especially helpful for people with disabilities who may not have access to audio information provided

by, for example, car radios, sirens, public address systems, or word-of-mouth information from bystanders.

■ Flat-rate plans, including text-only plans, have enabled many people to access wireless technology even on limited budgets – for example, most of our students at Gallaudet.

■ Captioning capability, although it usually lags behind the introduction of a video service, has been increasingly provided in popular Internet video venues.

Areas meriting attention

Just because a technology holds potential for accessibility, as we know from experience, does not mean it will be implemented. The market will make the determination, and it is the FCC's role to monitor and enforce the industry's obligation to make products and services accessible where readily achievable but where the market fails to provide. As indicated above, more is readily achievable now than in the past.

■ We are still lacking a viable way for people who rely on text and video to contact 911 in emergency. Although plans are in place for the next generation of 911 services to be robust in regard to accessibility, the realization of the next generation in a country as large and diverse as this one is far away. The FCC needs to lead in putting in place a near-term – and here I mean within a year or so – solution for people to be able to contact emergency responders when they are mobile, through text, and later, through video.

■ As new air interfaces are introduced and new forms of voice communication enter, the prevalence of hearing aid compatible devices needs to continue to improve, but this is an area where clearly, market forces will not dictate design.

■ Captioning of television broadcast to mobile devices is a critical feature with mainstream application; but without an obvious market pull, it often lags behind and requires more consumer advocacy than should be necessary. Given that the reasons for the 13" screen requirement in the 1990 Television Decoder

Circuitry Act are obsolete, caption capability in mobiles should be a logical requirement.

■ The introduction of CMAS makes it ever more important that speech output on a wide array of mobile phones be made available. If CMAS is successful in its mission, it will be essential that a wide array of mobile devices be able to speak the message so that it is accessible to people who are blind and who have low vision – even if they have plain vanilla mobile phones. This function will benefit not only blind users and those with low vision, but also will possibly be of value to highway safety because drivers, rather than grabbing for a phone, would hear the message if they wish. The opportunity here is that memory is ever cheaper and the array of phones that could support speech output is ever-expanding.

■ The general public began to "discover" text communication after the deaf community had been using it for a generation for telephone communication. Will the same thing happen for video communication? The answer to this question is still uncertain, since we do not know if this will be a killer app as text over Internet has been. Front-facing cameras are critical to this form of communication and time will be needed to allow the application to take hold. Interoperability of video-mobile devices with land-based videophones used by deaf and hard of hearing people will possibly be a challenge, as the newer SIP technology in mobiles will not work with a large portion of the embedded base of videophones.

■ Voice quality on mobile devices has not traditionally been one of the selling points of this service. The availability of bandwidth and faster processing opens the door for more high-fidelity audio, benefiting millions of people who have acquired hearing loss in their older years – a number that will rapidly grow with the aging of the baby boomers. Will mobile phones begin to provide a better listening experience?

■ Along with video interoperability, text interoperability needs to be provided at a level comparable to that provided for voice. Without an international standard for conversational text, functional equivalency in telecommunications cannot be attained.

■ International harmonization has never been more important, with our global economy. Companies want it and consumers want it. The FCC needs to have a proactive role so that the public interest is served and the standards of accessibility only improve over time. Collaboration among FCC bureaus will be necessary, particularly involving the International Bureau. I have appended to these remarks a list of areas in which harmonization will be critical. This input was provided by Gunnar Hellström, Omintor AB of Sweden, who is the leading international expert in telecommunications standards and harmonization efforts related to accessibility, and a partner in our RERC on Telecommunications Access.

Appendix on Harmonization

Provided by Gunnar Hellström, Omnitor AB, Sweden

Some of the ongoing activities that would need international harmonization are:

■ Revision of Sections 255 and 508.
■ NG-9-1-1 technical specification for IP access to 911.
■ U.S. National Broadband Plan
■ European Union revised Electronic Framework Directive application
■ NG112 technical specification for IP access to 112 (counterpart to U.S. 911) emergency services in Europe.
■ IETF standardization in the emergency call area.
■ Swedish Procurement Requirements for Total Conversation
■ EU mandate 376 for European accessible procurement standard
■ REACH112 European project for deployment of Total Conversation and access to 112 emergency services.

Technical facts

The standards that are in best position to support the communication and harmonization described are:

■ IETF 3261 SIP call control
■ ITU-T H.264 video coding with IETF RFC 3984 transport.
■ ITU-T T.140 Real-time text coding with IETF RFC 4103 transport.
■ ITU-T G.722.2 (AMR-WB) wide-band audio coding with RFC 4867 transport.

- These form together a solution for Total Conversation, and are included in the following environments:
- 3GPP TS 26.114 IMS Multimedia Telephony media considerations.   (for wireless broadband environments)
- IETF RFC 5012 Requirements for IP based emergency access.

For assured legacy interoperability, the following protocol standards are also important to support in broadband products.
- ITU-T H.263 video coding with IETF RFC 4628 transport.
- ITU-T G.711 audio coding with IETF RFC 3551 transport

For interoperability with legacy systems, it may be important to provide gateway services at least to the following:
- PSTN voice telephony.
- The nationally used subset of ITU-T V.18 for TTY and other text telephony systems.

AFB American Foundation®
for the Blind

Remarks of Paul W. Schroeder
Vice President, American Foundation for the Blind

I am pleased to provide these comments on behalf of the American Foundation for the Blind (AFB). Mobile technology has stimulated revolutionary changes in communication and significantly enhanced access to information and entertainment. However, in spite of advances in the capacities of mobile technologies, people who are blind or visually impaired are too often denied these opportunities because of the twin barriers of accessibility and affordability. As the dependency on mobile communications technologies in personal and work life grows, it is vital to ensure that consumers with vision loss are not left behind. The Federal Communications Commission has both the legal mandate (Section 255 of the Communications Act) and the technical competence to successfully address this challenge. The disability community is very enthusiastic about the vision articulated in the Commission's broadband plan and in the associated paper, "A Giant Leap and A Big Deal: Delivering on the Promise of Equal Access to Broadband for People with Disabilities."

According to the Centers for Disease Control and Prevention's (CDC) 2009 National Health Interview Survey results, there are more than 25 million Americans with significant vision loss. With almost ten percent of the total US population experiencing significant vision loss, it is essential to ensure that modern communications technology is accessible and widely available for this group of consumers.

Section 255 of the Communications Act of 1996 requires telecommunications equipment and services to be accessible to, and usable by, people with disabilities, if readily achievable. However, people with vision loss routinely state that few accessible cell phones are available. In our view, the FCC has not vigorously enforced the accessibility requirements of Section 255 which has likely contributed to less focus on compliance by cell phone manufacturers and carriers. Unfortunately, accessibility has lagged even further in advanced mobile technologies, perhaps in part because Section 255 is limited to telecommunications services and some of the advanced features (such as web browsing) have been considered information services.

AFB recently conducted a survey of a nationally representative sample of 500 individuals with vision loss to gain some perspective regarding their experience in using mobile and other information technology. We are still analyzing the survey and plan to issue a full report in July 2010. I do want to mention a couple of initial findings that should be of interest to the FCC. Of those surveyed, 68% (340) own mobile phones. The good news is that the majority of those using their mobile phones to make calls were satisfied with their phone's ability to make calls (91%). However, only 20% (99) of those with vision loss surveyed said they use their mobile phone for texting and less than 10% (51) said they use their mobile phone for browsing the web. A substantial majority of survey participants (89% of those experiencing limitations in using their mobile phone for text messaging and 82% of respondents experiencing limitations in using their phone for browsing the web) felt the limitation was the inability to read the information on the display of their mobile device.

■ What are the key disabilities access challenges that need addressing?

Although nobody could argue that progress hasn't been made, the American Foundation for the Blind is not satisfied with the current state of cell phone accessibility. In 2003, the American Foundation for the Blind (AFB) conducted a targeted survey of individuals with vision loss regarding the access features they would most want included in cell phones. The results of this research, dubbed the "Sweet Sixteen" guided our access evaluations. The top three features on that list were: Keys that are easily identifiable by touch; voice output (of menus and other display information); and accessible documentation. Since that time, we have also stressed the need for phones with displays with high contrast and magnification adjustments to be readable by people with limited vision. AccessWorld®, AFB's online technology publication, covers the issues posed by small visual displays in a July 2009 article "Combating the Small Visual Display Invasion: AFB Works to Set a Display Quality Standard"

Unfortunately, ten years after the issuance of regulations by the FCC to implement Section 255, there are too few phones available that include full access via speech output to all display information, and display screens are not designed to be viewable by most people with low vision. Additionally, the keys and controls on devices seem to have gotten harder to identify by touch or with limited vision. As discussed in the next section, both Apple and Google have led the way in demonstrating a new strategy for accessibility to mobile technology.

The development of third party access software has led to welcome improvements in accessibility of cell phones, and more recently advanced mobile devices. However, these advances have also created barriers. Products such as Code Factory's Mobile Speak and Mobile Magnifier and Verizon's TALKS provide screen reader and magnification access for many functions on mobile devices. Unfortunately, these applications often cost as much or more than the mobile device to which they provide access. For example, Mobile Speak is $295 and Oratio (the software application that provides access to Blackberry devices) is $495. (To their credit, both AT&T and Verizon do provide a subsidy for the cost of the software on certain phones). The software also does not work on all products within a product line and is often only useable on the more expensive devices. In short, these third party applications have provided important accessibility solutions, but with limitations and at a steep price, popularly referred to as "disability tax."

There is also a need for better and more comprehensive information about accessibility with regard to mobile technology. Too often, consumers find vague and general statements about a wide selection of phones with lists of access features without details on which devices have which features. (See the comment below on the value of an information clearinghouse). In addition, consumers with vision loss continue to indicate that customer-facing personnel have little or no information about access features. Training is obviously needed as well as better internal company resources so that these personnel can quickly gather current accessibility information for the products they sell to the public.

The increased complexity of mobile technology may be creating usability barriers, especially if accessibility is not fully or effectively implemented across the device and accompanying services. Each additional feature can add another layer of inaccessibility. In fact, as cell phone manufacturers compete to be the first to add new and more features to their products it is becoming increasingly difficult to find a relatively simple cell phone with only basic features. Yet, the impressive accessibility design included in the Apple iPhone suggests that full accessibility, even to a touch screen, is possible. As mobile technology becomes more dependent on touch screens, all manufacturers need to address accessibility for people with vision loss and other disabilities. For a review on the accessibility and usability of iPhone, see the September 2009 edition of AccessWorld®: The Revolutionary New iPhone - AccessWorld® - September 2009

■ How is current technology striving to meet these challenges?

As noted earlier, significant advances in accessibility have come from the development of third party access software. Code Factory and Nuance continue to add features and improve their access software for the mobile environment. Recently, RIM has worked with Humanware, a large assistive technology company, to develop Oratio to provide access to some products in the Blackberry line. Oratio is reviewed in May 2010 edition of AccessWorld®: A Review of Oratio: A Screen Reader for BlackBerry - AccessWorld® - May 2010.

Perhaps no other development has been met with such enthusiasm among consumers with vision loss as the access features built into the Apple iPhone. At one time, the notion that a touch screen could be made accessible for someone who is unable to see the screen seemed fanciful. Now, people with vision loss are ardent admirers and users of the iPhone. Google has since followed Apple's lead by building access into its Android operating system, including touch screen access.
Android is reviewed in May 2010 edition of AccessWorld® Can an Android Make Your Mobile Phone Accessible? - AccessWorld® - May 2010. Just as important, Apple and Google are building in access at no extra charge. Furthermore, Apple and Google are developing guidance to make it easier for third party application developers to build in access.

The dramatic improvement in the capacity of mobile devices and networks, combined with the robust accessibility available in Apple or Google products or through third party software, puts consumers with disabilities tantalizingly close to the dream of independent and full accessibility. In this environment, there should be no need to exempt technology providers who must either build in accessibility, or include third party software applications to make their products accessible.

■ What should the FCC's role be in ensuring accessibility to wireless products and services by people with disabilities?

I cannot overstate the need for the FCC to carry out clear, comprehensive and vigorous enforcement of Section 255. Through enforcement action, the FCC could clarify accessibility expectations and the limitations of the readily achievable exemption. However, it seems that the FCC generally has failed to address the broad pattern of inaccessibility across much of the telecommunications equipment sector. Instead, enforcement action has seemed to be narrowly focused on obtaining a "solution" for an individual consumer. Too often, the FCC settles complaints by

getting a consumer's money back or a replacement product, which while marginally better for that consumer, does not improve accessibility. Since consumers with disabilities have no other recourse to address inaccessibility, I urge the Commission to look more broadly at accessibility complaints as indicative of a systemic problem rather than as expressions of individual dissatisfaction with one product. I also encourage the Commission to see the relationships among consumer complaints, or to undertake investigations in areas where the telecommunications industry appears to have broadly failed to address accessibility.

The ongoing debate over the scope of Title II of the Communications Act has also likely hindered accessibility. For example, while I expect that most consumers would assume that text messaging is a substitute or replacement for voice telephone calls, the Commission has not yet made this determination and many in the telecommunications industry apparently believe that text messaging is an information service and therefore not covered by Section 255. Mobile technology routinely includes text messaging capability, but also other functions such as web browsing, email, and numerous other features not traditionally covered under Title II. Yet, consumers naturally do not understand why the telephone functions of a mobile device are required to be accessible, but not the other communications features.

■ Information Clearinghouse

We applaud the FCC interest in considering the establishment of an information clearinghouse related to accessible information and communication technology products and services. Consumers with disabilities would derive great benefit from such a clearinghouse if it contains specific information about products/services and specific accessibility features. Consumers need this kind of information in order to select products and services. Technology developers would also benefit from the opportunity to showcase accessibility accomplishments. Ensuring that interested and knowledgeable individuals are able to provide feedback and comments on information (sometimes referred to as crowd sourcing) is also a very important part of such a clearinghouse. Of course, this clearinghouse concept is also included in proposed legislation, H.R. 3101, the Twenty-first Century Communications Act.

10 G Street, NE, Suite 550
www.tiaonline.org | Washington, DC 20002

Tel: +1.202.346.3240
Fax: +1.202.346.3241

Telecommunications Industry Association (TIA)

TIA member companies design, produce, and deploy a wide variety of devices with the goal of making technology accessible to all Americans – an objective we share with the Commission. Industry has worked voluntarily and productive with the disability community on a number of accessibility initiatives to achieve this goal. TIA has also worked closely with the Commission, recently in the context of the National Broadband Plan, to ensure consumers remain connected through ICT products and services.

TIA member companies' products offer an extensive range of accessibility features that improve communication for all consumers. Specifically, TIA members manufacture products with instant messaging (IM), non-audio notifications, visual display and hearing aid compatibility for the deaf and hard of hearing; voice recognition, one-touch dialing, text-to-speech, reverse contrast, and text magnification for those with sight or mobility impairment. TIA is an accredited standards developing organization (SDO) which has developed standards used to make ICT more accessible, most recently including TIA-1083, a hearing aid compatibility standard that can be used on digital cordless phones and newer digital technologies, such as Wi-Fi®, Voice over IP, USB, and Bluetooth®.

The communications landscape is constantly evolving, in large part due to technology, which has allowed us to communicate at home and on the go, using speech, text, and even video. While these developments undoubtedly improve the lives of all Americans, they also present challenges. This is why TIA consistently engages with lawmakers and the disability community on the best way to overcome these challenges, not only through technology but open communication among all stakeholders. TIA commends the Commission for opening an honest discussion on accessible communications and we look forward to continuing the discussion.

May 13, 2010