

Paradigm Changes Noted

- Exodus Towards IP & VRS by TTY Users
- TRS Providers Rethinking TRS Definition
 - PSTN to Internet
- Functional Equivalence Based on Senses
 - VRS a “natural” telecom conversation
 - VRS not an add-on value

Paradigm Changes

- Interpreter
 - From free-lance to desk-bound work
- Internet Relay Easier for Those With Computers
 - No need to switch to TTY
- Internet-Enabled Services Require Different Regulations
 - Unique challenges of Internet

Internet-Enabled Service Funding Issue

✧ Interstate TRS Fund versus State TRS Fund

- Bottom Line is no matter which funds it:
Ratepayers ultimately pay
- Federal Government should opt for most cost effective system to subsidize Internet-enabled services

Federal Subsidization Route

- Multi-Vendoring Produces Constant Competitive Activities Among Vendors
 - Enable video and IP users choice of vendors
 - Users able to call anywhere in the USA
 - Most cost effective

State Subsidization Route

- Competition Only Happens Once With RFP Procedure
- States Not Likely to Offer MV
 - Instead select only one vendor
- Price Per Min Dependent on Historical Call Volume
 - States with small population will pay higher ppm
- If States Adopt MV
 - Costs likely much higher

Spin-Off New Internet Features

- ▶ Video Mail
- ▶ Video Email
- ▶ Instant Message
- ▶ Pagers

Conclusion

Internet-Enabled Services

- VRS and IP Subsidized by National Fund
- Should Have Special Regulations
- Separate from Traditional TRS
- Functional Equivalence Based on Senses

Avaya Presentation, FCC Accessibility Solutions Summit, 7 May 2004

Paul R. Michaelis, Ph.D., C.P.E.
Consulting Member of the Technical Staff, Avaya Labs

Thank you for inviting Avaya to speak at this summit. We appreciate the opportunity to contribute.

In most cases, private industry prefers to rely on market forces, rather than government regulations, to guide decisions about the products it should offer. However, with regard to VoIP systems and services, it is clear that market forces alone will not protect the rights of individuals with disabilities. The history of Avaya's Intuity™ AUDIX® voicemail system may illustrate why some form of regulation is essential.

In 1993, I helped design and implement the TTY user interface for this system. A key feature, beyond the ability to do simple TTY messaging, is that callers may select whether they wish to be prompted in voice versus TTY format. This means that the same phone number can be given to voice and TTY callers. Regardless of the prompting format that is selected, callers may leave voice or TTY messages.

I want to emphasize two points. The first is that this TTY interface is a standard feature in our Intuity systems. It is not an add-on. There is no license fee or right-to-use fee. The only thing a system administrator needs to do is turn it on. The second point: Despite our best efforts to encourage accessibility, we are finding that the vast majority of Intuity systems do not have TTY support activated.

It is clear that many organizations do not understand the need to provide *accessible communication to their employees and customers*. In this environment, we cannot expect that market pressures alone will ensure that VoIP systems are accessible.

Before I discuss the type of regulation that may be appropriate and beneficial, I think it's important to describe a few technical differences between VoIP and traditional telephone systems.

When you have an active call on a standard residential telephone, all transmissions are carried on a single audio channel. This would include your voice, as well as touch-tones and modem signals. Many traditional assistive technologies – notably TTYs – rely on the telephone system's ability to transmit audio information reliably and without distortion.

In the present regulatory environment, VoIP audio channels – by that, I mean the mechanisms by which VoIP systems transmit voice – are *not* required to support reliable TTY communication. This is a significant problem because the voice-optimized audio compression commonly employed in today's VoIP environments can decrease TTY accuracy to the point it becomes unusable.

An exciting aspect of VoIP technology is that, even while a call is in progress, all sorts of non-audio information may be transmitted via parallel data channels.

Avaya is already using this capability to provide reliable transport of Baudot TTY signals on VoIP wide area networks. Rather than transmit the TTY tones via the voice channel in a VoIP telephone call, a *description* of the tones is sent via a parallel data channel, with a command to the receiving device to reconstruct the original audio tones for the TTY device at the other end. For the benefit of any engineers in the audience, the descriptions are in the format specified by RFC-2833, and are sent redundantly to compensate for packet loss. It works beautifully.

The mechanism I just described brings our VoIP systems up to parity with traditional telephone systems. VoIP technology allows us to do considerably more.

A good example is a software adjunct for Avaya IP telephones, provided by Avaya for free, called Universal Access Phone Status. It takes advantage of capabilities that are present in our IP telephones, not available in traditional phones, to provide by voice output all of the information that is presented visually to sighted users – such as which lines are available and which are in use, whether the phone is forwarded, whether there is new voicemail, whether someone on hold has disconnected, and so on.

Mindful of the time, here are three high-level recommendations regarding regulatory control of VoIP:

First, regardless of how the FCC eventually comes out on the issue of “Is VoIP a telecom or an information service,” Avaya supports the idea that, at a minimum, the current accessibility requirements for traditional phone systems should be applied to VoIP systems. These regulations need to be implemented at the federal level to preclude manufacturers from having to deal with multiple standards and regulations that may be developed by the different states.

Second, we believe that a communication barrier might develop between VoIP users and the users of traditional phone systems and assistive devices if the need for interoperability and backward compatibility are not addressed by new regulations.

I regard my third point as being the most important. We believe that, if accessible VoIP systems cost more than inaccessible equivalents, the FCC may be unable to guarantee the rights of individuals with disabilities *regardless of whether VoIP regulations are adopted*. Previous accessibility statements from the FCC demonstrate that they have been reluctant – appropriately so, in my opinion – to require capabilities that are not readily achievable. A key component of how the FCC defines this term addresses the *cost of the incremental action*.

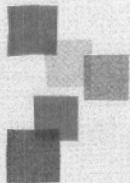
The Avaya accessibility solutions I described today are included in our products without additional charges or fees. We are able to provide these solutions for no additional cost to our customers because, in all of these cases, accessibility was provided by taking advantage of capabilities that already existed in our systems. For example, our TTY-on-VoIP solution uses a mechanism that was implemented originally to transmit touch-tones. Our TTY messaging uses software that was written originally to support multi-lingual *spoken* announcement sets.

This style of engineering, in which we try to “piggy back” onto existing capabilities, has a very important benefit. Keep in mind how the phrase “readily achievable” is defined. If accessible systems cost more than inaccessible equivalents, this could lead to discrimination in the provision of services and in opportunities for employment in organizations that are unable, or unwilling, to cover the extra expense. However, by re-using capabilities that were already present in the system, Avaya is providing accessible solutions for VoIP that are readily achievable.

Realistically, it is not always possible to include accessibility within a standard product for no additional charge. However, one thing you can count on is that Avaya will always try. We look forward to working with the FCC and with the community in general, to ensure that *everyone's* needs are respected and accommodated.

Thank you.

AVAYA



Avaya Regulatory Solutions

Accessibility Through Communications for Persons with Disabilities



IP Telephony

Contact Centers

Unified Communication

Services

In a democracy, people have a fundamental right to access information and exchange it freely. Laws such as the Americans with Disabilities Act of 1990, Sections 251 and 255 of the Telecommunication Act of 1996, and Section 508 of the Workforce Investment Act of 1998 guarantee that right to people with disabilities. And so it is that organizations must provide equivalent communications access for employees and customers who have disabilities that affect their ability to use telecommunications systems.

The federal government has estimated that 54 million Americans have a disability. According to the U.S. Census Bureau, after age 55 the proportion of Americans who have a sensory disability doubles (as a percentage of the total number of people with disabilities). In addition, Americans with a disability have an estimated annual disposable income of \$175 billion.

It is clear that even if it weren't a legal requirement, providing equal access through communications is a smart idea — making available a large, loyal, and talented labor pool and an untapped customer base. Avaya offers a large portfolio of telecommunication solutions designed to provide equal access to communications for people with disabilities. These solutions enable you to offer a wider range of jobs to people who have disabilities, as well as to serve the needs of a wider range of customers.

Messaging That Works for TTY Users

People who are hearing-impaired commonly use text telephone devices known as TTYs to communicate over telephone lines.* Keep in mind that over half of the telephone calls to a typical organization's employees are forwarded to an automatic messaging system. What if the messaging system is unable to prompt callers in a TTY-compatible format? What if the system cannot record a TTY message? Under these conditions, the organization would be denying the TTY caller equal access to communication — not to mention losing a potential customer.

* The term TDD (Telecommunication Device for the Deaf) is also used, but the term TTY is generally preferred because many users are not deaf.

The flagship messaging systems from Avaya can allow callers to select whether they wish to be prompted by voice or in TTY format. These systems can also record and store TTY messages in the same mailbox where voice and other messages are stored.

Not all people who use a TTY rely on it for both transmitting and receiving. Many TTY users are hard of hearing but still able to speak clearly, and may prefer to receive text on their TTYs and then speak in response — a process commonly referred to as Voice Carry Over (VCO). With Avaya messaging systems, callers are still able to record voice messages after selecting TTY prompting. Hearing Carry Over is also supported, so that even when voice prompting is selected, the systems are able to record TTY messages.

Avaya voice messaging systems permit people who "own" mailboxes to dial in by telephone to access a variety of user functions — such as generating and retrieving messages, doing directory lookups, automatically returning calls. With the exception of a few functions that are impractical because of limitations in TTY technology, Avaya messaging systems provide the same capabilities to TTY users.



Avaya TTY 8840 Telephone



So in addition to leaving messages, TTY users can take advantage of an Avaya messaging system interface to log in and manage their mailboxes via TTY.

The ability to support TTY messaging and TTY login is inherent in Avaya Modular Messaging, INTUITY™ AUDIX® Systems, OCTEL® Messaging Systems, and Avaya IP Office VoiceMail Pro systems.

Enabling IP Telephones for the Visually Impaired

Consider for a moment all of the information that sighted users can obtain by looking at a typical business telephone: caller ID (name and number), whether there is a new message waiting, whether the phone is forwarded, which lines are available and which are on hold, whether a party on hold has disconnected. In fact, on some Avaya telephones the status of more than 200 different functions may be displayed visually.

For people who are visually impaired, the inability to access the same telephony information as sighted people can be a significant inconvenience. More importantly, it can be an insurmountable barrier to communication-centric jobs that might otherwise be ideal for people with disabilities, such as call center agent.

In response to this need, Avaya developed **Universal Access Phone Status software**, which can be used with standard, unmodified Avaya Model 4612 and 4624 IP Telephones. The software itself is loaded onto the user's desktop PC. The PC establishes the connection with the IP telephone,

monitors the status of the telephone displays (alphanumeric and LED), and then provides *by voice output* all of the information that is available to sighted users.

In addition to supporting standard telephony functions, Universal Access Phone Status can also be used for specialized applications. For example, when used in a call center, it can voice special information required by agents, such as the number of calls in queue and mean waiting time.

The software can also be configured for use by people who are hearing-impaired — providing a highly animated screen pop on the users' PCs to alert them when they have an incoming call.

Avaya provides the Universal Access Phone Status software at no additional charge.

Increasing Access with Advanced Speech Processing

The capabilities of automatic speech recognition systems have improved tremendously in recent years. While there still are limitations, these systems can be extremely helpful to many people who have disabilities, particularly if functions are set up to be accessible by a variety of means (e.g., both speech and touch-tone response).

As a corporate descendant of Bell Laboratories, Avaya Laboratories is a world leader in speech processing technology. More importantly, Avaya is a leader in the development of products that use this technology in a

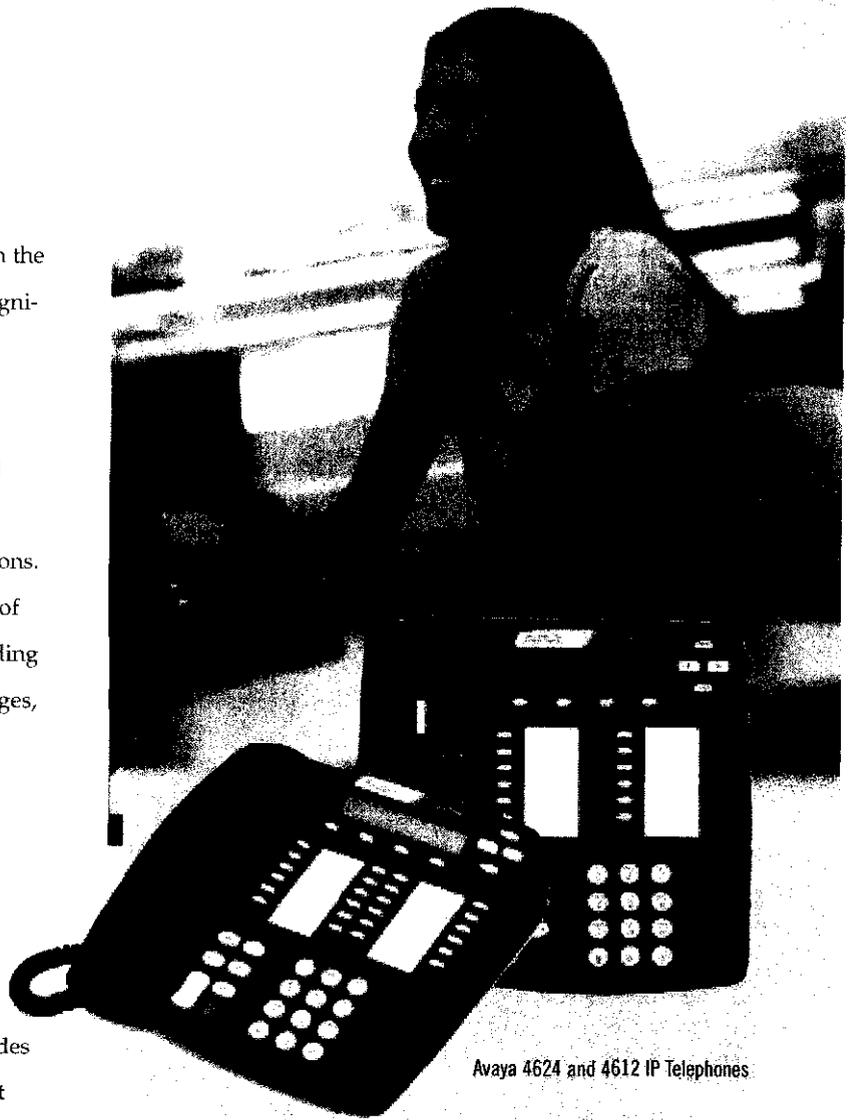
helpful, reliable manner. There are many examples within the Avaya product line, including the innovative speech recognition adjuncts available for Avaya Contact Center solutions.

For instance, there are many ways to help employees and customers with disabilities by using speech recognition adjuncts for Avaya Unified Communication Center solutions. These solutions can provide voice access to a wide range of telephony and information management functions, including call control and the ability to manage e-mail, voice messages, calendars, task lists, and contacts.

The Avaya Commitment

Avaya has a rich history of creating solutions that help individuals with disabilities participate more fully in life. Our corporate heritage and commitment predate by decades the laws that require such products. For example, our first TTY software for messaging systems was developed more than 10 years ago; our attendant console that provides many of the capabilities of our Universal Access Phone Status software was developed some 20 years ago.

The engineers who developed these systems are still with Avaya and working on products that demonstrate our continued commitment to the principles of equal access. The products described here are just a small sample of Avaya Accessible Solutions. Please visit the Avaya Section 508 Web site for more information and other accessible products (www1.avaya.com/enterprise/508). Or for more information via TTY, please call 877-372-5719.



Avaya 4624 and 4612 IP Telephones

Visual impairments can be an insurmountable barrier to communication-centric jobs that might otherwise be ideal for people with disabilities, such as call center agent.

In response to this need, Avaya developed Universal Access Phone Status software, which can be used with standard, unmodified Avaya Model 4612 and 4624 IP Telephones.

About Avaya

Avaya enables businesses to achieve superior results by designing, building and managing their communications networks. Over one million businesses worldwide, including more than 90 percent of the FORTUNE 500®, rely on Avaya solutions and services to enhance value, improve productivity and gain competitive advantage.

Focused on enterprises large to small, Avaya is a world leader in secure and reliable IP telephony systems, communications software applications and full life-cycle services. Driving the convergence of voice and data communications with business applications – and distinguished by comprehensive worldwide services – Avaya helps customers leverage existing and new networks to unlock value and enhance business performance.

reach
AVAYA
a higher plane
of communication

IP Telephony

Contact Centers

Unified Communication

Services

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IMPROVING ACCESSIBILITY THROUGH USABILITY STUDIES OF VOICE-OVER IP PHONES

Presenters

Kh. Eghtesadi

D. Burton

AccessWorld Solutions

American Foundation for the Blind

11 Penn Plaza, Ste. 300

New York, NY 10001

K. Boucher

P. Mertz

Cisco Systems, Inc.

170 West Tasman Drive

San Jose, CA 95134

Summary

Over the past few decades, phones are becoming more complex and feature-rich due to advanced technology for users. While new features offer unique options and functionality, their complexity also creates accessibility barriers for people with disabilities. Voice over IP (VoIP) offers the latest technology that provides capabilities and flexibility to remove these barriers. VoIP represents a system that runs voice applications over a data network. It provides a unique telecommunication capability in the internet age by exceeding the standards of traditional telephony.

IP phone technology contains rich application interfaces that provide the opportunity to enhance accessibility. It provides features such as caller identification, directory information, lines status, and conference calling. The flexibility of IP phones creates numerous options to provide accessibility without affecting system cost.

To assure the usability of IP phones for disabled users, Cisco Systems has set forth specific processes which include conducting accessibility studies. As such, Cisco engaged Access World Solutions (AWS), the consulting arm of the American Foundation for the Blind, to evaluate the accessibility features of Cisco VoIP hardware/software phones and provide recommendations for making these products more accessible.

This paper will describe VoIP and its benefits from an end-user perspective and show how the design features of VoIP improve accessibility and productivity in the workplace beyond traditional phone systems.

Overview of VoIP

Over half of the fortune 500 companies are deploying VoIP phones and over 10,000 organizations have deployed the technology with millions of IP phones acquired. VoIP is becoming a mainstream technology.

Traditionally, voice traffic is carried via circuit-switched networks (private brand exchange [PBX] networks) or networks made up of private lines and time division multiplexers (TDM's). Data networks have traditionally been separate from these voice networks. VoIP offers the possibility of a converged network which integrates data, voice, and video onto a single IP-based network. This technology offers significant operational and productivity benefits to organizations:

1. Reduced operational expenses - A converged IP network reduces the number of networks to manage.
2. Unified messaging capability - Users can send and receive faxes from their desks and reply to e-mails by phone.
3. Mobility - Home, branch, roaming, and traveling workers can access the same features as those working at corporate offices. Roaming users can even keep the same phone number by using the IP phones.
4. Extensible Markup Language (XML) applications - These allow third parties to create value added-applications (e.g., time cards) on the IP phones.
5. A standards-based, non-proprietary solution - Unlike traditional voice solutions, VoIP is based on non-proprietary protocols and is built using industry standards. This open interface means that organizations are not dependent on their PBX vendor to develop needed special applications or features. Instead, they can deploy a third party vendor who has the application that meets their needs today. Organizations with accessibility requirements can then mix and match the best-of-breed applications and use different vendors to suit their end-user needs.
6. Architecture - allows the reliable transportation of TTY services through the network.

Considering these benefits, VoIP brings an opportunity to improve the productivity of everyone in the workplace - including people with disabilities.

Accessibility of Cisco IP Phones Portfolio

To improve the accessibility of IP phones, Cisco Systems has been working closely with providers of assistive technologies and with research and consulting organizations such as AWS. AWS conducted an accessibility assessment of the IP Phone 79XX Series and SoftPhone to provide recommendations to further enhance accessibility features of these products.

IP Phone 79XX Series

- 7912G - provides features that address the communication needs of a cubicle worker who uses basic telephone applications. It offers four dynamic soft keys

that guide a user through call features and functions. The graphic capability of the LCD display provides basic calling information and access to features.

- 7960G - is a fully featured IP phone which provides six programmable lines, feature buttons, and a speakerphone. It offers four dynamic soft keys that guide a user through call features and functions. The LCD display provides features such as date and time, calling party name, and calling party number.
- 7970G - is a fully featured IP phone which has a color LCD display and touch screen providing eight programmable lines as well as feature buttons and a speakerphone. It offers five dynamic soft keys that guide a user through call features and functions. The display provides features such as date and time, calling party name, and calling party number.

The Accessibility Evaluation by AWS consisted of a two-stage process. First an accessibility overview was conducted to identify key features such as tactual identification and arrangement of buttons, access to display information, presence and configuration of soft keys, visibility of screen, and display contrast ratio and adjustability. Secondly, a thorough accessibility evaluation was done according to a defined real-case task list. User interface, features, functionalities, and usability of the hardware/software products were evaluated based on these real-case scenarios. Recommendations were made for future accessibility improvements of the Cisco IP Phones.

Accessibility features of the phones include the following:

- Large LCD screen that provides all display information visually. This feature improves accessibility for cognitively impaired users.
- Color LCD screen with high contrast ratio, providing accessibility enhancement for low vision users.
- Large buttons with logical lay-out arrangement, making the phone easier to use. The lay-out includes a dedicated button to retrieve voice-mail messages.
- Documentation available in electronic, large print, or Braille upon request.
- The non-proprietary standards of IP, allowing third parties or customers themselves to develop accessibility features on the phone. These features may include the ability to incorporate Text to Speech (TTS) software. The presence of TTS software resolves accessibility barriers for both blind and visually impaired users.
- A speaker phone with ability to attach external speakers for increased audio output, helping hard of hearing users
- Compatibility with TTY devices.

SoftPhone

The IP SoftPhone is a VoIP software communications application for a laptop or desktop PC. SoftPhone takes advantage of the usability of a PC and controls the hardware IP phone. In addition, it functions as a standalone software IP phone. SoftPhone provides a flexible user interface and context-sensitive controls. It has multiple features and functionalities that allow a blind and a low vision user to operate the phone.

The SoftPhone application was also evaluated in conjunction with the JAWS™ screen reader. A blind user evaluated the product to assess its operation with this screen reader. Upon evaluation, AWS provided recommendations for further accessibility enhancements of this product.

Key accessibility features of SoftPhone are:

- Provides complete compatibility and operation with screen readers and screen magnifiers software.
- Identifies line status (important with a multiple-line phone), speed dial identification, and caller ID information for missed and placed calls.
- For all the mouse-driven functions, provides alternatives for performing these tasks from the keyboard.
- Provides an accessible online Help system with complete information.

Conclusion

In any workplace, the phone is a basic tool that a majority of workers rely on for their day-to-day work functions. VoIP is creating sophisticated productivity enhancements that move the phone beyond just a communication device. As such, it is critical that even the newest technology maintain accessibility. From a disabled end-user's perspective, VoIP provides key accessibility features. These features allow all people, including those with disabilities, greater productivity in the workplace.

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Access to Voice over Internet Protocol ("VoIP")

Gregg C Vanderheiden Ph.D.
Professor Industrial Engineering,
Director, Trace R&D Center
University of Wisconsin - Madison
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Introduction

The adoption of voice over IP as a mainstream telecommunication technology is happening at an ever-increasing rate. Just this month, Time Warner Cable reached agreement with Sprint and MCI to market telephone services delivered over the internet. The voice over IP services (to be called Digital Phone) will include number portability and other mainstream features. Increasingly, companies, government agencies and other large organizations are turning to voice over IP. One company announced it had sold over two million VoIP phones alone.

As people move from PSTN phone technologies to voice over IP phone technologies there is a danger that, if accessibility regulations are not carried forward to the new technology, people with disabilities and those who are older will lose access to telecommunications. These comments are written to address this concern.

What needs to be done to ensure that social responsibilities are met (e.g., quality of service, E911, law enforcement assistance, universal service)

This is a key area when considering voice over IP regulation - and the one on which I would like to focus my comments.

The regulatory obligations were created by Congress to address issues that have not been addressed by regular market forces. As we move to VoIP some of the market dynamics are changing and some of the problems that were not naturally addressed under PSTN would be addressed under the market forces of VoIP. The dynamics around competition for example are quite different.

However, a number of areas are not competition based, and the new VoIP market will not provide them via normal market pressures. These include:

1. **E911,**
2. **Law enforcement assistance,**
3. **Universal service, and**
4. **Disability access**

Three of these were included in the question - and in other people's comments. I will therefore focus on the fourth - Disability Access.

Disability access in mainstream products is one of the areas that has never been addressed by natural market forces. Occasionally a mainstream feature that has benefit to one subgroup or another will appear, but accessibility for most all disabilities is not something that is addressed by normal market forces. . And telecommunications products have presented a host of access issues to people with disabilities and those who are older.

In our work, we communicate frequently with companies that are introducing new technologies. We do this because accessibility is cheapest to build in at the early stages of development. We have observed that, when new technologies are introduced, unforeseen technical issues always pop up, and companies address the most important ones and work on them first. Disability access problems are often on the list, but market forces never are strong enough to move them high enough on the list to get to the action level. All companies have long lists of things they never get to.

The exception is when there is regulation (or concern about regulation) to cause the access issues to move up the action list. Often, when there is even talk of regulation, there is action. But if that talk goes away, the action goes away -- and accessibility groups and task forces within companies have repeatedly been disbanded when regulations failed to appear or when regulations failed to be enforced.

For example, hearing aid compatibility disappeared when a new speaker technology came along. Congress passed the Hearing Aid Compatibility Act to get it back in, but left an exception for cell phones. When cell phone technology advanced and the market exploded, hearing aid compatibility was not provided again - since it was not required - and those who use hearing aids again lost out. The FCC exhorted the wireless industry and hearing aid industry to solve the problem voluntarily. Although this led to some technical work on a standard, it did not result in hearing-aid-compatible cell phones. It was not until the agency again turned its attention to this by adhering to the provision in the law directing the FCC to monitor the cell phone exception for problems, that we began to see progress.

When Section 255 accessibility standards were first announced a lot of action was taken looking at accessibility. People from industry even demonstrated a prototype phone that could talk for people who were blind. Today however,

companies do not see Section 255 as having any teeth. It is for this reason that, for the first 7 years of the law's existence, cell phones accessible to the blind did not appear on the market. Although there are some special phones now appearing the vast majority of those who are blind still have no access to even basic cell phone functionality beyond dialing by feel. They cannot tell if they are roaming (and are going to be hit with big surcharges); they can't tell if they have a signal; they can't even tell if their battery is going to die soon; and they have no access to the phone menus. This is true even on cell phones that have speech technology built in for mainstream features - but it's not used to provide accessibility.

People who are older, have lower vision, are hard of hearing, have physical disabilities, are all having problems with cell phones; - problems that could have been addressed by simply changing the software in the phones.

The same pattern is appearing in the voice over IP technologies.

Access to voice over IP is very important to people with disabilities and those who are older. It is already starting to take the place of traditional phones in many enterprises - and many individuals are concerned with their ability to function within those enterprises.

When VoIP rolls into *apartment houses, nursing homes, and elder care facilities* it will be important that individuals with disabilities and people who are older will be able to access and use those phones. And with the rapidly aging population, the need for access by these individuals is going to continue to increase.

For some people with particular types or degrees of disabilities, VoIP technologies may be easier to use even without regulation. But these will be the exception - and only occur where mass market needs happen to coincide with their needs. There is no market force to ensure that general access will occur -- or that the needs of people with most types or degrees of disabilities will be addressed whenever their needs differ from those of the mass market.

The current discussions around VoIP by companies and standards groups have shown that the aspects of Voice over IP that are getting serious discussion are those where there are regulations, enforcement or threat of enforcement.

That's not to say that there are not advocates within companies -- because there are. But they often find that they are unable to sell their initiatives within the companies because of the highly competitive nature of the market. It's simply not good business to pay attention or devote resources to disability access if you're not required to -- or more importantly -- if your competitors are not required to.

Market pressures have not and will not cause telecommunication to be accessible by people with disabilities and those who are aging in any but spotty, specific and temporary ways. And we often see even these anecdotal instances disappear later.

But companies are not to blame for this. Profit driven companies are not bad. In fact those are the ones that we all want in our investment portfolios and in our retirement funds. However, regulations are sometimes needed. Regulations are our way of putting societal factors into the profit equation - so that the natural market forces - and the natural forces within companies - can come into play and cause access to appear in products.

The wonderful thing about voice over IP is that this transmission format, and the types of telecommunication technologies used to implement it, make it easier to implement accessibility than in any technology before.

For example, one technology company called Avaya has just released a phone program that, when loaded onto the phone server, immediately allows much of the phone functionality on all of the phones to be accessible to those that are blind. And these don't require any change to the phones. With small changes to the phone software, full access could be gained to the phones without any hardware changes.

Trace Center and Gallaudet University are currently working with Cisco on a technique that would allow every phone within the organization to be instantly capable of text communication (with or without voice carryover) simply by installing a software program on the call manager server. A deaf person could then walk up to any of the 10,000 phones within the company and be able to communicate in text (or in text and voice) without needing any special equipment. They could then not only use the phone on their desk, but also on a colleague's desk, in the conference room, or the lunch room phone on the wall. This can be done without change to the software on the phones and in fact this can be done on phones which are installed today.

These are just two examples -- and both efforts have been enabled by the FCC's recent interest in voice over IP - which has enabled individuals to move forward within their companies.

There is nothing about voice over IP that makes accessibility harder than with PSTN. VoIP does present some new issues, but solutions for them are already known. We are hearing from those in industry that they cannot move forward with access implementations until it is clear that their companies will either have some advantage, or at least not be at a disadvantage, for implementing access while competitors are doing something else.

It is both important and necessary to carry disability access forward into voice over IP. It is technically feasible and, as the regulations are enforced so that there is a level playing field, it is commercially feasible and practical to implement VoIP technologies -- with great effect for those with disabilities and for those who are older.