UNITED STATES FEDERAL COMMUNICATIONS COMMISSION

VoIP SOLUTIONS
FOCUS ON DISABILITY ACCESS ISSUES

SUMMIT

FRIDAY
MAY 7, 2004

The Summit met in the Commission Meeting Room at FCC Headquarters, 445 12th Street, S.W., Washington, D.C., at 9:00 a.m., Robert Pepper, Chief of Policy Development, FCC, presiding.

COMMISSIONERS

MICHAEL POWELL	Chairman
KATHLEEN Q. ABERNATHY	Commissioner
JONATHAN ADELSTEIN	Commissioner
MICHAEL COPPS	Commissioner

PARTICIPANTS

BARRY ANDREWS	8x8
CARY BARBIB	Galludet TAP
BRENDA BATTAT	Self Help for the Hard of Hearing
ED BOSSON	Texas Public Utilities Commission
JEFF CARLISLE	FCC, Co-Director Internet Policy Working Group
GUNNAR HELLSTROM	Omnitor
PAUL E. JONES	Cisco
PAUL MICHAELIS	Avaya
ROBERT PEPPER	FCC, Chief of Policy D Development
HAROLD SALTERS	T-Mobile
PAUL SCHROEDER	American Foundation for the Blind
K. DANE SNOWDEN	FCC, Chief, Consumer & Government Affairs Bureau
CLAUDE STOUT	Telecommunications for the Deaf, Inc.
JIM TOBIAS	Inclusive Technologies
GREGG VANDERHEIDEN	Trace Research and Development Center
NATE WILCOX	Vermont Enhanced 9-1-1
TOM WLODKOWSKI	America Online

A-G-E-N-D-A

P-R-O-C-E-E-D-I-N-G-S

9:18 a.m.

OPENING REMARKS

DR. PEPPER: Good morning. I'll give people a chance to get settled. Good morning, my name is Robert Pepper. I am chief of policy development here at the FCC, and co-chair with Jeff Carlisle, who you will meet in a little while.

We are co-chairs of the Internet Policy Working Group. I want to welcome everybody to the second of our Voice Over IP Solutions Summits. We had one on E911 issues.

And we have today's meeting on -- we are focusing on disability access issues. And we are very pleased that everybody is here. And we are particularly pleased that so many people have come from out of town, as well as people who are watching us on the internet, since we are streaming today's solution summit on the internet.

It is being webcast, and it will be archived on our website so you will be able look at it later on. Back in December, on December first, the Commission had a public forum on Voice Over IP issues.

And, at that time, there was broad consensus that, well, Voice Over IP is a very exciting new

technology with all kinds of new possibilities. That leads to all kinds of new competitive possibilities and consumer benefits, and therefore, traditional economic regulation might not be appropriate.

That there were several very important enduring public policies, social policies, that do not change, and that, in fact, Voice Over IP services need to consider these very important social policies.

And among those we identified, and the Commissioners identified, and the panelist identified affordable phone service, universal service, the ability for first responders with 911 to have access, and for consumers to have access to 911, the ability for Law Enforcement to have access to the information that they need, and also, very importantly, that people with disabilities have access to the communications networks and services.

And so, at that time, Chairman Powell called for a series of what we called Solutions Summits. And it’s important, of course, you know, what you call things.

And the reason we call them Solutions Summits is Summits because we want senior people in from industry from, in this case, the disabilities community, from the academic world, senior people who

have been thinking about these issues to come to the Commission and talk to us, and talk to each other about the issues that are raised when we move into an IP enabled world.

And we focused on the word Solutions because that's exactly what we're looking towards, not just oh here are problems, or here are issues, or here are questions, but rather we should begin identifying what the questions are, and then beginning to identify possible solutions.

So it's a constructive positive solutions oriented discussion that we are trying to have today. And, having spoken to people, I think this is what we are going to have.

Just a few house-keeping things, and then I will introduce some of our distinguished opening speakers, my bosses, the Commissioners. First, as I mentioned, the event today will be webcast.

Second, it will be archived on the webpage we have on FCC, www.fcc.gov/ipwg, that's for IP working group. It's ipwg. And on that webpage you will be able to access not only today's event, but also the Solutions Summit we had E911.

Today's presentation also will become part of the record in the Commission's proceeding on IP

enabled services. There will be a transcript of today's proceeding that will be made part of that record.

What we will do is have time for questions after each panel. But if you could hold your questions until the panelists are finished, and then we will have all of the questions together for the panelists and discussion.

We also would appreciate that everybody use a microphone, since we are webcasting. And so the only way that the people out there in cyber-land will be able to hear the questions is if you come to the microphone.

We have two mics here for people. Please identify yourself before speaking. And, since we have signing and closed captioning, if people could speak very deliberately and clearly, so it makes it easier both for the people doing closed captioning, as well as the people doing the signing.

With that, I would like to introduce two of our Commissioner. All of our Commissioners and the Chairman will be here during the day. Should we start with Commissioner Abernathy to make some opening remarks? So, Commissioner Abernathy.

COMMISSIONER ABERNATHY: Good morning,

everyone. It is a gorgeous day, and I appreciate that you have all decided to come inside anyway to help us as we address a lot of these issues.

This is an extremely wonderful time in our society when it comes to what technology can do for people who have physical restrictions of different kinds.

And so, what I've done over the past three years is visited with a number of you to hear about what some of the frustration can be when these new technologies unfold, and somehow we don't pay adequate attention to how they can really change lives.

The beauty of broadband, as I've said before we even talked about with the disabilities community, is it's going to change the way people in rural parts of the country can educate their children.

You have access to professors that aren't available out there on subjects that previously couldn't be taught. It's going to change the way we do health and tele-medicine.

It gives access to wonderful ways of treating illnesses that, again, were previously unavailable. And today we are focusing on what's it going to mean for people with other kinds of physical challenges?

And let's make sure that it's going to deliver as much promise to all of those people, as well as to people in rural American, and people in urban areas.

So, I'm very, very pleased to be here. I have a quick story, because it shows how much our society really is changing today. And it's about my daughter, because everything is about my daughter.

And so I came home last night and there was a form she had to fill out for school next year. And it said what language do you want to take next year? And the choice was French and Spanish.

So I asked her which one she wanted to take. And she said I don't want to take either one. I want to take sign language. And I said, well, that's wonderful, that you want to take sign language.

But you're supposed to also take French or Spanish. And she said, well, it's a foreign language, mom, it's a different language, can't I take sign language.

So, it turns out her babysitter has been teaching sign language, and she really likes. So we are going to get a class in sign language too. In addition, she will also of course take a foreign language.

But what it means is that there's just a different way of looking at the world. And that means that as we approach these new technologies we have to make sure that we are presenting them in a way that all of these benefits will be made available to as many consumers as possible.

So, what I'm pleased, is that as many of you are here today to help us with these challenges. I think, as Dr. Pepper pointed out, we're not talking about the same old traditional economic regulation, because that's not really as much of an issue when we talk about competitive new services.

But what we are talking about, is what are the social obligations, the important policy obligations that are not market-driven. So they won't happen without our involvement.

And that's what this Solutions Summit is about, how can we deliver those benefits to all Americans? And we look forward to hearing from all of you.

I appreciate your time and attention to this issue. Rest assured, I will continue meeting with all of you through this next year, again, so we can continue to think about, and talk about how we can make sure that we're on the right track.

So thank you very much, and have a great day.

DR. PEPPER: Thank you, Commissioner Abernathy. Commissioner Adelstein?

COMMISSIONER ALDESTEIN: Thank you, Dr. Pepper, and I thank all of you for being here. I would also like commend Dane Snowden and the staff of the Consumer and Governmental Affairs Bureau that put this excellent panel together.

We have an outstanding group of panelist. And we really appreciate your taking the time to be here and to share your expertise, and all of you, the participants, that took time out of your busy schedules and, as Commissioner Abernathy noted, out of this beautiful day, to join us here this morning.

And I'd also like to take a moment to thank the Chairman for doing this. He was the one whose initiative set up this series of hearings. I really think it's important that he has recognized how critical this issue is to the future of internet enabled services are really put the priority on it that resulted in this event today, which can set for us a real agenda that we need to follow to make sure that everyone in this country can benefit from the amazing new services and functionalities that can come

with internet enables services like this.

I used to work on issues regarding Americas With Disabilities when I worked on Capitol Hill for about 15 years. And it was always one of the most rewarding things I worked with because I was able to work with people who had ideas about charting their own future and just wanted the government to be a partner in that.

And that's what we're doing today. I was there when the Americans With Disabilities Act was enacted. And I always try to keep foremost in my mind, and I'm glad to see that the Commission does this as well, the issues affecting people with disabilities, and to make sure that all the technologies that are unfolding can be accessed by everyone in this country, including those with disabilities of various kinds.

And each kind of disability presents its own unique challenges and opportunities as we look at this technology. Voice Over Internet protocols an incredibly promising technology for people who have disabilities.

It can provide new opportunities to communicate more completely, both at home and in the workplace. VoIP is especially empowering because it

can integrate the phone and voicemail, audio conferencing, email, instant messaging, and web applications.

It can be converted into text and vice-versa. So, you can have the voice become text, the text become voice, depending on what a person needs. It can remove the need for TTY device, because TTY compatible calls can be made from a computer.

This is an incredible new era we are entering. VoIP can also empower workers with disabilities to perform their jobs better. Hearing impaired workers can read their voicemail.

And they can use various programs to do that in a fraction of the time it would otherwise take. People who have vision impairments can use IP enabled phones without the need of memorizer, marked buttons on the phone.

VoIP can also help remote parties, loved ones or professionals, people we work with, that assist in the care of people with disabilities. This technology is still developing.

And the potential is virtually unlimited. So we have got to make sure that we enable access to everyone in this country to these new technologies as they are rolling out.

And, as Commissioner Abernathy said, to make sure that as that happens that nobody falls behind. And, in particular, given the wonderful opportunities and applications for people with disabilities, it is especially important with these kinds of services that we make sure to completely exploit their potential to the fullest extent.

We want to think about this in terms of broadband as well. Now, you can't have these kinds of services, VoIP or internet-enabled services, unless you have broadband.

And so that makes us think about the need to deploy broadband at a fast and steady pace, and in an even way across the country. I think that this will move ahead the day that we have to consider when universal service will be applied to broadband.

The purpose of universal service is to ensure that all Americans have access to comparable services at comparable prices. The idea was that nobody would be left behind, be it people that live in rural America, people that live in high-cost areas, or those who had disabilities.

And so the priority of ensuring that kind of roll-out is moved up as there are new opportunities that become available to people through VoIP. And as

we want to make sure that everybody has comparable services, if VoIP becomes the new standard, and becomes essential, for example, for those with disabilities, then we have to ensure that they have the broadband connections necessary so they can actually take advantage of these internet-enabled services.

It will make it easier to put everyone on these networks in an equal footing. So this summit is the first step in reaching those key objectives. I look forward to hearing from our expert panelist and participants.

We have this on closed circuit upstairs, as well as in our offices. We are going to continue to monitor this throughout the day. And I will want to continue to work with all of you to make sure that your views are heard as we debate these important issues, and as we make sure that this technology rolls out in a smooth, even, and rapid way across the country.

So thank you for making me a part of this. I really appreciate it. It is good to be here.

DR. PEPPER: Thank you Commissioner. The way we have structured this morning is into three panels and panel discussions. The first, which is

going to be chaired by Dane Snowden, who is chief of our Consumer and Governmental Affairs Bureau, is going to focus on opportunities presented by IP-enabled services.

And Commissioner Adelstein just talked about some of these things. The second panel, which I will moderate, is going to look at challenges presented by IP enabled services.

So we have the benefits and potential issues. And then the third panel that Jeff Carlisle will moderate is going to focus on regulatory considerations for IP-enabled services and disabilities access.

Dane will moderate, I'm not sure, I think we're just going to probably sit there, except if some people have PowerPoints they may come up here to do their presentations.

We are going to try to make this as informal as possible. But I, by the way, want to echo Commissioner Adelstein and thank Dane, and June Taylor, and Kelly.

I mean, you just have a fabulous group that put this whole event together. And I said to Dane earlier, you have now set a new standard for every other bureau and office that puts on a meeting like

this, because you have just done a fabulous job.

So thank you Dane. Thanks June, and thanks to Pam, Gregory and the whole team here. So, with that I will turn it over to Dane.

PANEL 1

MR. SNOWDEN: Thank you very much, Bob. My staff, they always make me look good, which is not necessarily an easy thing to do. And I appreciate it very much, all the hard work they have put into this summit.

Well, Good morning to everyone. This has been a long time coming. We are very excited to have this panel get started. I want to thank everyone for participating in today's activities.

And, as Commissioner Adelstein said a moment ago, when Chairman Powell made the call for a Solutions Summit, and he called for three, our goal was to do just that, find solutions.

And what we are here today is to hear some of the solutions that we can address as we look at the development and innovative technologies of VoIP. As Bob Pepper just mentioned, the first panel will discuss the opportunities of IP-enabled services, particularly as it applies to people with disabilities.

While still somewhat in its infancy, IP-enabled services are rapidly becoming a fixture as a tele-communications platform. Today, as we focus on the unlimited potential, we want to make sure we keep in mind the issues that address persons with disabilities.

The first individual we are honored to have with us today is Cary Barbib, who joined Galludet University Technology Access Program, or TAP, in 2001 as a Senior Research Engineer.

His current research areas include assessment and applications of digital video communications, wireless telecommunications, and text or VoIP.

He has been an active member of the technical incubator of the Alliance of Telecommunications Industry Solutions TTY Forum. It is my pleasure to introduce Cary.

MR. BARBIB: Thank you. Okay, thank you for having me here today. I'm going to talk about some opportunities I see in relationship to VoIP or IP-enabled services, the IP world, we'll call it.

And some of you, you know, we can talk about some of the opportunities for growth in the future and areas that we can make improvement in. One is video,

as you know.

Video is becoming a hot thing on the internet. The people can do video-conferencing from far away places all over the planet. It is very nice. You can feel like you're right there in the same room with somebody, and you can talk to your parents or whoever it is you would like to speak to.

Video relay services is an available service now throughout the United States and some other countries as well. And that's a nice service that we have available to the deaf community to enable quick and equivalent communication in phone calls with the use of interpreters.

But there is a lot of room for improvement and a lot of growth in the technology that's used there. For example, I envisioned that we could see the interpreter and the person that we are speaking with, the hearing person, so it's a three-way conference-call, so we can all see each other, just as if we were all sitting in the same room together.

That would be a nice feature to be able to have. That applies to conference-calls, forums, and various types of usages where you can, you know, people are talking with the interpreter, and, you know, you can be able to see the interpreter and know

what's being said and keep up with them.

It also affects quality of service issues. One are where I've noticed that video sometimes lacks is the frame rates that you get if the internet is very busy or something.

Then we suffer from that because of the ability to get quality of service through the speed of our internet connection based on the number of users and the internet speeds that are being used at that particular time.

It does bring us up to more of a functional equivalency level with a regular phone. You know, the interpreter is able to operate at a much quicker speed and much more fluently and fluidly.

Broadband in the deaf community is somewhat equivalent to a dial-tone for hearing people, because being able to have that opportunity to use, you know, video services, and being able to see somebody on the screen that perhaps you could lip-read while making a phone call that's a video-conference phone call.

And those hard-of-hearing users could be able to hear and also use lip reading to be able to enhance their phone experience. Being able to use video services, you know, video on demand for people is an extremely popular thing at this point in time.

And being able to have captions for phone calls, you know. It would help not only deaf and hard of hearing people, but hearing people in general, you know, because if you're in a noisy area or something like that, you could see the captions and be able to still understand what the person is saying.

If you are on an airplane or if you are in a bar where there's, you know, it's a noisy environment, and captions are giving hearing people access to the communication as well as deaf and hard-of-hearing people.

Another area would be the language of choice. So for me, if I would like to chose, you know, I would like to use sign language, or if I want to hear what the conversation, or if I want to have captions for the conversation, then it gives us functional equivalency and options.

You know, I can also maybe have both. Maybe if I don't catch something the interpreter says but there's simultaneous captioning of what the hearing person says, I can then, you know, catch the exact wording of what has been said for a particular conversation.

These services also give us choice, and allows us to have preference. And the technology

needs to tie everything together. And that's the next ting I'd like to speak about, is the opportunity there.

Have on-demand translations, you know, where we have interpreters in different languages, you know, between a deaf and a hearing person just with the click of a button we can connect to an interpreter for a different language, a sign language interpreter, a French interpreter, a Spanish interpreter or whatever, that is needed so that anybody can connect to each other and do that without barriers of language impeding.

Also mobile-IP applications like cell phones, pagers, and other devices that are used. That family of devices currently, you know, I can use my text pager to contact people from wherever I am.

You know, I'm not limited to where there's a payphone TTY or if I carry a TTY around with the cell phone. But, you know, now I'm untethered in what I can do with the wireless applications that are out there.

And that's great. But there are still issues there that need to be addressed as well. It would be nice if we had IP text messaging, so that that message could be received anywhere by any device,

that every device supported that text-messaging, so that people could immediately connect to each other and be able to communicate through that mode.

It especially applies to 911 call centers, the PSAPs. If I could connect to that PSAP through my, you know, text pager without having to use a phone and a TTY.

You know, currently a cell phone requires a separate TTY to be carried around. So there's two devices. And if you forget your TTY, my cell phone then becomes worthless for calling 911 or calling relay because I can't get a hold of them.

They don't know where I am. They don't know, you know, who's making the call. There's issues to be addressed there. But if everything could be incorporated into, you know, where text is a possibility everywhere, then I could page 911 and get responses.

And I wouldn't have to go through a third-party vendor for that. Also, in relation to calling 911, I think it would be nice that if we called 911 it would automatically be able to connect to video interpreters, you know.

When I'm using internet services that automatically the software would recognize that I need

to connect to an interpreter, and those interpreters would be available for those emergency calls.

Location is important as well. You know, we need to be able to use GPS devices or technology incorporated within text pagers to be able to identify our location so that the 911 call centers know exactly where I am when I'm making this call or sending this message.

And that's the same technology that needs to be used for 911 centers connecting through the internet for video calls, using interpreters. The other thing is that we need to have an open platform, a platform with interconnectivity for all devices, not certain clients only connecting with each other, but an open platform so that everybody can take advantage of the devices that they have, and use those.

And open platform allows people to use their own software and be able to have developers continually developing that software, and improving it.

Technology is very important, especially as we move into the IP world to make sure that everything is functionally equivalent so that we can stop using some of the old technology that we are currently stippled with.

And it prevents the fraud and barriers that we face as well. Thank you very much.

MR. SNOWDEN: Thank you Cary. Next up all the way from Sweden is Gunnar Hellstrom, who specializes in accessible telecommunications and information technology.

He is the founder of Omnitor, a Swedish company devoted to consulting, product development, and implementing solutions in this area. Thanks for joining us Gunnar.

MR. HELLSTROM: Thank you, it is a pleasure to be here. I want to speak about a title I called accessibility raised to the power of three. The three are the media that we need to include in the calls now, when we have a chance.

Voice Over IP technology gives us very good opportunity to improve the personal communication. We can leave the inaccessible voice-telephony behind and include more media in the calls, including more people in the calls.

We can have video. Video can be used for a lot of things, for sign language, for lip reading, for recognition, for feelings, for showing things. Text character by character just as on the TTY, but with better speed and two ways, can be used for

conversation, for addresses, and other exact information, for numbers, for spelling, and so on.

And voice, as e are used to, is also used, of course, for the conversation part. But if we include these three we open for a lot of opportunities and we establish services that would give very lot of benefits for us all and people with disabilities.

And we have a little picture with a possible user interface for this kind of communication with three media in the call. It is sign language and text in the bottom and also the possibility to have voice.

And that's the focus on what we should go with. One good example is the benefit for deaf/blind users. If you can -- you have many kinds of deaf/blind users.

But this one on the picture here is using sign language out, but can't perceive sign language in. So therefore she has a device where you get the text in and it comes out onto a Braille display.

So it is the same communication for all kinds of situations. And you can in that way open communication for all. Another example is between deaf and hearing persons.

If you don't go the relay, if you want to have direct communication, you need to go down to text

for the main conversation. But the video will give you the opportunity to see each other, to acknowledge and recognize, and show things, and so on.

So, you can combine a lot of situations like this, and find that the video, text, and voice combination is really the thing that opens the communication world.

The picture here is a small computer with this kind of multimedia, total conversation application. It's connected to the 3G phone, in this case, so you go mobile with it.

The more wide-spread we get this new telephony, the more benefit it will be, of course, for all. And here is what you can do. With IP you have the good benefit that you have many kinds of access, many kinds of connection.

And you can use the same protocols. You can have wired connections in your office or your home. Or you can connect these mobile telephones. You can have wireless LAN in private or public settings.

You can have 3D wireless connections. And you don't need to always be on multimedia. You can also do subsets like the video phone, with only video and voice.

You can do voice phones, you can do text

phones with the same protocols you get interoperability. And, talking about interoperability you also need to be interoperable with the old world, the telephones and the text phones, the TTYs.

And that has to be done through gateways into the old telephone network. And we should not forget to also link in the relay services. And one important reason to arrange for interoperability with the telephone network is for emergency access where we need to link the new way of doing text in IP with the old way of doing text on the TTYs.

So, voice gateways and text gateways are needed to connect this world. We cannot do this in an efficient way if we don't apply standards. And that's an area where I have been working quite a lot, to reach a reasonable good state currently with standards.

And we can achieve interoperability if we promote one preferred set of standards as the main ones. It seems that the text medium is the part that is usually lagging behind, or not getting that much implementation.

I would prefer that we can agree on using SIP for the goal as a preferred set of default standards, and then video, and T.140 for text, and

audio standards.

And if we, as much as possible, go with these standards we will have easier to make interoperability. There is quite good situation. Many standards boards are working on this idea.

ITU, ETSI, TIA, all are working and know what each other are working with in this field. And it's the text part that needs to be checked, that it follows the pace of the others.

But it's a good situation. And we have the impact. Well, Paul will tell you more about the standards. We have to put the user in the center so you give one terminal to the user.

It can be different makes, different kinds. They must use the same protocol so that you can get interoperability, and the user can use the same terminal to access voice users, text users, signing users, text relays, and video relay services, and emergency.

And I would like all to join in this implementation of personal communication for all. That will benefit us if we harmonize it. Thank you.

MR. SNOWDEN: Thank you very much Gunnar. The next panelist will be Harold Salters. Harold is the Director of Federal Regulatory Affairs for T-

Mobile USA, with responsibilities for various technical and operational issues, including interconnection, infrastructure access, network reliability, interoperability, digital TTY, and Section 255 implementation. Thank you, Harold, and welcome.

MR. SALTERS: Thank you, Dane. Good morning everyone. Thanks for coming. As our previous panelists have indicated, it's so important that we add the mobility dimension to IP-enabled services.

Adding this dimension is crucial to accessibility. It's important to note that although we talk a lot about future requirements, that mobile data devices today offer accessibility opportunities here and now.

And as noted, for instance, mobile data devices liberate individuals from the whatever inconvenience of the portable TTY hookup to the cell phone.

And, indeed, a significant portion of the market for handheld devices is the deaf and hard-of-hearing communities. I'd like to just show you for a moment some of T-Mobile's hand-held offerings.

Up there we have the Blackberry 7230, a very popular device both in the business community and in

person communities as well. Next up we have the T-Mobile Color Sidekick, a very popular device in the deaf and hard-of-hearing communities.

It features AOL instant messenger is already loaded directly onto the Sidekick desktop, and in addition to text messaging and email. And also we have the Trio 600, which is an integrated PDA device, again, offering email and text.

It's important to note that a significant portion of the demand for these devices are the deaf and hard-of-hearing community. And also, that these devices work as an important bridge between the IP layer and the public switch telephone network.

As we saw from the example of Gunnar's cloud PowerPoint, it's very important that there be connectivity. Indeed T-Mobile is investigating multiple versions and options of IP relay services that would be free to the end user, specifically for the Sidekick.

So, again, this offer is an important bridge between legacy applications and future applications. Further, T-Mobile offers the Hotspot WiFi, which offers laptop connectivity to the internet.

What I would urge all of us to keep in mind is that, as we address these issues, is that we need

to maintain a forward looking focus on IP and accessibility issues.

Right now there is a great deal of standards work going on in the international community, and domestically as well, on making those things happen, as Gunnar has alluded to.

I'm also proud to note that one of my colleagues, Jim Nixon from T-Mobile, is Chairman of the NRIC VII Focus Group on long term 911 issues. The network reliability and interoperability council's focus for the upcoming two year term is going to be on precisely 911 issues.

And I think it's so important that those issues are being highlighted. That would Focus Group 1B. It's also important that we make the public safety community aware of the need to implement instant messaging access to 911.

Not only to PSAPs (Public Safety Answering Points) have to have PSTN connectivity, they have to have IP connectivity as well. It is encouraging that a number of public safety agencies are integrating today standards-based IP functionalities into their overall public safety communities systems in order to enhance their own interoperability and efficiency.

The challenge before us is to get the public

safety community to also recognize that this ongoing IP work needs to also be done to enable text and instant messaging access to 911. Thank you very much.

MR. SNOWDEN: Thank you very much, Harold. Next we will have Tom Wlodkowski who is Director of Accessibility at America Online. In this role he drives employee awareness of issues that prevent full access to the internet and the development and implementation of requirements and technological solutions to enhance the accessibility of AOL products and services to people with disabilities. Welcome Tom.

MR. WLODKOWSKI: Thank you. It is my pleasure to be here today. Before we get into looking at opportunity, it seems to me that one of the things that we really aught to do is take a look at where things are currently today, in terms of how we are leveraging IP.

Certainly mobility seems to be the underlying theme throughout the panelists' presentations. And I couldn't agree more with that. Untethering individuals with disabilities from PCs where they have traditionally had access to access technologies.

You know, when I go to traveling down to my,

you know, parents house or whatever, I don't always have the laptop with the access technology. So what we really want to do, then, is make sure that there are IP-enabled solutions that will allow someone, for example, to access their email without need of a screen reader, if you are talking about someone who is blind or visually impaired, and making sure that an individual who is deaf can get instructions, driving directions, using mobile devices.

Today AOL has a few different services that we believe provide this mobility. AOL by phone is a phone based email system that is available today where you can read, reply, and initiate an email message simply by recording a voice message.

That message is then sent to the recipient's mailbox and they can either pick it up through the traditional means of accessing email through their PC, but they can also, you know, call AOL by phone and hear the message that way.

Again, we believe that is an experience that brings folks away from total reliance on the PC to benefit from the most popular feature today on the internet, email.

AOL for Broadband over the past six months recently launched streaming closed captions on select

video content, as did our KOL service, and online channel that is target for kids six to twelve.

Today kids can log on and watch a ten episode cartoon series titled Princess Natasha with closed captions. The captions are off by default, and there's a little button on the video window where they can enable the captions.

AOL for Broadband is streaming six daily feeds of a CNNJ Quickcast, which is a three minute news stream produced and provided by CNN. What we do there is use some automated technology that can actually take the script of the newscast and sync it up with the video.

And we are able to deliver in an automated fashion these six daily streams. Automation is critical, particularly where, at least from where we stand, in that media shops are relatively small, particularly in the internet space, where we are a content aggregator.

And so we are dealing with multiple partners. And much of the content is produced exclusively for streaming only. And so some solutions were done in the area of automation and ways of syncing text with video would certainly be welcomed.

And we'd be happy to be a part of that

environment. Looking ahead, certainly AOL Instant Messenger has recently announced and launched video capability.

So it is now possible for individuals with a webcam to get into a video chat, as aim is pervasive throughout many devices, from the PC through mobile devices, as you just heard, available on the T-Mobile Sidekick device.

Looking at how we can leverage instant messaging to enhance accessibility. And the immediate concept that comes to mind is using instant messaging as a gateway to relay and video relay services.

And we are now actively looking at ways of doing this with relay partners and hope to have announcements in this area very shortly. Again, looking for partners is the best way to advance these solutions.

So I want to just, in closing, thank the folks here at the FCC for assembling this panel. And I feel that certainly a Voice Over IP is an emerging technology, and hope to use the remainder of the day to learn actually more than what we can present now, and hope that we can come back in years to come with a continuing brightening picture, thank you very much.

MR. SNOWDEN: Thank you, Tom. Next Paul

Jones from SYSCO Systems. Paul has been involved in research and development of protocols and systems architectures in the area of multimedia communications including voice, video, and data conferencing over IP networks. Welcome Paul.

MR. JONES: All right, thank you. Just to let everybody know, I was a little bit late getting my presentation to the FCC. So we did not have Braille copies available.

If anybody needs a copy in Braille, let me know and I will get that to you. So, a lot of people so far during this session have been talking about the things that we need to do.

And certainly there still are a lot of things that we do need to do. But I will, I guess, put a little bit more positive spin on things. We are doing things.

We are doing a lot of stuff. So the topic of my presentation is on total conversation through ITU and IETF standards, and specifically sign-type speak.

You Decide, is the title. So as you know, the TTY was introduced roughly in 1964. And that device really opened up communications for the deaf and hard-of-hearing. It allowed them, for the first

time, to be able to communicate with people over a telephone that, in the past, had been limited only to people who had hearing ability.

So the introduction of the TTY really changed things for the deaf. And things really didn't progress too much beyond the introduction of the TTY. Since that time, the TTY device has stayed basically with the same technology.

Different countries around the world have adopted different protocols. And they have tried to make improvements on the TTY device. And Mr. Hellstrom in the panel here was one person who has tried to do a significant amount of work to try to improve on the TTY device.

But I do think we have a unique opportunity with IP to make a huge step forward. So part of the work that I have been doing for quite a while now has been focused on multimedia conferencing, specifically things related to voice, video, and text integration.

I have been doing that within the ITU and the IETF. And I think that, if you bring these things together, you will better enable everybody to communicate, not only the people that are deaf or blind, but everybody.

And I think that’s the ultimate goal. We

want to have total conversation as part of our communications experience. So the ITU had defined a set of multimedia service specifications.

The ITU then set out and -- actually in parallel -- also defined multimedia conferencing protocols, most notably H.323, H.320, and H.324. And those different protocols have different applications basis.

But they are largely interoperable. The IETF worked on the protocol called SIP, which is not quite as interoperable as some of the H.300 series protocols, but is a multimedia protocol intended for use over IP networks.

So one of the issues I think that we faced early on was that those multimedia systems were focused on voice and video. In fact, they were focused on room-based video conferencing systems.

So, when the IP came along, -- I think it was about the mid 90's when IP really started to take off around the world -- people started looking at turning this into a Voice Over IP technology, not just a room-based video-conferencing technology.

And there was not a focus on text, per se. So the ITU took the task to try to raise awareness on accessibility issues. We focused on the needs of

improving video for sign language.

We also started to add things to the multimedia protocols to support text properly. So, again, Mr. Hellstrom worked on T.140, which is a very important piece.

This allows us to actually relay text, or to send text between multimedia systems. The IETF RFC 2793 is a document that describes how to take T.140 and transport T.140 over an IT network between two systems.

H.323 and SIP both can utilize that protocol. So there's an ongoing initiative at the moment called ToIP, or Text over IP. And the focus of this is to allow the bridging of two PSTN networks.

This is to allow character by character communication, which is the preferred mode of communication, allow simultaneous two-way conversation, along with voice and video.

There are inherent limitations with the existing PSTN. Obviously we can't do simultaneous voice, video, and text if we are also interworking with the PSTN.

But it is an important component to be able to do the PSTN interworking. And we have a standardized character set based on Unicode, so all

languages of the world are supported.

We want to support all of the TTY devices that exist today. So we don't want to leave somebody with a legacy device behind moving on to an IP network.

We want to enable different device types to communicate to each other. This is actually a barrier internationally. People from one country to another can't communicate with their TTY devices.

We are going to try to figure out a way to remove that barrier with IP. And we want to enable the legacy PSTN devices to communicate with all the newer devices.

So there's a link on my slide deck to a website that I have been creating. It's not fully fledged out, but it has some information on ToIP. There's RFC, I mentioned, 2793, which describes how to convey Text over IP.

And you will see on this slide here we have a V.21 device in UK talking to a Baudot device in the United States. RFC 2793 can serve as the bridge for that.

We also have along with us the ability to bring in additional devices. We can have endpoints that are PCs, endpoints that are IP phones bridged

with endpoints are traditional TTY devices, everything interconnected over the IP network.

There are some numbers on this slide that talk about the number of users who are using Instant Messaging short messaging system. Those are actually forecast numbers, looking at the years 2006, roughly in that time frame.

But you can see that text is going to be a very, very important component. So the ultimate goal is total conversation, to all text, to be able to work with voice video, and allow everybody to communicate. Thank you.

MR. SNOWDEN: Thank you very much Paul. Tom said something that I thought was very striking. He said he also wants to learn. And that's something that we here at the FCC want to do.

And before we open it up to questions from the audience to the panelists, I wanted to ask the panelists a question. And if each of you want to take it, or some of you, or none of you -- hopefully one of you will.

As we at the FCC evaluate the policy approach that we should take for VoIP, what do you consider to be the most critical issue that we consider as we go forward?

And then what is the solution that you see in your mind, if there is one at this point, that should be thought through here at the FCC? And I will open it up to anybody who wants to take that first. Harold?

MR. SALTERS: Thanks Dane. That is an excellent question. I think that I would say to the FCC that the most important thing is to keep a forward looking focus.

And, although it is important to have a bridge between the legacy technology and the future technology, I think the focus has to be more on the future, rather than the specifics of the linkage between legacy and IP.

So I would say that to focus on the specifics of it would probably detract from the future focus.

MR. SNOWDEN: Thank you, anyone else? Gunnar?

MR. HELLSTROM: Be encouraging, invent regulatory measures that are encouraging, stimulating for the industry in some way, not that much chasing and punishing.

Be international. Look at what voice telephony is internationally. You can call anywhere

with voice. And we need to have the same thing with accessible communication.

MR. SNOWDEN: So if I understand you correctly, you are saying get out of the way?

MR. HELLSTROM: Did I?

MR. SNOWDEN: Make sure that we don't inhibit the growth the IP related services?

MR. HELLSTROM: No, but you can really act positively and be encouraging, buying services, buying development.

MR. SNOWDEN: All right. Harold.

MR. SALTERS: Dane, just to elaborate on what -- to follow up on what Gunnar said, I think he made an excellent point when he said don't chase and punish.

And I think that is -- I think in looking in terms of future regulation, it should be more of an enablement focus, than an enforcement focus, per se.

MR. SNOWDEN: Anyone else on the panel want to address that before I open it up? Cary?

PARTICIPANT: Again, I think that the FCC needs to spend more of a focus of emergency access. I mean, in the IP world we -- the emergency world and the IP world are not really connected.

And we need to look at what technologies are

available so that we can make these kind of quick calls. So we need to think especially about the PSAPs and how to get them connected.

I mean, there are other areas of improvement needed. But I feel in particular the emergency services needs to be tied in so that we can, you know, pull people away from the TTY.

Because, up to this point, they are still tied to the TTY in an emergency. But if we are talking about functional equivalence, we want to untether them.

So we would like to move faster in that particular arena.

MR. SNOWDEN: Thanks Cary. Other comments from the panel before I open it up? Any questions from the audience here? Yes, sir. If you could remember to state your name.

MR. BAILEY: All right, thanks for having us here, it is a great show at the FCC. My name is Bruce Bailey. I am with the U.S. Department of Education. We have be actively migrating the VoIP almost entirely for cost savings reasons.

And it has gone very, very well. And one of the things that has gone well is the accommodations that we are providing to our employees that are deaf

or blind.

We have very good TTY access. We are very pleased with how the progress is going so far. And if there is anyone here that wants to contact us to ask about that, we would be more than pleased to share our progress.

My question is really for Cary Barbib, or maybe for Harold Salters. We are also using a lot of the Blackberry, so Mr. Salters showed us the Blackberry.

So my question is can you speak to if the accessibility of the Blackberry, in terms of access for people with mobility impairments, TTY access, or some other equivalent facilitation for folks who are blind, because that's an update probably on any of those accommodations at this point?

And then for Cary, I was wondering kind of along the same lines, why don't you think there's been a consumer TTY sell device at this point? I mean, it seems to me at this point cell phones are so inexpensive, market forces should be able to support a cellular TTY. Thank you very much.

MR. SALTERS: Thanks, I will take that, the first Blackberry question there. I think with the Blackberry and with all the data devices, the

compelling application is text itself.

And it's just very liberating. I've seen estimates, for instance, from the Sidekick, that ten percent of the market for the sidekick is exclusively people who are deaf or hard-of-hearing.

And that's amazing, in an area of the economy where things don't tend to be market-driven. It's really remarkable that you have, you know, ten percent of the market being persons with disabilities.

So I think in terms of going forward it has to be, with the Blackberry and the other devices, it has to be can you contact the 911 PSAP? And I think the concept of equal access and functional equivalency brings us to the imperative to get the public safety communities, which are using VoIP the same way the Department of Education is to rationalize and better their internal processes, to take some of that VoIP and focus it externally at how citizens and consumers can contact them using those IP-enabled technologies.

PARTICIPANT: Again, this is Cary. In terms of cellular TTYs or having TTY functionality in a Mobile device, right now we are looking at it in a third party type of way.

But there is a push to incorporate all these services into one device. There are some services

that ride on the date networks so that we can connect to our relay services, we can connect through instant messaging through the relay service.

But there is however no current device that uses a voice channel. And I think that is the key. That especially will help us tie into the 911 services.

Going via the data service, we cannot connect directly to 911 unless the PSAP itself accepts data connections through IP, for example. Then we would be able to connect directly.

But up to this point we have not had any devices where that's built in. So, you know, I really couldn't tell you why that's not happening, why they are not available.

And, in terms of other people with mobility disabilities or visual impairments, I really couldn't respond for them. But I do know that the sidekick is not accessible for people who have low vision because there is not audio feedback, or other types of feedback.

Maybe the keyboard is too small for some individuals to use. But there are some other phones, however, that have audio feedback, but not that one that we as the deaf community are using specifically.

MR. SNOWDEN: Thank you, Cary. Other questions from the audience? Yes, sir. If you could come to mic.

MR. CROWDER: Hi, I am Chuck Crowder out of VIA Inc. You know, I want to respond. I want to make a statement. But I think I want to make this statement more because I happen to be a citizen of the United States.

And that is that I agree that you shouldn't have regulations that punish people or get in the way, but I do think that this is so important that you do need a federal regulation to make sure that people do what they should do.

Because it's so easy for companies to say I didn't do that because of the cost. And they can use that as an excuse at every instance. So you do need federal regulation.

And I want to be very clear about that, because I don't want this notion of oh gee, you know, you're going to create a barrier, you're going to get in the way, and so I'm not going to do what's right.

And so that's my point. I want to make sure that we're very clear about that. We need to do something in this area. And it is achievable. And we need to make sure that there is a regulation that

imposes that upon corporations. Thank you.

MR. SNOWDEN: Thank you. To Echo what Bob Pepper was saying, if you would like to stay in your seat, we have a roving mic as well that if you just raise your hand we will send someone over to bring a mic to you. Yes, sir.

MR. FREDRICKSON: I have a question I would like to address to Gunnar Hellstrom.

MR. SNOWDEN: Could you state your name too, sir?

MR. FREDRICKSON: Oh, I'm sorry, apologies. Mark Fredrickson from the company MBurst. Mr. Hellstrom, I was wondering if you could -- what has been mentioned many times as the importance of connections to E911 or emergency services.

I was wondering if you can tell me, from your experience, if there are any lessons in the international community of how other countries have connected people with accessibility issues to their various emergencies.

Are there any lessons to be learned from other countries that we might adopt here?

MR. HELLSTROM: I know at least about how it's arranged in different countries, mainly for the deaf and hard-of-hearing, for the text access to

emergency services.

And I don't think that any solution is perfect. In Europe we have a strict policy that all emergency access should go through the emergency number 112.

But, if you look at the situation for text phone access, it is not done that way in many countries. Sweden does it so that the text phone goes through the regular emergency access centers where the calls are too few.

So it is a great risk that they are not handled well. Other countries like the UK have a special number that takes all text calls into one central location where they are more knowledgeable about handling text calls.

But then it's a load on the user to remember that strange, different number. Many countries do not at all have any emergency access for other than hearing voice users.

So it's not very much to learn. There has been an interesting committee in Europe called InCom, working with the regulatory recommendations for accessibility last year.

And they definitely stressed that the single-number access for text and voice and, in the

future, video users, is the goal.

MR. SNOWDEN: Thank you. Other questions? There's a hand back here.

MR. ODOM: Hi, my name is Jesse Odom from Go America. And I had a question for Paul. Paul, you and I talked one not too long ago about text over IP going through the PSTN.

And you showed the slide with all the different protocols that you are working through the ITU to get standardized. What is it going to take for the actual PSTN implementation of this so people understand what the road blocks may be in actually get some of these things through for use?

MR. JONES: Thank you. I don't think that there are any issues for the PSTN at this point. It is pretty fixed. So we look at that as a fixed network.

Everything that has to be done is on the IP side. So I think the biggest hurtle is understanding all of the various TTY types that are out there in the world.

In the United States, I guess we are fortunate, and maybe unfortunate, that we primarily have Baudot. But not only Baudot, there are actually some proprietary protocols that are also being used by

the deaf.

This is a concern. How can we bring those proprietary protocols over? We can't standardize them. This is an issue. So we are focusing on, in the standards bodies, of just Baudot at this point.

Of course, for the rest of the world, we are also focusing on every TTY type that's being used in every other country. For the U.S. it is a Baudot only focus.

So I think the hurtles are, if you speak of just the U.S., it's getting Baudot's support on the gateways to interface between the PSTN and the IP networks.

For the rest of the world it is the same thing. But it's whichever protocol is being used in each country. For manufacturers such as SYSCO, we are building gateways for deployment in every country in the world.

Of course that makes it much more difficult in that we have to focus on -- we have to be able to put the functionality into the gateway to support every one of those protocols.

And that takes time. It's actually not as easy a task as I had thought it might be when I set out working on this. But it's certainly something

that we're driving hard toward. Did that answer your question?

MR. ODOM: I think so, thanks a lot Paul.

MR. JONES: Thank you.

MR. HELLSTROM: I can add that, did you see the cloud diagram in my presentation with the IP network and the PSTN network and connected with the text and voice gateways?

That is a real network. We have it up and running. And we have been in a European project for a mobile communication for the deaf where we implemented a small gateway for text telephony into IP form of text standard.

So it's doable. And we have done it. But, of course, it needs to upscaled, and we need further projects to do things. And we have other projects going one.

The real challenge is to go into the major IP gateways to get them to understand TTY, which takes some power of their processors.

MR. SNOWDEN: We will take one more question from the back of the room here.

MS. ROSE: I'm Ms. Rose, Department of Veteran's Affairs. This is for Tom Wlodkowski from AOL. I am a line person myself, and I was assisting

another new customer to load version 9 of the AOL software on their PC.

And though I was able to do it, the installation was somewhat difficult, really would require someone with some intermediate screen reader experience.

And then we tried to use the email and found that not to be particularly accessible. So I was thinking I could possibly use another mail product that I know works better with screen reader programs.

But when I called your technical support they said this was not possible. So I was just curious to ask you is that true, or are they getting ready to put out another version of the email that would work better with the various screen readers that are out there? Thank you.

MR. WLODKOWSKI: Well thank you. Certainly you can now use other email clients to get at AOL. We just announced that last week. We have opened it up to Outlook and Outlook Express and other email clients.

WE can certainly talk offline and get that information over to you. I would also be curious to hear what the issues were with 9.0. Certainly I use the mail program as a blind user, probably

affectively.

And no others do as well. And so, perhaps there was a screen reader issue in terms of version that you were using, or what have you. But, basically our rule of thumb right now is working with the latest versions of Jaws and Window Eyes with the latest version of the AOL software.

We are furthest along with Jaws at this point. And it is still very much a collaborative effort where we retain consulting services from an organization like Freedom Scientific to literally build the customization that's necessary.

I think later this year you will actually find a product that's coming out to support our broadband initiatives. You'll also be able to use it in dialup.

That will really bring us into parody with some of the other email clients that you mentioned. And that's going to be beta here in the next four to six weeks.

And then it will release later this fall. So hopefully we can catch up offline and I would love to get you or your colleague up and running helping us test that product.

MR. SNOWDEN: Thank you Tom. One more

question.

MR. OBREY: Ronald Obrey with Hands On video relay service. I'd like the FCC to take into consideration to maybe encourage and enhance providers that are coming into the market, as far as 3G and other broadband wireless services that will enhance people that use sign language as their primary mode of communication.

So they'll have an alternative to text-based messaging. Most of the deaf people that use sign language as their primary mode of communication I think are very excited to see some of the other countries in the world have the speeds that enable wireless devices to do sign language, thank you.

MR. SNOWDEN: Thank you. We want to take a quick seven minute break so we can stay on schedule. But before we do, how about a round of applause for our panelists here. We will re-adjourn at 10:45.

(Whereupon the above-entitled matter went off the record at 10:35 a.m., and went back on the record at 10:47 a.m.)

DR. PEPPER: We heard on the first panel some of the opportunities. And we also began to hear some of the questions that are being raised about the move to IP-enabled services and Voice Over IP.

And now on the second panel we are going to focus on some of the additional challenges as a result of the shift to IP-enabled services. If we could have people move.

I think the coffee and the sweets are competing with the panel. Our first speaker is Brenda Battat, who is a long time advocate for the rights of people with disabilities.

She currently is Senior Director of Policy and Development for Self Help for the hard-of-hearing people. She's a former member of the FCC's consumer and disability telecommunications advisory committee.

She currently serves on the AT&T consumer strategies and issues council, the Northwest Airlines travelers with disabilities advisory committee has been very active. So Brenda, thank you for being here.

PANEL TWO

MS. BATTAT: Thank you very much. I am pleased to be here. The first slide I just put up to remind everybody about the need. And I think the demographics here, I just wanted to remind you about the demographics, and really to show the business imperative.

And the question whether or not it is going

to be a business imperative. And some of these numbers, as you can see up here, are eye openers. A huge number, one out of five people with disabilities, and disposable income, and the trillion level.

And baby boomers now turning 50 every seven seconds, and people losing their hearing now at 50. So these are just purely to say is this going to be enough to make it a business imperative?

We'll find out. I know this panel is about barriers. But I guess when I think about this I see it more in terms of opportunities. Although our question is, you know, how we are going to make it happen.

A lot of people have already talked about redundancy. And from my perspective redundancy is the basis of access. And Voice Over IP really offers that.

But can we get there quickly enough? I am very concerned. You know, they are predicting 50 percent of businesses will be using VoIP by 2006, and about 40 percent of all U.S. phones by 2009.

You know, are we going to get there quickly enough even though there are a lot of opportunities? Some of the other opportunities are already happening now with several hard-of-hearing people using some of

these upstart telephone company services.

Getting for 15 dollars a month just about every bell and whistle that you can possibly think about. So, the other attraction for some people, assuming they have access to broadband of course, is that it can provide them with fairly affordable services.

I thought one of the things to talk about -- the barriers -- would be to also tell you some of the things that people who are hard-of-hearing need. And, you know, we have talked a lot about mobile services, mobile focus, which is really important.

But what about using it in your home? Several other things that need to be connected with that whole system to make it work, the hardware. And we are running in with, people who are hard-of-hearing are running into a lot of problems with that.

But anyway, let’s looks at some of the features. Some of these are already available. And the question is we don’t want to lose them. And some of them are more like a wish-list, but we believe could be possible, because of the opportunities that Voice Over IP offers.

So we are talking basic things like clear, strong, high quality signal for speech and tele-coil.

It is very important for hard-of-hearing people.

Adequate volume control, and this is a lot of times on the hardware piece of it. Adequate volume control easily manipulated. Tele-coil compatibility without interference for people using it with their cochlear implants and their hearing aids.

Simultaneous voice and text display, we have that now with their preferred relay, which is captioned. Are we going to be able to keep that? We don't know.

From what I'm hearing, if it's compatible with a fax we will be able to. But we don't know for sure. But we do want to keep that capability, because people hard of hearing can hear some of it.

But they want to be able to read at the same time, particularly older people. Now, I know these baby-boomers that are coming along. Also being able to output a jack with sufficient power to use assistive listening devices, neck loops, and such in the hardware piece of it.

High quality video just around the mouth, 30 frames a second, or faster, you know, just being able to have a piece of that video that will give you enough speed that speech reading will be accessible.

We have already talked about simultaneous

audio and video a lot. But also the ability to add text to voice calls. And it would stream in an incoming call.

Let's not forget about incoming calls. We are on a call, and we think we are doing okay, and all of a sudden we start to realize this is somebody we just cannot hear.

Can we then immediately bring in text to that call? That's very important for hard-of-hearing people. An ability to initiate three-way-calling both for incoming and outgoing calls, which at the moment is not something that can happen.

That should be. That's on our wish-list. But I think that could be something that we could hope for. We have talked a lot about emergency. I don't need to get into that.

The ability to connect and to relay into a call at any time, a call that is not a relay, but you want to bring it in to a call when you are suddenly running into problems.

And maybe, in terms of getting less error when you are looking at speech recognition in the future, to have less error, to enable hearing callers to use their own speech recognition on their end.

So each have their own speech recognition on

either end. So, I'm here talking a little bit more about existing hardware that's not accessible. Many people are setting up Voice Over IP.

And their preferred way seems to be to do it with extendible cordless phones. And right now, even though those phones are regulated, they are not in many times accessible, because they are starting to create interference because they have gone digital, if I put it like that.

So we are running into trouble with people finding that that's the best way to use Voice Over IP. But they can't because the hardware is not accessible. So what are we going to do about that?

And, you know, we have talked about whether or not there should be enforcement versus, you know, dangling a carrot. We already have laws in place. And one of the big barriers that we're facing right now is that they are not being strongly enough enforced.

And that is definitely going to impact hard-of-hearing people's ability to use Voice Over IP. So we really have to look at that very seriously. And then I think right now there's the whole uncertainty of where Voice Over IP actually fits in to the telecommunications structure.

Is it going to be regulated? You know, based on history, and this is being said over and over again, that really is the only way that we do get access.

And even then it is hard to make it happen, because of the enforcement situation, it's not always as effective as it should be or it might be. I think the issue here is that a decision needs to be made very quickly by the FCC about this, because Voice Over IP is rolling out extremely quickly, very fast.

And we are going to be -- I see us being in a situation that we've been in before where, you know, we are playing catch-up all over again because we just have missed the boat in terms of getting started quickly enough.

And there are leaders here, and companies that are obviously making efforts to make sure that they do have access in their systems. But what about all the other companies out there that are not represented here today, and are not as focused as these companies who are here today. Thank you.

DR. PEPPER: Thank you Brenda. Our next speaker is Barry Andrews, who is trained as an Engineer. And he is President of 8x8. 8x8 is a Voice Over IP service provider.

And so Barry is going to focus on the questions from the perspective of somebody who is actually providing Voice Over IP.

MR. ANDREWS: Thank you, I didn't get my slides in on time, so if anyone would like a copy, please send me an email or see me after the talk.

DR. PEPPER: They also will be posted on our website with the others.

MR. ANDREWS: Okay, great. The continuing rapid adoption of broadband internet access is one of the major factors that is driving the growing Voice Over IP market.

Services -- and by that I mean voice, video, and text -- can be delivered reliably and cost effectively over IP networks. There are challenges that are presented by IP-enabled services.

Some of these have been discussed already, and a number will be discussed in the 911 regulatory panel. Those include usability and accessibility. We want a service that’s easy to use by all.

Quality, especially as it relates to video and the requirements for bandwidth, as well as video and audio sync. Interoperability, the joke is, you know, the nice thing about standards is there’s so many to choose from.

But that doesn't help when you're trying to communicate with other vendors. And public service and safety, including such things as rural access. In my very brief talk today I'm going to attempt to do a demo of one such service called Packet 8 that our company offers.

It's an example today of a voice and video over IP. And because I'm worried about running out of time, I'm actually going to state my conclusion right now.

And that is voice, video, and text in a universal service over IP with global interoperability presents the opportunity to improve personal communication for everyone.

So, very quickly, Packet 8, a description, and then the demo. Packet 8 is an end-to-end voice, and/or video communication service that operates over the internet.

It allows calls to or from any phone in the world, including traditional telephones. And it uses regular telephone numbers currently assigned from the U.S.

It enables high quality voice and video calls dependant on your video bandwidth that you might have home or your office, or wherever. Subscribers

can choose the use of a traditional analog telephone to connect to the audio adapter, their computer, a cell phone, or a video phone to place calls.

It's extremely simple to install. It requires only the terminal adapter or video phone. Basically plug it in and have a dial tone. My two year old daughter can operate the video phone.

For her, you know, making a phone call means a video call. She's at that age she knows nothing else other than talking to daddy on the video phone. Set up is managed and billed via the internet.

This is perhaps a subset of the diagram that Gunnar was showing earlier in the first panel. Our service is also based on SIP. And I'm happy to say I have not talked to Gunnar at all.

But the set of protocols that we are using very closely matches what he described as the preferred setup protocols. Okay, so we will see if Murphy's law doesn't take effect.

So, this is the video phone. I think I have people here at the FCC that can vouch that, you know, they did no special configuration of their firewall. We basically just plugged it in.

DR. PEPPER: Can you give him the handheld mic or -- there we go.

MR. ANDREWS: So I'm calling a San Jose, California number. And actually I dialed the wrong number. But this is my daughter Janette at home. I sweetie, how are you doing.

She's my five year old. But the two year old is hiding somewhere there as well. She can use the video phone. Okay. Hi girls. I think they sense someone else is here.

Let me try another number. Okay, this one is different by one digit. Hello Richard. Richard is actually a former employee of 8x8 when we had our via-TV line of video phones.

And he was instrumental in enabling that device for text over a POTS video phone. These are similar type things that we are working on with the Packet 8 service today.

Hi Richard, how's the weather in California? Okay, so we are somewhat limited by the bandwidth here, but you can see that it does work today. This is real, this is something that's offered now.

Thank you, Richard, good-bye. Okay, I'm not sure where we are time-wise. I do have a little bit of time. And maybe I will just point out that I go into more detail on some of the usability requirements in the last two slides.

Of particular interest are things that are outside of our control as a service provider, are, for example, the bandwidth. DSL is typically you have a downstream of 384 Kbs per second or greater.

But the upstream is limited to 128. Video and audio over IP are symmetric in terms of their bandwidth requirements. The first call I made was actually to my home.

We have cable there. The upstream bandwidth there is better than DSL, it is 256. And, of course, the more the better. Gunnar mentioned H.263 is a very common and very well known video codec.

And there's actually a lot of activity within the ITU on enhanced video codec such as H.264. All right, I see I'm out of time. There is another slide here if anyone wants to read more. Thank you very much.

DR. PEPPER: Thank you. Our next speaker is Claude Stout. Claude has been a frequent participant here at the FCC in a variety of forms. He's currently Executive Director of Telecommunications for the deaf, TDI.

TDI is a national non-profit advocacy organization that promotes equal access to telecommunications and media for deaf people in the

United States, as well as people hard-of-hearing and deaf/blind.

Prior to TDI, Mr. Stout was the Assistant Director of Community Affairs with North Carolina Division of Services for the deaf and hard-of-hearing. Claude, I am very pleased to see you again. And we are looking forward to your presentation.

MR. STOUT: Thank you. It is good to see everyone here today. Brenda talked from the perspective of hard-of-hearing people in America. I am going to speak from the perspective of deaf, late-deafened, and deaf/blind Americans.

We in America who are late-deaf, and deaf, and deaf/blind get more encouraged by the advent of VoIP and the internet capable services throughout America.

And we are already enjoying some services in that arena. For example, right now we are enjoying internet relay services. I have to tell you we don't have to bother with our TTYs.

We just have our computer on our desk. We can put aside that TTY and just move forward using our computer. And it's just in a window on our computer. And we can move to relay service, video relay service, or a Microsoft Word document and transition between

those applications very seamlessly.

The other thing we enjoy using is the new video relay services that have been in existence for a short time now. And they are amazing for the community.

And I have to let you know that VRS is not an add-on service. It's not an added value service for us. It's really not. It is approaching functional equivalency for us more than any other service.

VRS allows me to use my native language to communicate with an interpreter through my computer and a webcam, and then communicate to a hearing person on the other end of the call.

And it goes quickly. The hearing person is going to be much more eager to receive phone calls for me because there's not delay that's experienced through a traditional relay call in the turn taking that's necessary there.

And as we experience these IP services, these basic services, we are now seeing that we are leaving the traditional services behind, that we are now ready to dive into the multimedia and to, you know, distance ourselves from using those traditional devices and services, and be able to use, you know,

the other multimedia services that are out there, like have been presented this morning.

There's a multimedia approach that can be used for audio text. Voice and video all integrated into one product that is very exciting for us. Please know that deaf people have been involved with advocacy for many years.

Some of us for 30 years. Some of us who have lived a long time have been in it for 40 or 50 years, you know. And we feel we have seen such great changes in access, and that more access will be granted as regulations and those things are developed that will help move the technology forward.

A lot of this effort has been by volunteers or by companies just out of the goodness of their hearts developing these products. And we encourage that voluntary participation from companies throughout the United States that have done that.

But in order to get more services for us to be able to see cost reductions and to be able to have, you know, more convenience and enjoy better customer care, we want to see a more diversity of services out there, more things developed in the IP arena for people with disabilities.

Broadband is now spreading across America.

But we need to have research and rules created that allow us to enjoy the most of broadband. Right now, as we have talked about with video services, sometimes we experience reduced frame rates that impede the quality.

Maybe in a workplace we can't make a call because of a firewall that's set up that doesn't allow a video call to be made. We need, you know, work-arounds to be set up that still maintain the security of the system for companies.

Many of us use computers in libraries and schools. And many of us in our community are poor and don't have computers at home. And we depend on support from universal services funds that allow us to have access to the technology that we do need.

Many of us, you know, have phone lines that cost a certain amount of money. We need to have a fee structure set up that will no longer rely on just the phone service fees only, but will allow IP fee structures to be incorporated there.

We are also looking at, you know, different economic situations, and educational situations, people that are very good in English, or other folks that because English is their second language they are not as strong in that language.

Other people who are underemployed because of their disability that don't have the money or the funds to be able to access the technology that gives them full access.

There's lots of areas where there seems to be a focus on the high-need areas. But there's also people that may seem to have a low need that still need access to this technology.

This IP technology, you know, shouldn't push us into another valley. But it should, as products are developed, and services are developed, it should lead us along with the rest of society in being able to take advantage of these products and services that are developed.

Technology means freedom for us. It enlarges and expands the playing field for us in employment, in education, in community, and other arenas in our lives.

I'd like to emphasize to the IP developers out there, the companies and the developers, that when you design and develop products and services please consider our needs, not just develop a great product and then say, oh, I forgot to meet the deaf and hard-of-hearing needs

And now what are we going to do with this?

We are going to have to reverse engineer or do an add-on or something. If you think of our needs first, don't assume those needs, ask us.

Definitely ask our needs. Ask people. Go out in the communities, ask people throughout the nation what their needs are and build them in from the ground level.

We applaud Gunnar and others like him who have, you know, encouraged the production of multimedia, audio, text, and video services all combined into one product so that we can have our everyday needs taken care of.

There's a variety of degrees of hearing loss out there. There's a variety of degrees of vision loss out there. And all of those needs need to be considered. Thank you very much.

DR. PEPPER: Thank you, Claude. Our next speaker is Jim Tobias. Jim is President of Inclusive Technologies, and is working with the field of technology and disabilities for about 25 years.

He currently is providing consulting services and telecommunications and disability, aging, and education. He was a member of the Access Board's Telecommunication Accessibility Advisory Committee responsible for drafting section 225 regulations.

And he's also an Alum of the FCC's first consumer disabilities technical advisory committee. So thank you very much Jim.

MR. TOBIAS: Thanks. I want to talk today about what I consider to be the worst functional limitation that could be imposed by the migration to Voice Over IP or IP-enabled services.

And that is in an information age not knowing is the worst disability, the worst functional limitation that a person can have. When we are offered a range of products that allow us to perform almost infinite combinations of services -- we've heard about voice and text, and video, and automatic translation -- we have to remember that a product with infinite functionality, has an infinitely long configuration system, with an infinite number of wizard screens that take an infinite amount of time to figure out which check box and which radio button do I implement here.

And this is not just a theoretical barrier. This is an actual barrier. If you look at the way to implement TTY compatibility on today's generation of cell phones, you find that it's rather deep in the menu.

How are consumers expected to find that

information? How deep down do they have to dive into the manual of an accessible mainstream product to find the feature that they need to turn on or turn off in order to make it work the way they need to?

So this profound lack of information appears as a barrier to individuals with disabilities. And we see this in the outcomes. And to answer Dane's question, which wasn't asked of this panel, but I will answer it anyway, what is the approach that the Commission by profitably take to address accessibility?

I would say an outcomes oriented approach, not an approach that says here are the regulations, and here is the lack of complaints, which indicates that there must be the right amount of compliance.

But what percentage of people with disabilities can access what reasonable market basket of services in the world of telecommunications given the combination of mainstream technologies and assistive technologies?

Are we actually showing an improvement in people's live and abilities to communicate in this information age? So if people don't know about the services and features and products that are accessible, it's just as if they were never made

available at all.

If we let ourselves live at the abstract level of oh yeah, it’s in there somewhere, we haven’t really performed the public service that I think we want to perform.

It would be great if the only people who lacked information were the consumers. But in point of fact, those of us who have worked with industry over the years recognize that industry has its own, you know, I don't know what I don't know to channel the Secretary of Defense.

By the way, he’s still Secretary of Defense. I haven’t checked the news this morning. But industry very often doesn't know what it doesn't know about accessibility.

And they recognize that, and they are willing to learn. But, again, those of us who have worked with industry over the years, find the irony that just when we’ve managed to train up the right staffer, in the right job, in the right company, there’s some turn, there’s some re-engineering, a re-org.

Or that person retires or finds, imagine it, a better job than working on accessibility within that company. And so we begin the process all over again.

So there is an organizational ignorance, or a lack of organizational memory in large mainstream companies that occurs.

And we see it going on now with, you know, large scale retirements. We have lost many of our accessibility champions and technology experts within mainstream companies.

So that's an issue that we have to resolve somehow, not by locking people into their jobs, but figuring out some way to make sure that information reaches the right people in industry at the right moment.

Policy makers also have their own areas of ignorance. And I will leave that sentence without any implications. And again, to focus on outcomes, for a political environment that focuses so much on market realities, this is an area where I think it is highly justified.

But it's an area where ignorance is endemic. What do we know about TTY users as a market? What do we know about relay users as a market? What do we know about screen-reader users as a market?

Both the current users and the potential users, we hardly know anything about them. We wind up using anecdotal experience, oh so and so now has a

Blackberry, and they're not using their TTY anymore.

I guarantee that that's true. What percentage of the adoption curve, if you think of the innovators and early adopters, what percentage have already moved and migrated away from some of the legacy equipment and into two-way text, and text over IP, and what have you?

And what percentage have been left behind, and maybe left behind if we don't take some concerted social policy action? It's almost enough to get you to believe in the existence of a digital divide, if we didn't know better.

I'd like to sort of end this dreary exposition with a little bit of hope. We do see companies that are actively reaching out to understand what consumers' needs are, and to get beyond just the anecdote level, or the assumption level, actually doing primary market research on customers with disabilities, fantastic stuff.

We find advocacy organizations doing the same kind of work, asking their members what you use, why did you change what you used to us? And as a final point, I want to emphasize the initiative taken on by the Alliance for Telecom Industry Solutions, which is an industry body that coordinates information

for the sake of manufacturers and telecom carriers, etcetera.

It is now moving towards the establishment of a telecom accessibility council based on its experience with stake holders from the disability communities, researchers, policy makers, and people in industry.

This is a new initiative. And we have already talked to most of the industry stake holders in the room. If you'd like to follow up on it, get information, you can find information about it on the website that we distributed about, or at atis.org. Thank you.

DR. PEPPER: Thank you very much. Thanks Jim. Our final speaker on the panel before we open it up is Nate Wilcox. Nate is the Systems Administrative for the Vermont Enhanced 911 Program.

The program oversees a multiple public safety answering point, PSAP, system. And it was recently used as a benchmark system for the report card to the nation on 911 that was presented to congress a couple of years ago.

Nate is the Chair of the Voice Over IP Packet Technical Committee of NENA, which is the National Emergency Number Association. And he is

recognized as an industry leader for Voice Over IP technical advancements within the 911 community.

And I have met Nate at multiple Voice Over IP meetings. And I know that he has been working, and his group has been working, very, very hard. And I'm glad Nate that you are here as a 911 person, because you have already hear multiple people talk about the importance of E911, 911, not just in and of itself, but particularly for people with disabilities. So, Nate?

MR. WILCOX: Thank you Bob. And I am absolutely glad to be here. I was not able to make the E911 summit we had last time here at the FCC. My boss was here, Evelyn Bailey.

And she generally talks within that arena. However, I am here to talk about good things within 911. I have good news. Because all I have heard so far this morning really is that there's a true barrier, right, to 911, and in particular for the disabled community.

So I have good news. I am here to talk on behalf of the small and overworked group of dedicated 911 individuals within the 911 community that are working to enable IP connectivity within the 911 PSAP nationwide.

Not only nationwide, but on a global effort. And we are finally seeing the light of day from those efforts that we have been undertaking for about three years now, because of the adoption of consumer VoIP services and the recognition now.

That's not to say that we're not still in the requirements of analysis stage. So clearly what's brought out from you folks will be brought back into the design of the new 911, the future 911, which will be wholly VoIP enabled, is the thought process.

So what needs to happen -- it's a paradigm shift -- we have to think differently within 911. And along those lines, I'm going to talk about challenges that we are facing, and some of the solutions that we envision to those challenges.

A lot of those challenges that we're facing in 911 are challenges that are similar across the board for 911. They impact everybody, regardless of who uses the VoIP phone or that mode of connectivity, it impacts everybody.

I'm also going to provide some solutions. So I was a little confused as to what lies truly beyond. It seems like 911 always winds up on the challenges side of it.

But really there's some opportunities there

as well that we can certainly provide. I will talk about nomadic user, nomadic VoIP users. I will talk about TTYs and some of the challenges there.

I will talk about the lack of a standardized approach to IP communication enhancements. And I will hit on QoS on an end-to-end IP communication system where 911 is at one end and the consumer VoIP user is at the other end.

And then I will talk a little bit about what's going on right now within this arena. So nomadic VoIP users, these are the guys that take the 8x8 telephone adapter to their hotel room, plug it in, and they get phone service, okay.

Within 911 we count on the user without considering wireless or sedative callers to be stationary. They are at the end of a pair of wires, and we always know where they are.

And they will always have the same address. The process for validating that location information takes about 24 hours with the phone company. So when I get my new phone service, 24 hours later, my location information is validated through a process.

The problem with VoIP is now I can take my telephone adapter, plug it into an Ethernet connection anywhere, and have a location information. But I have

to go through the 24 hour period of having that location information validated, which by the way hasn't been enabled for Voice Over IP yet.

And one of the serious benefits of VoIP is to be able to take that telephone adapter with me back and forth to the office, have the same number at the office as I do at home.

So, I'm clearly breaking the 24 hour rule right away. So what we have to do is we have to create a paradigm shift for broadband service providers, those folks that provide the IP services to be able to validate that location information in advance before I ever plug in my telephone adapter.

That's a paradigm shift that needs to occur for nomadic VoIP users. TTYs, I think we all are pretty familiar on some of the negative impacts on TTYs when you start to use them over Voice Over IP or IP-enabled circuits.

The reality is that the total character error rate for TTYs could create a situation in which dropped packets, which is normal within an IP network, you know, packet loss is normal.

IP communications on the whole are designed to preserve bandwidth. And part of that preservation is packet loss. So those dropped packets can actually

drop control characters.

We all know that. They can actually drop TTY conversations all together, immediately. It's not a great situation to be in for the 911 call takers, certainly not a great situation to be in for the TTY user who is relying on these communications to continue.

So the paradigm shift for TTYs, we need to ensure a compressionless as possible compressionless codec that's used for 911. And I have G.711 up there as an example.

It seems to work well for TTYs. There are others out there as well. We need to promote technologies that improve through-put, and use of alternate communication methods as well to provide TTYs.

I'm talking about SMS, two-way paging, real-time text messaging, those types of communications. So that's a shift that needs to occur within that arena.

The lack of a standardized approach, I recognize the fact that instant messaging, chat sessions, and other modes of communication are catching on more and more within the disabled community.

And clearly the need has to be that that should be supported at the PSAP site, at the Public Safety Answering Point. It is unofficially supported now.

If you walk into a PSAP, nine times out of ten, a lot of those call takers are already using chats and instant messaging for their coworkers and family.

So, unofficially, it is supported. Officially it needs to be adopted, right? Full streaming video isn't supported, and simply because IP connectivity within PSAP is not inherent.

So we need to create a platform that calls for a standardized approach to all these technologies. And we need to migrate this capability not only to the 911 PSAP, but beyond to the emergency responders as well, so they can participate in any of this information that's coming into the PSAP environment.

Quality of service, I'm not going to go over that too much. Clearly background noises and other elements associated with Voice Over IP can create problems for 911 calls.

So, in that regard, the paradigm shift is to provide and support better technologies to support that. So what's being done? And I've got maybe ten

seconds left here.

The National Emergency Number Association has been working, as I mentioned, through both the technical and operation side of the house these issues.

We have several folks involved within the process, including folks from within the ITF and other organizations similar to that. Our plan is to gain ANSI accreditation for the standards that come out of that effort.

And, like I said, we are at the requirements analysis phase. So there is plenty of opportunity for more input there. We are looking at an immediate solution for Voice Over IP which will not provide nomadic or mobile support to be available this month.

In fact, the standard is written. An analogous solution for current 911 processes, including the ability to locate nomadic callers will be done by the end of they year.

But the real cool product, which will bring IP into the PSAP, which is the native end-to-end VoIP with ongoing support for communications at all levels will begin later this year to be completed, we hope, by mid year, next year. Thanks.

DR. PEPPER: Thank you Nate. That actually

is good news, I mean some optimism. And I think some of this came out of the meeting we had about six weeks ago here on the E911.

So I'm hoping that similar progress can come out of today's meeting. That would be terrific. Again, there's two microphones, plus a roving microphone for people who have questions.

Let me just start off. I thought Jim made a really important point that if you have to retrofit capabilities it can be very expensive, very difficult, a stranded investment, people's equipment won't work.

On the other hand, since in an IP world we are largely working in a world of software where the incremental costs of designing functionality in at the beginning are very low, that, you know, the goal here is, you know, identify what the requirements are, similar to what Nate's been talking about in the E911 world.

Identify the requirements at the very beginning, design them in from the beginning. If you design them in from the beginning not only are they there, the cost of doing it is greatly reduced.

So one of the questions is how do we begin, first of all, how are we doing on that part of the process in terms of designing in capabilities for

disabilities access particularly in Voice Over IP but other IP-enabled services?

And what suggestions do you have to identify those requirements and work with the vendors, the equipment designers, the software designers? Jim, why don't you start off?

And then, for example, Barry has already designed some things in it. So maybe Barry wants to.

MR. TOBIAS: So you just gave me another seven minutes, is that right?

DR. PEPPER: No.

MR. TOBIAS: Well, again, I would want to emphasize the fact that the purely technological issues are either already solved, or real easy to solve, purely technological.

Let me go through, since we haven't -- and I'll just take a minute to do this. Since we haven't heard about visual impairment and blindness barriers to show how the marginal implementation points of these products and services can provide unnecessary accessibility barriers.

In order to sign up for a very popular IP service you have to go to a website and, as is very common now, you have to be able to transcribe some numbers from a graphic into a text box.

So the task is you've got a graphic with some kind of hard to read numbers. And they do this to prevent web robots from registering for the service.

So it's not actual text, it's an image, okay? And it's a great security technique, but it's completely inaccessible to people who use screen-readers.

And this particular implementation would be very hard for someone who is low vision to perform as well. Then when you can actually register for the service, when you download the common client, and I won't be giving out any information if I tell you that the name of this client application includes the letter X, because everything includes the letter X.

It is constructed in software out of one single control. So instead of using typical software development practices of, you know, using, let's say in Microsoft, you pull a text box control in there and that's what the person is supposed to type in.

This is one completely custom control, completely inaccessible to screen-readers. Also very poor performance for someone who is low vision and using magnification.

Keyboard access to this particular

application is very poor. The tab key does nothing. Actually if you tab the right number of times and then use the arrow keys you can, in fact, control the volume of the speaker and the volume of the microphone.

But there's no way that you would know that you're doing that. So these are entirely avoidable accessibility barriers that are not essential to the IP network.

So, again, it's the information issue. Now, obviously there are probably dozens of screen-reader accessible Voice Over IP residential type clients. But how does the user find out about them?

And if the user is an employee, how does the user go to the IT network management security person and get permission to download that one-of-a-kind accessible Voice Over IP client?

So that's the barrier more than the standards and the pure technology.

DR. PEPPER: Barry did you want to?

MR. ANDREWS: I think I can maybe make two points on that. The first is that products such as Packet 8 are software based running on, in our case, Lenox servers.

We designed it from the start for ease of

use, but also to be extensible and really a platform to make future enhancements easy and simple to deploy. The current Packet 8 is a good example.

We started first with the audio adapter. We have added video and things like text, mobile clients, there's a semiconductor companies that are working on, for example, combined GSM and WiFi chip sets that will go into portable both traditional mobile phones as well as mobile VoIP phones.

The second point I want to make is that I think awareness is key, especially for small companies like ours. And I think that's where summits like this really help us understand the issues.

Once we understand the issues, we can define the problem. And as a technologist, once that is done, once we have a well-defined problem, it is very easy to come up with a solution, especially when it is IP based.

That's the easy part. Having everyone agree on that solution, that's the tough part. And that's where standards bodies such as the ITU, IETF, etcetera, are I think doing a very good job.

DR. PEPPER: Thank you, Barry. Why don't we open it up for questions?

MR. CLARK: Hi, my name is Drew Clark with

National Journals Technology Daily. I believe I have a bit of a technical or informational question that I just don't understand.

Obviously TTY technology was very important in the old world, the circuit switch world, in getting text through a traditional phone line. But it seems to me now that IP connections, you know, offer text very readily.

And I believe there was a comment that text over IP drops characters when you are trying to use TTY over IP type services. I'm not quite sure why we're not just sort of immediately or dramatically moving in the direction of IP based services for people who want to have text in your conversations, just like an email or instant message, or any of those feeds that you get over an IP connection.

And so maybe I'm just a little confused as to why TTY is essential going forward in the IP world as opposed to simply having the text that's obviously and immediately available over an IP connection.

DR. PEPPER: Claude?

PARTICIPANT: It's a very complex question. But in my response you have to remember that for the last 40 years we have been using TTYs, and we have been asking businesses to buy TTYs so that we could

communicate with them.

And then we had the relay service arise in the 70s and 80s, text relay, so that businesses no longer had to have TTYs, they could call the relay service to contact us.

Whether it be a doctor or a hospital, anyone in the public world could contact us via the relay service. But then again, you have to remember access back then was only through TTYs.

Today it's true that the world is changing and we have access through all different sorts of technologies, but, again, it takes time for us as consumers to shift from TTY or to not use TTYs at all.

It really depends on the efforts of the business community to support us in the sue of other technologies. Migration issues need to be discussed more. How does this happen, how can we make it happen in the quickest way psychiatry.

DR. PEPPER: Thank you, any other comments?

PARTICIPANT: I think this is really important. An I think it might be worthwhile for companies to have this discussion because in the long run it might be very cost-effective if they can do some sort of socially responsible thing to help people migrate, assuming that they want to.

But I think this discussion really needs to happen.

DR. PEPPER: So it's a migration question as much as anything else?

PARTICIPANT: Yes.

DR. PEPPER: A question back here.

MS. KELLY-FRYE: Well thank you very much for the seg-way. My name is Brenda Kelly-Frye. And I'm the Director of the Maryland relay. And I also wear another hat, and I am the Chairperson of the Telecommunications Equipment Distribution Program Association, the acronym is TEDPA.

We are state administrators who distribute free equipment to individuals who are indigent and cannot afford to purchase their own equipment. I established the program in Maryland approximately six years ago because I, as an interpreter, had noticed that several people were not able to access 911 services because they did not have a telephone in their house.

The reason they didn't have a telephone in their house was because they needed an adjunct device called a TTY in which to hook up to their standard phone to make a phone call.

Their lives were in danger. They were not

able to call 911, they were not able to call their pharmacy to renew their prescriptions. They were not able to call their doctor or the police or fire department.

With the movement now into the VoIP arena those people are still going to be left behind. We've got this huge digital divide that's going to be growing, and growing, and growing.

Right now, those people who are indigent are able to take advantage of such a program through the telephone companies called Telelife Program, which gives them reduced telephone rates, plus reduced phone calling capacity, you know, they have like 30 free phone calls a month.

How are we going to bring these people, who now can't afford to purchase a TTY themselves, can't purchase a computer that gives them access to IP, that gives them access to video relay service, and also provide them with some kind of a connectivity with a high speed?

How are we going to be able to do that? Are we going to be able to apply such a program such as Telelife to this for high speed connectivity so that they can have equal access to the wonderful features of IP that we all are able to enjoy because we all

have good jobs?

DR. PEPPER: Good question. Thank you.

PARTICIPANT: In line with this line of discussion, I just wanted to point out that the FCC has granted a waiver. I think they have four years left for the IP text relay and the VRS not to have to handle 911 calls because of the same kinds of problems that Nate was talking about, locating people, and validating, and so on.

If we're going to have a lot of migration in the next four or five years this could become a serious problem. Some of my students at Galludet have abandoned -- the people don't have a lot of money and they are early adopters.

And they are abandoning phone lines, don't have a way to get access to 911 at all. So I think that's a policy issue that needs to be looked at again perhaps.

And the relay companies need to be encouraged to work perhaps with NENA and others to fix the problem for that area. Bruce I wanted to ask you, you had mentioned about text in your product.

And I wonder if you have it in the current generation, or is that in the planning stages? Because text we think of as something that has kind of

a low overhead medium when you have multimedia.

And you have some familiarity with the deaf community, so I'm going to embarrass you with that comment.

MR. ANDREWS: I think the question was for me?

DR. PEPPER: Yes, Barry.

MR. ANDREWS: We have had a previous line of products that worked over with the H.324 standard, which is basically modem based, trying to send everything over a modem connection.

And that did have an accessory port for text. And it is something that we are aware of. I think in our case, we are a small company. We have been fortunate, I think, to have employees that cared about these issues.

And so it is something that we are working on.

DR. PEPPER: Thank you. Another question?

MS. STEWART: Hi, I am Pam Stewart from Maryland. I have a question, I guess it is mostly directed to everybody, but Nate in particular. In your one paradigm you said that, you know, we have to sort of shift towards things like SMS and two-way paging, and that kind of stuff.

And I know that I personally am terrified that I know so many of the deaf people that I know that have given up their telephone lines. And they are depending solely on two-way pagers.

Now, if that person has gone off the car into a ditch, I know very many times I have sent a two-way page and it doesn't get to somebody else for three hours, or maybe the next day if everything is overload.

And it terrifies me that a lot of the companies that have the two-way pagers are encouraging people saying, you know, you can call directly to 911 on this, without any of those warnings.

And I think we are setting up for some really bad problems here.

MR. WILCOX: First, we do recognize as part of the requirements process some of the limitations of the new paradigms of communication, two-way paging being one of them.

We haven’t set in stone an adoption of how e are going to handle those yet. And it’s exactly those issues that are creating some of the delay in quicker adoption.

We do have a fairly good cross-section of folks working on that issue as well. So I guess the

answer I have for you is right now I don't have an answer.

We don't have a way of accepting that type of messaging. We are looking at the limitations and developing the requirements based on those limitations and hopefully pushing the manufacturers and the support companies for those devices to be able to recognize that they will be used for emergency signaling, and to improve the ability of those devices in that regard. So, thank you.

MS. STEWART: Thank you. But, like what Jim said, I think this needs to be stressed too, that it's organizational too. And I think it is incumbent upon these companies to have more reasonable advertising and don't tell people that this is going to get you to a 911 center.

DR. PEPPER: Thank you.

MR. LUCAS: Fred Lucas, FAL Associates. And I'm also the Chairman of TIA 30. Just a bit of information kind of addressing some of what Nate had put up on his 911 fly as far as TTY over IP connections, etcetera.

As was mentioned in the first panel by Gunnar Hellstrom and Paul Jones, a lot of work is taking place in the standards area on that.

Internationally, as was pointed out, to cover all forms of text devices in the ITU, but also within the U.S. working in conjunction with the ITU group.

With are working with NTR 30 developing a standard that will transport the Baudot device information reliably, reliable transport across IP connections, where you do have packet loss and lower quality of service.

Right now we are scheduled to have that completed in August of this year. So just as a bit of information, it's going to be called TIA 1001. The international work also addresses the fact that there is known packet loss in the network, and provide reliable transport of TTY and such devices over the network where you are going between PSTN through IP, back to PSTN, etcetera.

DR. PEPPER: Thanks Fred. We have two more people, unless there's anybody else that wants to get in line. We will take these as our two questions before the next break.

MS. MARVENEY: Hi, I am Dana Marveney, the Director of the National Center for Hearing Assistive Technology for hard-of-hearing people. The one thing I would like to point out is that if the multimedia conferencing software had the ability to work with the

speech recognition software often available on many user computers this would be a way of cutting down cost because it might not be necessary to use relay services.

And so I would really like to encourage everyone to think about building in hooks to the speech recognition modules on computers because I think that would be a very good way of providing access.

Many people cannot type very well. So, again, I think this would be something to explore.

DR. PEPPER: That's great. Thank you. Does anybody on the panel have any insights into that, or have a sense of where some of those, you know, speech recognition program are in terms of implementation?

No? Well then maybe that's something that other people during the break can raise or talk to you about.

MR. DANIELS: As a deaf individual I will be using the interpreter. My name is Paul Daniels, I am representing myself. There was one woman who made a very good point about if you're in a car accident, how do you contact 911.

Is there any way we could include maybe GPS systems? I know many of the new cars being produced

already have built-in GPS systems. It seems like somehow we should be able to create devices where a signal could be sent straight up to a satellite, whether it be a mobile device, or my computer, or whatever.

It could shoot up to a satellite and people would know where I am, regardless of how hurt I have become. And then I could be brought to the correct emergency center to be helped.

That was just a comment I wanted to add, thank you.

DR. PEPPER: Thank you. In fact, Nate may want to respond to that.

MR. WILCOX: Well, the good news is that that's already there. For wireless, for cellular calls the process to enable that is already there. In fact, about 20 percent of the country's 911 system now is at a point where they are able to accept the geo information associated with a cell phone that dials 911.

As long as the device, like your OnStar or your ATF system in your car uses the cellular network and you happen to be in a location where the 20 percent falls, then you most likely will get located.

However, other technologies, two-way pagers,

things of that nature, they are not there currently. So those are some of the things we have to look at. So thank you very much.

DR. PEPPER: Nate's making another really good point, I think, which is something that came out at the E911 Solutions Summit, and that is that as we moved, for example, to location based mobile systems, the capabilities and technologies are there.

A real issue at this point is implementation by the PSAPs and the funding problems that PSAPs have as local and state government entities having funding problems.

So I think that it's important to recognize that. And if we believe, you know, as a society and country that these are things that are important then we're going to have to step up and make the financial commitment to converting and proving opportunities for PSAPs to take advantage of the new technologies.

I think we have time for about an eight minute break. Then we will move into the next panel. Dane's folks and June in particular have really kept us on a forced march through a lot of really good substance.

I just want to thank the panel first, and the questioners.

(Whereupon, the above-entitled matter went off the record at 11:51 a.m. and went back on the record at 12:02 p.m.)

DR. PEPPER: Hello. Could we try to sit down and get started? We are competing with the food again, but I think if our panelists could come up and be seated.

Thank you very much. I have the privilege of introducing another one of our Commissioners, Commissioner Michael Copps. Commissioner after with reconvene here, we have been having several panels.

If people get settled I appreciate your being here. Commissioner?

COMMISSIONER COPPS: Good afternoon, it doesn't bother me if folks are still eating over there. Please go ahead and do so. Let me apologize for my voice.

I am fighting kind of a bad cold. I promise not to get too close to infect everybody. But I am pleased to see you all here. And I thank you for the opportunity to come by for just a few minutes.

More importantly, I wanted to come by to thank you for sharing your time and your talent in what I hope has been, and will continue to be, a productive dialogue, productive both for you and for

the Commission.

And finally, I wanted to commend Chairman Powell and the Consumer and Governmental Affairs Bureau for bring us together today. This is just the kind of outreach I like to see this Commission of ours have on the whole range of technology issues that confront us.

There's noting that comes close to getting out and sharing information with the many groups that are so much affected by the decisions we make around here.

Last year about this time I was a guest over at Galludet University's celebration of the 15th Anniversary of the deaf President. And I spent some time with the President of that institution, King Jordan, and attended some classes, and was able to speak with some of the students and professors.

And it was a terrific day on a beautiful campus. But what stays with me most about that visit was the incredible enthusiasm that people there had for all the new technology that was coming there way, and the almost seamless way that many of them seemed to be incorporating it into their lives.

And I went away from there with the idea that, you know we talk so much about the early

adopters in silicone valley and their enthusiasm and all that.

I don't think they have anything on the techno-savvy that the disabilities community has. And I was just so proud to see that. And that's why today's dialogue is so important.

I know you are talking about VoIP. That's not just a hot topic around the halls of the Federal Communications Commission, but I think it's going to be really a vital feature of our communications future.

And I think it may end up being truly a transformative thing if we get it done right. The possibilities are so great for customized services and fusing voice and data and video onto internet based networks.

But there are a lot of challenges that accompany them. That's what we are trying to wrestle with here at the FCC right now. But chief among them is making sure that IP services like this are accessible to everyone.

It's the right thing to do. And it is also the legal mandate that we have. When congress passed the Americans With Disabilities Act, more than 13 years ago, it directed the FCC to do everything we

could to ensure that those with disabilities have access to functionally equivalent services so that all of our citizens can participate fully in our society.

So that's what we need to put front and center. Let's be certain we do everything we can to ensure that we live up to the mandate of functional equivalency as IP services flood the communications landscape.

I know that term, functional equivalency, is so bureaucratic, and legalistic, and antiseptic. But if we stop and think about it, what it really translates into is equal opportunity, and the opportunity to lead productive lives, and to communicate, and to educate yourself, and others, and to have a good job, and so much, much more.

It is a huge challenge. And that's a challenge that we have to both meet and master. And we've got a long way to go in doing it. We have to wrestle with some hard questions.

This Commission has been on a forward march, as some of you know, to re-classify the telecommunication services under our jurisdiction, to re-classify many of them as information services.

We need to get a much better handle on what that means for persons with disabilities. And I'm not

convinced that it bows particularly well for people with disabilities.

Frankly, as many of you probably know, I am worried that this re-classification could cause many more problems than it resolves, if it resolves any. We also have to build on the TRS options we have today that already involve IP platforms.

IP relay has been eligible for TRS reimbursement for about two years now. So you have been ahead of the curve in the disabilities community in coming to use IP services to communicate.

But we need to ask now how broadband deployment impacts IP relay use and what more we can do to ensure that the disabilities communities have access to the bandwidth they need to use this internet based alternative to TTY.

We also are overdue for getting our policy on VRS compensation right. And I imagine you are talking about that today. And it is time for a frank discussion of the benefits of making it a required form of TRS.

And I am really hopeful that the Commission can get this teed up in the relatively near future. So there's a mountain of challenges out there. But it is through dialogues like this I think where we can

really tackle these things and make a contribution.

So my advice to you is tackle these tough issues, figure who else needs to be a part of this dialogue, reach out to anybody else who needs to be a part of this dialogue, and see if we can't tackle these questions together.

So I won't detain you further today. But I just did want to come by and welcome you, tell you how appreciative I am for the efforts that you're making to help us shape policy here at the Commission.

I think all of you know, I hope you know, that my door is always open to you, and I look forward to working with you on all of these challenges. Thank you very much, and good luck.

DR. PEPPER: Thank you Commissioner Copps. Jeff Carlisle, my co-Director of the IP Working Group is going to moderate the third panel. Jeff?

PANEL THREE

MR. CARLISLE: Thank you, very much Bob. This panel is going to focus on the regulatory implications of what we have been talking about. And it is really designed to give us an opportunity to talk about what does the regulatory environment look like in order to ensure that we overcome the difficulties posed by the migration to IP technologies

and also best realize the opportunities presented by those technologies.

It is interesting that engineers sometimes make very good attorneys, largely because the though process of engineering and law can be very similar in terms of problem solving.

Unfortunately, I think all to often when we are designing regulatory regimes we sort of forget that when you are going through an engineering process you define the problem, you define the solution, you see if the solution works and you go back and you change it if it doesn't so you can reach the goal of actually answering the question you started from.

All too often in the regulatory space, unfortunately, you end up defining the problem, somebody figures out okay, well we'll just regulate it this way, or we'll have this program.

And then by the time you get around to figuring out whether or not that program has actually worked, or whether that solution has actually worked, you are two or three years down the road.

And if it's not working, it's extremely difficult to actually change it to make it work. So, getting it right at the beginning is extremely important, and also being willing down the road to be

flexible in the approach and adopt new solutions as they come up is also very important.

So I'm extremely excited that we have the speakers that we have today on the panel. I think we really do have a panel that represents perhaps an aggregate of over 100 years of experience in this field, which is not individually, but, you know, each one adds up.

And I think you will find that the speakers have an enormous wealth of experience to share with us today. We are going to start with comments from Ed Bosson, who is widely regarded as the father of video relay service.

He has been the relay Texas administrator since 1990. In this capacity he manages the relay and associated expenses for the state of Texas. He has won numerous awards for his efforts in this area, including awards from the Texas Associated of Deaf Recognition Award, the Robert H. Weitbrecht Telecommunication Access Award from Telecommunication for the Deaf Inc.

He has also received TDI's 30th Anniversary Recognition Award where he was recognized as one of the 30 individuals who have produced the greatest impact on telecommunications accessibility for

America's deaf and hard-of-hearing citizens. So I welcome Mr. Bosson into the panel.

MR. BOSSON: Thank you. We will be talking about the impact of network services on VRS. As a result of the internet relay and VRS, there has been a paradigm shift that I would like to share with you.

Obviously, TTY users are now migrating to VRS and internet relay services, and the call volume of traditional relay services has either plateued or decreased as a result of this migration.

TRS, traditional relay services, are now rethinking how to define their services because of what's going on in the internet services provided. And those internet services have provided challenges to meeting the TRS guidelines.

Functional equivalency, I know it's been discussed and analyzed, and rediscussed, but I'd like to really emphasize that functional equivalency should be based on the senses and how those services are accessed via the sense.

Hearing people use a telephone with a voice and hearing. And that gives them access very easily. Deaf people use sight as their sense of communication access.

And so they depend on sign language and that

visual access. So the different services we have, like VRS, it isn't a Cadillac for deaf people, it's really just a basic service that provides functional equivalency to that which is already out there for other users.

Also, these new changes are affecting interpreters. Interpreters used to have to go from place to place to do their work and interpret for people.

But now interpreters are taking on desk-bound work. Many interpreters never predicted that would happen to their industry. But it is happening as they work in VRS call centers.

More and more deaf people are having access to computers in their homes. And so they are using internet relay and video relay services. And it is making it easier for them to communicate.

And they are not using TTYs anymore. And we have already seen several deaf people talk about how TTYs are, you know, being thrown out and land lines are being cut off, that they are focused on only the internet services that they are able to access at this time.

Internet services will require different rules and regulations. Average speed of answer is one

that that's being affected, you know. We need to determine how quick it needs to be answered, you know.

The different internet speeds that people are connecting with, you know. So the regulations need to come up with a fair result of, you know, cost of service and quick speed of answer.

Also identifying callers, the originating caller and the terminating caller, how to identify callers. Should that be required? Or should that be a service that isn't required anymore?

Should the regulations require internet capable services have logins and password protection to minimize some of the fraud cases that we are now experiencing?

The question has come up about the funding source for those internet services. Should they be moved back to the state level or maintained at the Federal level?

I'd like to really emphasize that the funds are collected -- the money is collected from the carriers. And the carriers collect from the rate payers.

And so really, in essence, whatever we call it, the rose is still going to smell the same. Okay? Whether it is Federal or State. On that basis I

believe the Federal Government should study which would be the most cost-effective and the most accessible, provide the most access and be the most fair, not only to the phone companies, but to the rate payers.

Because those are the people who are ultimately paying for this service. So if we looked at it on a Federal sponsorship level, I would encourage the FCC to look into Federal funding support for internet relay and VRS completely.

I think it is more cost effective. It will distribute the costs more evenly to all of the carriers, and as a result of that to all of the rate payers.

All of the payments that they make will be equalized. If it was pushed onto the states that they had to pay for internet and VRS services, competition would only happen at the RFP level.

Vendors tend to hold back new technology and new ideas and wait until RFPs come, and they put them in, in hopes to win over their competition. So at that different level it puts, at the Federal level, there's more competition available, rather than limiting it to a single source at the state level.

If it is pushed down to the state level

there most often isn't a multi-vendor approach. The RFP approach normally chooses one vendor for the state.

They establish a contract. And deaf people then are limited in the choices that they currently experience. Price per minutes depend on the call volume histories for those states.

And in the RFP that get sent out, a vendor will look at that state and say well if you have a call volume the price per minute will go down. But if it's a low call volume then the price goes up per minute.

And so then that cost is pushed back to the rate payer, depending on which state you live in. If the states did decide to go ahead and take a multi-vendor approach, the cost would then be much higher then if it's done on a Federal level.

What you see here on the screen, all of these new things we have coming up, in itself contribute to a reduction of the call volume of traditional relay services, which is a good thing, actually.

In conclusion, VRS and IP relay needs to be subsidized by the National fund. There should be special regulations that are separate from traditional

relay service regulations because of internet accessibility.

It's not unlike what the FFC is doing right now with VoIP, developing new regulations and new protocols. The same thing needs to happen with internet relay and VRS services conducted over the internet.

Functional equivalency needs to be taken a hard look at and redefine functional equivalency. It needs to be redefined in a way that will be more fair to deaf people. Thank you very much.

MR. CARLISLE: All right, our next panelist is Dr. Paul Michaelis, who is a consulting member of the technical staff in Avaya Labs, and an adjunct professor in the Cognitive Science Institute at the University of Colorado in Boulder.

He is the inventor, or co-inventor, of many Avaya accessibility solutions. He currently has over 15 patents, or patents pending in this area. He is the recipient of the Access Innovation Award from the Association of Access Engineering Specialists for his development of the TTY user interface for the Intuity messaging system.

He was a member of the Lucent Intellectual Property Board of Advisors, and a distinguished member

of the technical staff of Bell Laboratories. We are very pleased to have him with us here today.

MR. MICHAELIS: Thank you. And also I would like to thank everyone for inviting Avaya to speak about regulatory considerations. In most cases we prefer to rely on market forces to guide our decisions about the products we 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 our Intuity voice-mail system may illustrate why we believe that some form of regulation is essential. In 1993 I helped design and build the TTY user interface for this system.

A key feature is that callers may select whether they wish to be prompted by voice or in TTY format. This means, of course, you can give the same phone number to voice and TTY callers.

Regardless of the prompting format, callers may leave voice or TTY messages. This TTY interface is a standard feature in the Intuity system. It is not an add-on, there is no license fee, there is no right-to-use fee.

The only thing a system administrator needs

to do is turn it on. Now, despite these 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 to their customers.

In this environment we cannot expect that market pressures alone will ensure that VoIP systems are accessible. Before I discuss regulations that may be appropriate and beneficial, I think it's important to describe a few technical differences between traditional phone systems and VoIP.

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 assistive devices, notably TTYs, rely on the phone system's ability to transmit audio information reliably and without distortion. In the present regulatory environment, VoIP audio channels are not required to support reliable TTY communication.

This is a problem because the voice

optimized audio compression commonly used in VoIP systems 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. So rather than transmit the TTY tones via the voice channel, a description of the tones is sent via a parallel data channel, the receiving system reconstructs the original audio tones for the TTY device at the far end.

And, for the benefit of any engineers in the audience, these 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 voice systems up to parody with traditional phone systems. VoIP technology allows us to considerably more.

A good example of software for Avaya IP telephones is provided by Avaya for free called Universal Access Phone Status. It takes advantage of

capabilities that are present in our IP telephones to provide, via voice output, all of the information that is presented visually to sighted users, such as which lines are available, which are in use, whether the phone is forwarded, whether there is new voice-mail, whether someone on hold has been disconnected.

In fact, over 200 different functions are supported by this product. My flow 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.

In addition, we would like these regulations implemented at the Federal level, so that manufacturers won't have to deal with multiple standards and regulations that may be developed by the individual states.

Second, we believe that a barrier might develop between VoIP users and the users of traditional systems if interoperability and backward compatibility are not required.

I regard my third point as really being the

most important. We believe that if accessible VoIP systems cost more than their inaccessible equivalents, the FCC may be unable to guarantee the rights of people with disabilities regardless of whether VoIP regulations are adopted.

Previous statements from the FCC demonstrate that they have been reluctant, and appropriately so in my opinion, to require capabilities that are not readily achievable.

A key component of how the FCC defines readily achievable takes into account the cost of the incremental action. Now, the accessibility solutions I have described today are included in our products without additional charges or fees.

This was a priority for us during the design process. And we were able to achieve this by taking advantage of capabilities that were actually already present in our systems.

For example, the TTY on IP solution uses a mechanism that was implemented originally to transmit touch-tones on the internet. The TTY messaging system I described to you uses a software that was implemented originally to support multi-lingual spoken announcement sets.

How, this style of engineering, which we try

to piggy-back inexpensively onto existing capabilities, has a very important objective. Now, keep in mind, the cost component and how the phrase readily achievable is defined.

We believe that if accessible systems cost more than inaccessible equivalents this could lead to discrimination of the provision of services and opportunities for employment in organizations that are unable to or unwilling to cover the extra expense.

By reusing capabilities that were already present in our systems, we are providing accessible solutions for VoIP that are, by definition, readily achievable.

Now, 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.

Going forward, 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.

MR. CARLISLE: Thank you very much Paul. Our next panelist is Paul Schroeder who serves as the Vice President of Policy Research and Technology for the American Foundation for the Blind.

He is responsible for AFB's activities related to legislative and public policy, research and demographic trends and efforts to improve access and information concerning technology.

He has been directly responsible for a number of significant developments, including helping to negotiate disability access language during the 1996 Telecom Act.

He has been a leading advocate in the effort to enact legislation that would improve access to text books for students who are blind or visually impaired. And he has also been a leading voice in AFB's work to foster a greater access to cell phones and other telecommunications equipment. Paul, thank you very much for being with us.

MR. SCHROEDER: Thank you, very much. And good afternoon. I want to observe that so far we have all been very nice and behaved. And I will try to keep to that.

I think it's kind of a suit and necktie phenomena that we are all kind of constrained from speaking perhaps directly. And I want to compliment Jim Tobias for A, not having a necktie, and B, being fairly provocative in some of his comments.

And I thought they were very well chosen.

And those of you who may have missed it, especially those listening on the web, check him out. They were good comments.

It's interesting that we saved the regulatory portion to last, and appropriately so. I think it's good that we've been able to talk about some of the other issues, including some of the great benefits that come from IP-enabled services.

I want to make a couple of observations. But first of all I want to commend the Commission for an excellent notice of conveying your usual breadth and depth of analysis.

Those of you who have maybe been daunted by its length or its topic, please read it. It's really tremendous. It's a great read. The layering discussion alone is almost Dostoevsky in tone.

You will enjoy it. It will be in literary classes next year I'm sure. It is a good notice. And I do commend it. We have heard a lot today about Voice Over IP.

And I want to express a concern that we are really talking about something far deeper and more significant in a way than that. Voice Over IP fits fairly well within the current telecom structure.

I think we can debate and argue over how it

should be deemed in the regulatory scheme. But I think we could probably come down and agree that it's a telecom service and should be treated as such.

IP-enabled services are far more significant, and really have to be treated differently. And that's one of the things I want to talk about.

How do we ensure that people with disabilities have reliable access to these IP services with all that comes with them? Well it should be no surprise to anyone here that I'm going to advocate, yes, regulations, to ensure reliable access for people with disabilities.

Voluntary measures and market forces simply don't work. Everybody wants them to work. Everybody says they should work. Everybody hopes they will work.

But they simply don't work for people with disabilities. So, even though we might say it over and over again, it isn't true. It hasn't been true, and I doubt for the foreseeable future that it will be true.

The reason for that is fairly simply. We simply don't have the sufficient focused power in the marketplace to ensure that services will meet our

needs.

So it seems to me the role of government, and in this case the FCC, is to ensure a reliable opportunity for equal access, albeit with minimal intrusion.

Striking that balance is the critical task confronting the Commission. I think we have a historic moment to try to construct the right regulatory approach that meets the needs of consumers with disabilities, rather than trying to shoehorn us into the unrelated legacy approaches of the past.

Of course I'm referring here to the computer inquiry lines of reasoning, and to the economic-based regulatory scheme that we have been living within. Whatever the flaws of the latter, the economic scheme, might be, certainly it has served important interest, especially in constraining the abuses that might arise for monopoly power.

But even in a non-monopoly condition, people with disabilities still do not have the power to negotiate the rates, the terms, and conditions that affect our access to services.

With respect to the computer inquiry decisions, one wishes we could have been around 40 years ago to try to steer things in a different

direction.

Nonetheless, most of us weren't, maybe a couple exceptions on this table since we've got a hundred years of service. We have said several times in our responses to notices here at the FCC, we have asked the FCC to try to go beyond, to try to move past the separation of basic and enhanced or telecom and information services that arose from the computer inquiry.

We've said that in our comments on the further notice of inquiry, Section 255, and we've also made the same point in talking about broadband services.

Obviously the analysis in the notice that Commission has published also points out that there is a rich communication environment, and an environment that does go well beyond the division of telecom and if services.

Nonetheless, I have to say at the heart of the discussion of regulatory schemes in the Federal Communications Commission notice, and in the comments here this afternoon, we have continued to focus on voice and made analogies to traditional voice telephony.

We have to move beyond the focus on voice.

And we have to get to a focus on the message, on the content, for it is the communication of that content that really is essential.

Yes, the transmission of voice is important, and it does need to be protected in terms of accessibility. But so many other forms of content described in the notice, and talked about in terms of the IP environment that we are now in, are of great significance to people with disabilities, and are simply not being made accessible.

I have no doubt that the marketplace will ensure a wide panoply of services and products for consumers. And I have no doubt that those providing those services will find a way to make money.

But experience tells us that the needs of people with disabilities, if thought of at all, will be addressed as afterthoughts, retrofits, and incomplete and inferior approaches.

We are not looking for an imposed solution. Nor do we want to be bought off with a scheme that says special devices for special people. So, how do we ensure that people with disabilities can take equal advantage of these new communications services?

Well, I'm going to say that I think Section 255 of the Communications Act actually offers the

right starting point. Yes, it does bear the struggles of having been written with a telecom and information services distinctions in place.

But it addresses the needs of consumers by addressing access to both equipment and telecommunications services. And it sets user interface standards.

Section 255 addresses that all important human interface to communications. Regardless of whether we are describing a traditional telephone, or whether we are describing something that, in fact, uses enhanced technologies.

I am convinced that standards can be set to require access to IP-enabled services, that we can look at end-user devices, those used by the consumers in their home or on their person, the controllers of those devices, be they personal computers, handheld devices or otherwise, the software that runs those services, the electronic services, such as the web-bases services that allow individuals to interact.

And, of course, we can ensure that the communication protocols are open so that consumers can connect at will. But, as I said, 255 is limited by its applications to telecommunications and, frankly, its neglect in the enforcement here at the Federal

Communications Commission.

Unfortunately, our hopes have not been realized. But I believe that the breadth and approach of 255 remains right. We've gone nearly this time -- and I'm closing up here -- without using the term ancillary jurisdiction.

And I can't believe we have gone a whole morning without saying that. It's the right regulatory edifice on which to build a 255-like approach to ensure broad access to IP communications and technologies for people with disabilities.

MR. CARLISLE: We'd like to get people warmed up for a while before we actually start throwing around ancillary jurisdiction. By the way, thank you very much.

That's the first time I've ever heard a, speaking on behalf of the staff who wrote the NPRM, that's first time I've ever heard any part of an FCC order referred to as Dostoevskian.

We usually get Kakkaesque. And it's really not that long. It's only about 60 pages long, which is actually a pamphlet compared to most of what we do. And one more thing, before I take anymore heat on this hundred year comment, I'm just going by the bios.

And Vanderheiden has been in this for 30

years. Mr. Schroeder has been in it for 20 years from his bio, Michaelis for 25, and Mr. Bosson has been head since 1990 of the Texas TRS Service, and has probably got more experience than that.

So, you've at least got 89 years by my account. So just put that to rest. Our last panelist is Dr. Gregg Vanderheiden who we are very happy to have again.

He was on our VoIP forum in December of last year, and provided very valuable input on the disabilities access issues. So we are very happy to have him back again so we can delve into more detail in this forum here.

He is a Professor in Industrial Engineer and Biomedical Engineering, and directs the Trace Research and Development Center at University of Wisconsin in Madison.

Dr. Vanderheiden has been working in this field for, as I mentioned, 30 years. He pioneered the field of augmentative communication and assistive technology, and for many years has been looking at issues for physical and cognitive disabilities.

He has been involved with computer access since the late 1970s. And many access features he has developed are present in Mac, UNIX, and Windows

operating systems.

He has worked with a wide variety of Federal Government agencies, as well as corporations. His recent activities focus on cross disability access to the full range of communication and information technologies.

He is the co-author of W3C's web content accessibility guidelines, various interconnection standards, and voting systems that are usable by those with disabilities, or elderly.

Again, we are very happy to have him. And, please?

MR. VANDERHEIDEN: Thank you very much. Again, thank you for the invitation and for putting together this very excellent panel. Coming last is always a dubious distinction.

And I will try not to plow old ground. But I will try to bring some things together and to really look at some of the underlying forces that cause things to happen or not happen.

So I ask the question, why would we regulate? And the answer is we wouldn't or shouldn't unless we have to. So, is this true for Voice Over IP and for IP services?

And let's examine this. One of the things

we saw was in the telecom area we have seen nothing happen regarding accessibility and mainstream companies and products until regulation.

Although there were serendipitous things, and there were special programs, sometimes special adaptations in special room. But we haven't seen anything regarding overall access to the different disabilities and the problems they face.

With regulation, we also saw that nothing substantial happened that hasn't been driven by FCC enforcement or threat of enforcement. And so when that has either relaxed or time has passed, the interests and the efforts in the companies can actually be seen to slacken and reduce.

When a complaint is filed, interest, activities, funding, and work within the companies increases again. Now, is this because the companies are bad, or evil?

And the answer is no. It's complicated, but the underlying driving force is that it is not good business to do things that do not generate the most profit.

This is a very competitive industry. And those who ignore this, the laws of business, they are gone, they disappear. And we here who buy stocks --

anybody here buy stocks or have a pension fund?

We want our stocks to generate as much return as possible. So if you're like we, the public, are the evil owners of these companies that care about nothing but profit.

So profit isn't bad, it's life. It's like gravity. If you're old and you fall and you break your hip, you kind of curse gravity. But if you didn't have gravity you wouldn't have traction, you couldn't walk.

Profits are similar to gravity. They are both a fact, and they are what makes things work. We ignore gravity at our own peril. We ignore the profit motive and its driving and critical force in business, at the peril of actually the consumer.

If we think that things will happen for the consumer for any other reason except if they need to, then we basically are ignoring gravity. So what does this have to do with regulation?

Regulations are a way of taking important things that won't and don't happen by market forces, that aren't in the profit equation, and putting them into the profit equation.

Profit is what makes businesses work. Regulation is how society, and what society uses to

make sure that our values are in the profit equations. So it comes down to a series of questions.

Number one, do we think that access to telephony is important for people with disabilities, including those who are older? And, by the way, all of us will acquire disabilities, unless we die first.

So, the answer is yes, telecom is essential to daily life. It's essential to independent living, particularly as we age. You will find it becomes more and more essential.

And, increasingly, this has also come to be access to IP. Question two, is IP telecom? Well, from the legislation, we see that telecommunication is the transmission between or among points specified by the user of information of the user's choosing, without change in the form or content of the information center received.

Thus, the internet is telecom. The world wide web would not. That is, the internet which connects us all would be, but an information service on the internet may not.

Question three, is VoIP telecom? Well, first of all, it is transmission among specific points specified by the user, etcetera. Secondly, we are seeing that it is rapidly replacing the public switch

telephone network, especially in some markets.

And if PSTN was telecom, regardless of whether it was transmitted using wires or light, or microwaves, or satellites, or data packets over wire or air, which is what the public switch telephone network does, why would VoIP not be telecom because we used differently shaped packets and hand shaking over the same media?

Question four, if it is telecom, is regulation needed? And the answer is for some aspects no, regulation is not. But for accessibility it is. As we noted earlier, whether it is TTY compatibility or TV decoders, or hearing aid compatibility, nothing has really happened without FCC requirement.

Are standards the answer? And the answer is they are a very important component. But of all the standards that have been passed related to accessibility, the only ones that have been implemented, are those that have been required by the FCC.

In fact, our colleagues working in various international standards groups are dismayed to hear companies say that they are only going to support the U.S. related accessibility standards or components of standards because those are the only ones they are

required to.

Question five, do I have anything cheerful to say? Yes. Access over IP technologies is cheaper and easier. There are many examples of this. And we have heard some of them today.

One is a concept that we have been working on a major VoIP company with that would allow you to install one program on the central call manager server, and instantly all 10,000 or 20,000, or however many phones you have, that are inaccessible on the enterprise would become text compatible.

I don't mean you could hook up a TTY. I mean you could communicate in text on them. A deaf person could walk up to any phone and communicate in voice or text, or mixed, without any TTY, or any other device, and without changing the phones at all from what they are today.

Number two, access over IP technologies can address many more needs for more people as we have already seen today. And number three, access over IP technology can be simpler for those who are older.

Yes, wouldn't it be nice if any technology got simpler? It can be simpler for people who are older and give them what they need when they need it to stay independent without changing how the phone

operates for the rest of us.

And there's more. But it won't happen if no one requires it to. Enforced regulation can make it profitable to make things accessible. It can keep good actors from losing ground to bad actors.

It can level the playing field. It can make sure that everyone takes access into account. And it can cause access to be part of doing business, and a standard part of the future telecom system design.

And, finally, it can make sure that telecom is there for us, and usable by us, when each of us grows old and needs it. And we will. Thank you.

MR. CARLISLE: I'd like to start off the Q&A session with a question that sort of takes us a step beyond the on/off switch of whether it is regulated, or required, or not regulated or required.

Because I would like to sort of delve into what the content of a requirement would be. Let's assume there is a requirement of disabilities access applicable to VoIP, however that might be deployed in the system.

How do we best implement that requirement? Do we as the FCC issue detailed specific requirements that VoIP companies have to abide by? Do we just have a general requirement and then enforce it on sort of a

case-by-case basis and essentially allow standards to develop?

Or do we take a much higher level approach and require a series of reports to see how it actually happened, how the technology actually develops out in the market?

Any one of these is a valid approach. But, from your perspective, which one do you think works the best, and can be enforced the best? Go ahead.

MR. MICHAELIS: Number one, I would have to say that the FCC needs to consider a telephone to be a telephone, regardless of the transport mechanism. A phone is a phone.

We'll start at that basis. Next, I think we need to recognize that even if I, as a manufacturer, am required to provide accessibility, that doesn't necessarily mean that they are going to keep lining up to buy my products.

That's the reason I cited the example of our voice-mail system. We have been providing this TTY support now for over a decade. Nobody is using. Not nobody, but very few people, disappointingly few of our customers have actually enabled this capability on the system.

All they need to do is turn it on. So I

would like -- I don't know how to propose to do this -- but I would like some sort of regulation that encourage more of my customers to put accessibility into their RFPs.

Aside from non-government agencies, we are seeing very few RFPs from the business community saying we want the solution you sell us to be accessible.

That's just not happening. I don't know what enforcement mechanism might encourage that, but that would certainly be a wonderful thing, if I started seeing our customers asking for it, instead of trying to force it on to them, or perhaps you forcing it on to them by saying it's a required component of the product.

And then, finally, again, I want to reemphasize the importance of having the regulations be Federal in nature. If each of the 50 states adopts its own regulations, that's going to be a terrible mess for all of us.

We really need centralized control of what this environment's going to look like.

MR. SCHROEDER: Just a couple of follow-up comments. I would say one in three in the scenarios you laid out. One being very specific, and I regret

having to say that.

Because it's almost like voluntary-based measures. I wish general requirements would work and did work, because it would allow things to move forward.

They only can if there's an aggressive enforcement and review behind it, which is why I say three also, because it's one of the things we missed, it seems to me, in the 255 world, is having some form of required reporting on actually what's being done where we would have it down in clear digits or print, or whatever, that the there isn't much accomplished, at least in some areas of the marketplace for people with disabilities.

And so that would allow the Commission to come back and look for, you know, why is this occurring, and what can we do about it? I guess specific and follow on reporting requirements.

The other thing is, you know, Paul's point is right, and I wish in some ways I wish we could have written the ADA a few years later where we could have gotten at electronic access as a required element, as opposed to something we are still arguing about in the courts.

Because some of the things you are talking

about might well have been covered if we could have made it clear at the outset that services needed to be made accessible, webs needed to be made accessible, ecommerce needed to be made accessible.

MR. CARLISLE: Gregg?

MR. VANDERHEIDEN: Yes. It's a good question about performance based and design based. In 508 there's performance and design based. And the performance based are essentially ignored.

The performance criteria at the bottom, there's no guideline for them, there's not comment on them, there's not support documents on them, because what people really look for is something very specific.

They want to know what is it and can I test whether I have done it. And the more general and performance you make it, the more someone's got to come back here and ask you did this pass.

And that's not good for a company, because a company can't put a product out on the market and then after they put it out come talk to you. And they don't really want to come talk to you with their secret brand new product.

One other thing is a phone is a phone. Conversation is conversation. Another thing that we

see, wherever there is conversation, there should be text.

I mean, on the IP network, there really isn't a reason why you would have voice communication, where you can't have text intermixed. And if you have voice and vision and no text, which is like a 30th of the bandwidth, and the easiest to implement, you know, why?

And the answer is you didn't have to do it, so we just did the things that we thought were going to be market driven. Again, the market. It's good business, it's just not good society.

Performance under duress. One of the things that we need to look at -- we talk about these things and people say you're going to use G.711, and that's great, except when there's a hurricane, there's a tornado, there's any kind of pressure on the system.

What will the systems do? Will they drop half the phone calls, or will they drop the GE729? I mean, we had one where we said how are you going to guarantee the text will continue if there was a thing?

And he said, oh, the first thing we would do is cut all the text out so we would get more voice calls through. And this was in a conversation about accessibility for people who are deaf.

The comment was, oh, even though the text takes a very -- I mean, you could have many, many text conversations for one voice conversation, they would cut them out so they would get one more voice in.

Now, that wasn't the company decision, that was just a reaction by one of the people from a company who was looking at this issue. Finally, I do think the idea of reports over time is good.

MR. CARLISLE: I said that Ed would have an opportunity to address this one.

MR. BOSSON: There is already a clause in Title 4 of the ADA, where it clearly states, it encourages that new technologies. And so I believe that the FCC can use that particular language in the ADA to expand the regulations to apply to both VRS and IP relay.

MR. CARLISLE: We have a question over here.

MR. TOBIAS: Jim Tobias, Inclusive Technologies. I'm sorry to be testifying from both sides of the witness stand, but I too agree that periodic reports, collecting and disseminating information about accessibility solutions that are there in the marketplace, be they mainstream technologies, or assistive technologies, is a good idea.

And, in fact, the access board, and I believe we have -- there he is. He's right here, right behind me, probably follow on to my comments -- issued a market monitoring report in 1999, which our company performed.

And it was at that time kind of a snapshot of accessibility solutions, what were the features in telecom products? And so it might be time, five years now, to go on and do more of that.

But I would like to renew what I said on the panel. And that is to focus on outcomes, not on performance, and not on design criteria, but on outcomes.

You have a huge staff of very talented econometricians who should be able to calculate the social cost and the social benefit of accessibility policy.

In fact, the Commission responded to exactly this issue a number of years ago when TRS coin sent paid was an issue. And that is, I'm carrying my TTY, I want to make a relay call from a payphone.

The estimated cost to the industry of making the necessary network changes so that an 800 number could wind up at a billing system was estimate to something like 150 million dollars.

The volume of calls was estimated at somewhere between 1,500 and 2,000 calls a year. It was quickly realized that that was not a socially valuable decision to make.

And so, in fact, part of the Commission's rule was not to make a technical change, to provide workarounds for all of the TTY users, and to have a massive outreach campaign of information about how you can perform relay calls from a payphone.

And I would consider that to be another regulatory model to use.

MR. CARLISLE: Andy comments from the panel on that?

MR. VANDERHEIDEN: Yes, I would like to speak to the outcome. And one of the things that I think the FCC has done from time to time is that come back to the industry and say gee, this is something we were considering.

You said it was going to get fixed. It is now X years later, you know. Are people who are deaf able to successfully communicate? And if they say, well, yes, we are working on it.

The answer is you have been working on it. And it is actually easy to design things that need specs, that still don't make accessible communication.

The other thing I'd like to say is that one of the things that that kind of a thing can do is it can look at more than just the types of disability or the cases that have been brought in as a complaint.

The number of times I'm sitting with somebody and you are trying to solve a problem, and they say okay, but if you do it that way you are going to create a problem for this other disability, and they say oh, that's okay, they're not suing us.

And so I think it's one of the other things that that type of an approach would do in a report in looking at it, is that you can look across the disabilities, not just at the ones that happen to have been vocal up until now.

DR. PEPPER: If I could actually just ask Gregg a very specific question, because I think you may actually have the answer asked by an earlier questioner.

And that is the -- then a more general one to your comments -- the specific question is what is the current state of voice recognition software and its implementation?

MR. VANDERHEIDEN: This is actually one of the powers of Voice Over IP, is that you can actually get a phone client that would just go right on your

laptop, or a PDA.

And we now have voice recognition, which gets better and better each day, that would run while you talk. And it would literally type into the VoIP. So you'd not have to have voice recognition in the VoIP at all.

And each year that voice recognition gets better with your old phone you would get better and better. IBM is working on a project called super-human speech recognition.

And its goal is to be better than a human being at recognizing speech. And we will get there.

DR. PEPPER: So this is actually one of the good things, then.

MR. VANDERHEIDEN: It is a tremendous power, except if one decides that if it's not a phone, doesn't look like a phone, if it's a laptop that makes a phone call it's not covered.

I don't mean the whole laptop, I mean just the phone ap. Then that would fall by the wayside.

MR. BOSSON: Voice recognition, I'm not sure, you may have heard already several people mention Captel this morning. That's a new service for hard-of-hearing individuals.

They use the service that has voice

recognition within it. And it makes it possible then for a hard-of-hearing person to make a call to a hearing person.

That individual, when speaking back to them, it comes through the Captel program where it has a person who is able to speak in a way that the Captel will recognize and presents the hard-of-hearing person with text.

And they can have a live conversation. We see that more and more states are using this technology. And it's ideal for the elderly, for hard-of-hearing people, who still have good speech.

MR. CARLISLE: We have time for two last questions before we move on to the Chairman's closing remarks. Please, go first.

MR. BAQUIS: Good afternoon. My name is David Baquis. And I work for the U.S. Access Board. And I would like to raise the issue of section 508. One question that we get at the Access Board is very simple, yes or no, is VoIP covered as a telecom product by the section 508 standards?

And the Access Board has not seeken to take the position that we want to be the first to determine that voice over the internet, or internet telephony, is a telecom product before the FCC rules on this.

So this is a very important issue because these decisions about procured telecom products would be enforceable. And second, we know that although the section 508 law, the Rehabilitation Act, applies only to Federal agencies, we are well aware that many entities in society are voluntarily looking at those standards and internalizing them into their own state laws, or polices.

So when I do things like travel to the state of California and they ask me about what they should be doing for accessibility of their telecom products, they also want to know.

And they don't just want to be told that they could do the right thing if they had the resources to do so. But they want to know what they have to do.

And so it would be very helpful to us if we had a sense of how this issue's going to be dealt with and when the timeline is, and also what the enforcement implications will be for Federal agencies that have already purchased Voice Over IP-type products, which may or may not be perfectly conformant with the law.

MR. CARLISLE: Would anybody on the panel like to address that?

MR. VANDERHEIDEN: I think that's a request to the FCC. I think 508 talks about functionality so that if it's a telecommunication functionality it might be considered to fall under the telecommunication regs of 508 without getting into deciding whether Voice Over IP is.

It's the functionality. So that might be a way of addressing that.

MR. CARLISLE: All right. Las question.

MR. SLETS: My name is Ken Slets with the Information Technology Industry Council, the IT side of the spectrum. We tend to view Voice Over IP as probably something that is transitioning from our side of the technology into a telecom type service.

But we would like to suggest the FCC to be a little careful about how you approach this. In terms of performance versus design standards and requirements, we tend to view design standards as being a ceiling.

It tends to be a ceiling in the innovation market, so to speak. Whereas performance essentially establishes a floor. When you establish a floor in terms of your requirements that enables changes in the marketplace.

Our technology advances, as everybody knows,

extremely rapidly. I suspect that that's going to be the same thing with Voice Over IP. We are going to see new technologies.

They are probably already on the drawing board, that are going to roll out that will achieve or accomplish a lot of the accessibility, not only for people with disabilities, but for everybody.

And I would just sort of caution not to be too rapid in trying to box this in, because you might in essence box out solutions. And then, secondly, just suggesting that, again, with performance-based requirements what you essentially do is provide the opportunity for competition.

If you tell people how to design their products, or what specifically has to be in there, it may provide the near term solutions, but it may prevent solutions, again, that we haven't even contemplated that ultimately may be much better for the marketplace, and particularly for the industry. Thank you.

MR. SCHROEDER: I just want to return to the importance of looking at these IP services more broadly than simply looking at Voice Over IP. I think this question really points to the need for that.

Ken, your point is not doubt right at some

level. It doesn't seem to be proving right in terms of actually getting technology companies to move forward, even on the design standards that are required.

Let me make a broader point, which is the needs of those of us with disabilities don't change as rapidly as technology does. They don’t change over hundreds of years very much.

I can’t see today. I won’t be able to see tomorrow, and I won’t be able to see in a hundred years when I’m up there near Gregg’s age. And so I’m not going to be able to read text off of a screen any better tomorrow than I am today, and any better five years from now.

So, unless that text can be converted into something accessible, speech or Braille for the moment, I can’t use it. I’m not going to be able to find a button on a touch screen any better tomorrow than I am today, and any better in five years.

So, unless that button that controls the device is identifiable by the means that I have at my disposal, I’m not going to be able to use it. And so, one of the beauties to me of section 255, and really the 508 standards as well, is that they really do speak to user needs.

So while the technology changes, and while we should be promoting accessible design with rapid innovation, the needs of the users don't change dramatically.

And the ability to interface with technology is very much dependant on one's disability. And so the reason we feel it's so important for the Commission to broaden its view of this notice, to not just focus on voice, but to focus on all IP services.

And we argue the same thing back in the further notice of inquiry. We tried to get you to fit email in as a telecom service. We still think that's right, because essentially it is communications going on.

The point is, we don't have any sense that we're going to have access to it as blind people, because our needs, to be able to have access to something in a non-visual way, or in a way that uses our low vision, don't change over time.

And the technology industry needs to be able to provide those solutions, yes, through innovation. But the solutions need to be provided. And for my money the only way they are going to happen is through a regulatory mandate.

MR. CARLISLE: We are going to have two last

answers. One from Ed, and then one from Gregg. And then we'll conclude the panel.

MR. VANDERHEIDEN: Just a quick one. There is something between the functional performance and the very, very specific design that we might be considering.

It has to be measurement-based. But we could talk about measurement-based functional performance that looks at, again as Paul had talked about, what is it that an individual, whether they are sighted or blind or whatever, needs to be able to get?

And then can we provide some measurements as to whether or not this is being provided in fashions that can be made into the form that people need. And the only key on it is that we need to do these measurements under duress.

Doing these things to telecom systems in ideal situation isn't going to do it.

MR. CARLISLE: Well, I want to thank all of our panelists for giving us an awful lot to think about on this, and also solutions for some of the issues that we've got.

This is a Solutions Summit, I think you all came with a very specific set of recommendations for us. And in the months to come we will be taking them

very seriously. Thank you, very much.

What we'd like to do now is welcome to the podium the Chairman of the FCC, Michael Powell, who will be providing us with closing remarks.

CLOSING REMARKS

CHAIRMAN POWELL: Thank you Jeff. And welcome to all of you here at the Federal Communications Commission. You know, I have a text here, but I think I'm going to push it aside and talk from our experience and from my heart.

We all have recognized, and probably have heard today, enormous potential that IP-enabled services provide for all kinds of consumer welfare enhancing applications.

And to take off from a comment I heard a minute ago, it's about anything and everything IP. Voice is one manifestation. But if it by no means will be the only one.

And this causes, as is natural in public policy debate, an immediate recitation of the problems. But what this is in part an effort to do is to talk about the opportunities at the earliest possible stage.

I tend to think about the break through in IP technology as putting more tools in a tool box to

use to solve the problems of the public, whether it be universal service, in which we have always had, one solution, to try to bring services to very despaired communities, different geographies, different demographics, different socio-demographic classes.

That made that problem very, very difficult. We may have the opportunity to use a host or suite of IP-enabled devices and technologies and services in different segments of the industry to promote and tackle problems at a deeper level, and a quicker and more responsive level.

And that’s what I think IP holds the promise for us all to do. Now, while the initial debates about Voice Over IP have largely been about whether you should regulate, for economic purposes, the way you regulate the telephone system, it occurred to us that there were core values that should stand outside of that value, core values that no matter what the communication system is, just to take off on the comment about the human being doesn't change.

The human being in core values that are needed to be preserved aren’t going to change either. We wanted to, at an early stage, highlight and focus on those things specifically and specially.

And disability access to my mind, and to our

passion, is one of those things. I have been here for seven years, and worked on many issues for the disability community.

And we have had many proceedings on them over the years. But there's always the same criticism and problem about policies approach to disability access issues.

It's always being retrofitted. It's always being bolted on at the end. And it's always twice as difficult because it's being thought of at the end, after investments have been made, choices have been made, policies have been developed.

And, oh by the way, let's take care of this function in the mature stages. What the Solutions Summits approach is, or intent to do, is for those core values, bring those stake holders in this community together at the earliest possible stage.

That is as early as and as swiftly as government agencies can move, to begin to talk about quickly identifying the kinds of problems, the scope of what we'd like to see solved, to engage the stake holders, create the networks, talk about the regulatory policies right from the beginning.

And that's why we have asked you all to come here and be a part of this, and why this is so

valuable to us and -- I think if we do it right -- to you.

And it's also a way of providing a collective expertise to our legislator, and our president, about how these issues will unfold in the years to come long after this particular Commission, or even any of the people in this room, are still working on these issues.

So, this is vital. It is critical. It may even be a little novel. But in that I think is promise. And I just wanted to offer my personal commitment to you that that's what we're attempting to do.

We want to be partners in that. We want to be driven by that. And we will continue to do so. But you all are a critical voice or access to understanding where those problems lie.

So I hope this is not just an event that we will celebrate having happened on this day in may. But it really is the inauguration of a relationship and a dialogue that over the next five, ten, twenty, and thirty years, will be able to be a demonstration in the information age as to how these kinds of core values can be predicted, preserved in a regulatory exercise. And so, thank you very much for being with

us. Thank you very much for your insights. I assure you we have all this recorded. I personally am going to watch the whole summit.

And I look forward to working with you in the days and years to come to make this a reality and have us celebrating that the internet revolution truly was a revolution for everybody.

And so with that, again, I thank you. I thank you for having me with you. And I look forward to our continuing relationship, best of luck.

MR. CARLISLE: All right, with that I will call the Solutions Summit to a close. Although I would hope that the people in this room and that people who have the benefit of watching us over the internet will interface with each other and talk with each other and continue the dialogue on these issues.

Just to remind you, this will be archived on our webpage. Please go to www.fcc.gov/ipwg for the webcast. And today's presentation and transcript will become part of the public record in our IP-enabled services NPRM docket number WCP04-36.

So that's an appropriately regulatory way to end. But thank you very much for coming.

(Whereupon, the proceedings went off the record.)