Captions

(T9B)

Accessibility of Online Based Material for Persons with Deafness

James Fugate

ROUGH EDITED COPY

NTID/RIT

ACCESSIBILITY OF ONLINE-BASED MATERIAL FOR PERSONS WITH DEAFNESS

JAMES FUGATE

JUNE 28, 2005

9:00 A.M. CST

CAPTIONING PROVIDED BY: CAPTION FIRST, INC.

PO BOX 1924

LOMBARD, IL 60148

* * * * *

This is being provided in a rough-draft format. Communication Access Realtime Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings

* * * *

>> Good morning.
Welcome back!

Welcome to our session this morning.

I would like to introduce our presenter, and his name is Jim Fugate, and he is from NTID.

He teaches in the computer-aided drafting, and building technologies area.

And I am actually very much looking forward to his presentation this morning.

Also, I would like to introduce our interpreters, penny Arndt, and jean rodman, and we have Mike Cano, from Caption First.

I have to mention a couple of things.

I would like to remind everyone to please, please, fill out your evaluation forms.

That's very important.

And you can fill out your forms here in the room, and I will collect them at the end of the session, or you are also welcome to fill out the forms online.

So it's up to you.

And also, if there's anyone who has any special needs, if we're comfortable with where the interpreter is standing, is there anyone who needs the interpreter to move at all?

Okay, wonderful.

Does everyone have a handout?

No?

Okay.

We have a few more handouts left, and as our presenter
began, I will take the handouts and bring them to the people, if you could just leave your hands up, okay?

Jim, if you would like to get started.

And just to mention one other thing, it looks like there may not be enough handouts, so we'll distribute what we have, and if you would like to, the handouts are also available online at the symposium website, okay?

Thank you.

>> JAMES FUGATE: Good morning, everyone!

Welcome to our first workshop for today.

And while our facilitator is handing out handouts, I want to go ahead and get started.

My name is Jim Fugate, and I am a faculty member here at NTID, and the topic for today is accessibility online-based materials for persons with deafness.

The premise, here is the premise for today's topic.

When you design online-based material, that is material for the Internet, or material for any online resource whether it's in education, or you are just trying to present some kind of information, special consideration should be given to your audience.

You should always know who your target audience is.

And in our case, or in my case, our target audience are persons who are deaf or hard of hearing.

And what are the special needs and considerations that you should take into account when you are designing material for this particular audience.

This research resulted into the six guidelines, and this is basically what today's topic is going to be.
I am going to summarize each of these six guidelines.

There are many resources for designing materials for disabled people, making things accessible.

But I try to distill things down to focused on our target group which is deaf and hard of hearing.

I want to point out that I am not the author of these six guidelines.

This is the result of a survey, a research into all of the various accessibility issues, and distilled things to try to create a succinct set of guidelines so that we can create material that works for our audience, which includes deaf and hard of hearing.

Before I get into each of the six summaries, I wanted to just kind of introduce our topic today, which is the issue of accessibility.

We want to give you a bigger picture of this whole issue.

According to the U.S. census, we have about 54 million Americans living in this country who have some sort of disability, whether it's hearing impairment, or visual impairments, or physical mobility impairment, or mental impairment.

This is a fairly large percentage when you consider there's less than 300 million in the population at large.

So we have quite a sizable group.

When you look at the international community, especially in the developing countries, the percentage of disabled people increases significantly.

The Internet is very unique.

The Internet is the first dominant media that is used by the population at large that at least has the potential to be accessible to everybody regardless of your
disabilities.

When you are talking about the deaf community, they had certain restrictions in what they could access as far as the dominant media is concerned.

They couldn't listen to the radio, and even the television was limited to some extent.

Captioning helped to bring that along.

But if you are a person with a visual impairment, reading the "Daily News" paper was a real challenge, obviously, and it just was not practical to make a daily Braille version of the entire newspaper.

So the Internet is wonderful in that it is the first media that is potentially accessible to everybody, you whether are visually impaired, or hearing impaired, or physically impaired, so it's a real opportunity here to bring in everybody to kind of level the playing field for all of us.

With that potential, it is still well-known that the disabled population is still a much less -- has a much less use rate of the Internet, and that's for a variety of reasons, which we'll take a quick look at.

Although it's improving, the primary reason why people with disabilities use the Internet at a lower rate is the whole issue of accessibility to the material.

In a recent survey last fall, 2004, less than 20% of the fortune 100 companies homepages, these are well-known companies, large companies, their homepages, and we're just talking about the first page that you come to, and not all of the peripheral in-depth material that you get into in the website, but just their homepage has some significant portion of it that is inaccessible to portion of the population, whether you are hearing impaired, visually impaired.

And that's somewhat disappointing.
Although it is improving.

One of the reasons it's improve something that guidelines are being developed to assist website designers and corporations to make their materials accessible to persons with disabilities.

Now, anyone who is involved in website design is probably familiar with these two primary guidelines for developing accessible materials for the Internet.

And we're talking about accessibility in a broad sense here.

The World Wide Web Consortium is an international organization.

This is a group founded by Lee who you may or may not know who is considered the founder or inventor of the worldwide web as we know it.

This is an international organization set up to try to establish standards for the Internet so that regardless of what operating system that you use, or what browser you use, we can all access the Internet and the information that's there.

Just trying to establish standards.

Now, a portion of what they do a little bit more recently in the late 1990's is that they developed quite a long set of guidelines to make materials accessible.

It's very long.

I read through the whole document myself.

And there are a lot of parts to it, but it's a very good in-depth guideline for making materials accessible for the disabled.

Now, in conjunction with that, we also have the Section 508 checklist.
And this was a law passed by the U.S. Federal Government in 1998.

It's an amendment to the Rehabilitation Act.

It's a law that requires all federal agencies to make their electronic material, which includes the Internet but it's not just the Internet, to make their electronic materials accessible to persons with disabilities.

They use a lot of the guidelines from the W3C, so there is a tremendous amount of overlap with these two guidelines, but with these two documents, you have a pretty big picture of how to make materials accessible.

These two guidelines, the W3C guidelines, and Section 508, they primarily focus on the visuals of the Internet, which is understandable because the Internet is a very visual medium, and they just consider that persons with the visual impairment has the largest barrier to access that information.

And that's probably true.

However, as we all know, the persons who are hearing impaired, deaf or hard of hearing, they also have needs, and special needs, and barriers to overcome to access the materials on the Internet.

That is what my focus was, to try to dig through all of these documents as well as other resources out there, do so some user group studies, and try to distill a short, succinct set of guidelines and how to make materials accessible for the deaf and hard of hearing.

So my research resulted in six guidelines.

So now I will quickly go through each of the six guidelines to kind of summarize them for you.

The first guideline which is to provide text equivalents for auditory content.

This is somewhat -- may seem somewhat obvious if you
have audio, if you have sound, you have a narrator, and it's on video or a multimedia presentation, obviously that may probably not be accessible to a person who is deaf or hard of hearing, so you need to provide some kind of text equivalents for that.

There are three different ways to do that.

One is closed captions, the other is opened captions, and the third is transcripts.

Closed captions and open captions, the only difference between those two is that closed captions are -- they must be turned on by the user.

They're not always visible.

Often times maybe a hearing person may find captions to be a distraction and they wish to turn it off, or for whatever variety of reasons they have the ability to turn it on and off.

Opened captions, on the other hand, are permanently embedded into the video, or the presentation.

They cannot be turned off.

They're just a permanent part of the presentation.

The wonderful thing about these two options is the whole concept of synchronization.

Transcripts is the third option, and it's probably the easiest option if you have a video is just to write out a transcript in some text file, create a link on your document that refers to the text document, and you have theoretically satisfied this guideline number one.

However, that transcript is not synchronized with the video or the multimedia presentation, and that is very important, and it's a very key concept, the synchronization, because you will not benefit from the presentation if you don't have the content of that
presentation synchronized.

However, transcripts provide a very valuable resource in that they're very easily searchable.

You can download them, and they're easily read by screen readers for people may have a visual impairment as well.

So our recommendations is that either opened or closed captions should be used, and that transcripts should be used as a supplement.

You should not rely on the transcript alone, but transcripts ought to be available because of the benefits that transcripts provide.

Now, another important concept is the whole -- the concept of sound effects.

If you have a narrator, if you have a video, the ability to give the full picture of the sound, the noises that are going on, by including sound effects is important.

Not just give the transcript of the narrator's words that are being spoken, but to give the full picture of the whole sound effects that are going on.

If, for example, I cough -- (Coughs)

-- the caption can display up there that some sound occurred that was not necessarily apart of the spoken word document.

So guideline number two, it's sort of the opposite of guideline number one, is to provide non-text equivalents for text.

This sort of goes back to the ability or the reading/writing abilities of our audience.

Those of us who are involved in education, deaf education, are well aware that deaf and hard-of-hearing people tend to -- at least on average -- tend to have
weaker reading and writing skills than their hearing counterparts.

There are many deaf and hard-of-hearing people that have excellent reading and writing skills and they can read and write as well as any hearing person.

But if you were to look at the bell curve, on average, the reading and writing skills of the deaf and hard of hearing population is significantly weaker than hearing counterparts.

There are many reasons for that.

That's not the point of this presentation, but given that information, if you have a block of text, or if you have a document that has a lot of reading involved in it that may be considered inaccessible to someone who does not have very good reading and writing skills.

It's considered for a lot of people in the deaf community, reading the English language, or reading and writing skills is considered a second language to them.

Where Sign Language is their primary language, reading and writing is their secondary language.

So to rely solely on reading and writing may put them at a disadvantage.

So how can we help with that?

If you provide non-text equivalents for the text, that's done through images, and that's done through videos.

What we recommend is basically to avoid large blocks of text.

We've done several user group studies, and any time where you have a large block of text that requires a lot of reading almost always the students would not read through that large text.
They would find almost any other way to try to get that information rather than just reading through the entire document.

So what we propose to do, if the whole point is trying to get information across to an audience, is to supplement images, lots of images, descriptive images.

If you embed images into your document that tells the story, or provides the information that you are trying to get across you should be able to just look at those images and get the gist of what you are trying to say.

And then go back and read through the document to get more information, or get a little more in-depth information.

But the images should be able to tell the stories.

You can also use video.

The last bullet there talks about Sign Language videos, or signing Avatars.

There's quite a bit of research done and experiments of trying to include sign videos if you have a large block of text with a lot of information in it to have a button there or some kind of a window that shows an interpreter basically signing that information.

In some case it is works good.

When you are talking about the Internet, there are several problems with it.

Videos have a tendency to use up a lot of resources.

They can be very slow to download, to stream.

If you have a dialup connection particularly.

If you have a slow connection, you are either forced to make the image very small which makes it very hard to see, or the image becomes jerky in its motion, and it's
very limited in its success.

The only problem with creating a video is that you have to hire these wonderful interpreters, bring them into a studio, give them the transcript, record the video, translate it into a format that can be put on the internet, put it up on the internet, and then, oh, if you have to go back and make some changes, you've got to invite them back in, re-record the video, and it's just not a very practical way of creating a dynamic document.

A better way of doing it is to use signing Avatars.

If you don't know, an Avatar is basically a computer -- a Avatar is a computer-generated character.

It's not a real person, but it's an almost cartoon character, a computer figure doing the signing.

There are several programs that have created these signing Avatars, and they're a lot of fun to play with.

Because you can type in what you want them to say, and then it will be created.

You can even have it live program in that the text is streamed into this program and signs it as it receives this text.

It's great for dynamic web pages that are created on the fly, like news stories and stuff like that, that's frequently updated.

It's great for -- well, it's great for downloading it because the images are tending to be very small because they use a lot of solid colors.

The BMAP can be highly compressed, and are small and they're better for downloading over the Internet.

It's improving, but still the problem with it is that ASL, Sign Language, is a very complex language.

It's not just the hand motions, it's the whole body
language, it's facial expressions, it's the use of spatial references in front of you, and it's very difficult to get full and accurate interpretation just by feeding words to a program that just does a strict translation of those words.

So the whole technology is improving.

What we recommend -- or I should say what I recommend is to supplement all your text with a lot of images, descriptive images.

And then if you have a long story, create a signed video of that because that's a wonderful way for many people in the deaf community to get that story.

The third guideline here, there are actually two parts to this.

Avoid the false perception of sound.

What this means is that if the user is looking at a document, or watching the presentation, and there's sound going on, but the user is unaware of that sound and doesn't know that there is sound going on that's called the false perception of sound.

Even for hearing people, if you have a computer that does not have sound equipment on it, or a sound card or something, and you are running a video, or you are running some kind of a slide show, and there is a narrator going on in the background, but you don't know that it's there, how would you know that there is a narrator there, you are missing obviously some information there.

You try to avoid that, and the flip-side of that is that the false-positive perception of sound.

And that occurs when you think there is sound, but there really is no sound.

Examples of each one of these, in the first one, the false perception of sound is this happens a lot with -- like if
you create a slide show, and you are presenting data, some charts, figures, or you are trying to present information just through a basic slide show, and you are looking through the slide show.

There is a narrator going on in the background that's explaining the information, or explaining the data and the charts and giving a very specific interpretation of those charts and figures.

But if you don't hear the narrator, and you are just looking at the slides, you may come away with a very different interpretation than what the designer wanted you to go away with.

An example of the false-positive perception of sound is most video has some kind of soundtrack to it, or even a multimedia presentation, why we call it multimedia because it has all of these different forms of media which sound is usually a part.

If you are deaf or hard of hearing, or if you don't have sound equipment on your computer and you are running some kind of multimedia presentation or video, you might think that there is sound there.

If you don't know that there isn't sound, you are getting a perception that you are missing some information.

Some people say that's not really an issue because you are not really missing any information, but it is a problem if you think that you are missing information.

It becomes a distraction on one hand, but it also gives a very negative, a very frustrated impression of the website, or the material, if you think that you are missing something.

So how to avoid it.

Always give a visual clue of the presence of sound.

Let the user know that there is sound.
Now, if we go back to guideline one, if there is a narrator, or there is sound there you need to provide text equivalents of that sound.

There's a lot of overlap with these guidelines here.

But if we're strictly talking about sound, you need to let the user know in some way that there is sound as part of this presentation.

Or on the flip-side, let the user know that there is no sound.

And one way to do this that's often done is to include maybe a speaker icon, or some kind of volume control on there that usually indicates that there is going to be sound there.

If there is no sound with part of the presentation, still include the icons there, the speaker or volume control, but gray it out so that it's inaccessible.

Guideline 4, and I see that I am running out of time a bit.

Guideline 4 is to provide context and orientation information.

This goes back a little bit to just the way that you present textual information.

Divide large blocks of text into smaller groups that can be more easily digested and more quickly understood.

If at all possible, avoid any kind of large blocks of text.

And one of the best ways if any of you have taken a technical writing course, technical writing is a terrific way to kind of organize your information in such a way that it's more easily digested breakup your text.

Use headings, use sub-headings, and by using headings and sub-headings, just by reading those headings you should be able to get the gist of what the point is of the
information.

Include lists and tables.

Use charts and graphs.

Use contextual graphics.

Again, that goes back to guideline two.

Providing non-textual information for text.

But good technical writing skills is a great way to kind of present your information.

The fifth guideline, use a clear and simple language.

This is a little bit -- this seem as little bit hard to do.

It sounds easy, but it's into the easy.

I am not a language expert.

I am more of a technical person than a language person.

However, there's been several resources out there and several attempts by many different people to kind of create guidelines for writing English for people whose language -- first language is not English.

This is for people who are in English as a second language programs.

This is also for people if you are in the deaf institutions who struggle with the language.

But I have found that if you write everything in very simple short sentences, that's almost as hard to read as something that's written in longer and more complex sentences.

So it's a very difficult balance.
But I kind of summarize many of the guidelines that I found into a way that I think can help you, you know, improve the writing so that you are able to balance stylistic writing, keep things interesting, but yet make it more simple and easier for someone who may struggle with the language to understand.

Actually, in your handouts, just because of time limits, I am going to kind of go through this very quickly.

But in your handouts you can read through these if you want.

There's the guidelines for writing simple English is sort of broken up into syntax which is grammar, how to put the words together, and semantics, which is the sort of conceptual writing, the concept that you are trying to write.

So basically those two different categories.

And I believe that there are eight different syntax guidelines here.

Will just go through them real quick.

Want to limit your sentences to two main verbs, except when they're joined by and, but, and/or.

The and, but, and/or are used as a conjunction to kind of put two complete independent sentences together in one longer sentence.

But within each part of the sentence you want to try to limit yourself to only two verbs.

In other words, you don't want a lot of actions going on that can be very confusing for someone who is attempting to basically decipher the words, and then put it together in one sentence.

If you have too many actions going on, it's easy to get lost.
In this example, when he finished working on his project, the student expressed an interest in expanding his project by adding a two-car garage and a workshop.

There are three different actions going on in this one sentence here.

It may not sound difficult to some of us, but someone who is trying to decipher each individual word and then put it together into a sentence at the end if there are a lot of things going on at one time, it's very easy to kind of get lost or to get a little confused about what exactly is going on.

So break it up.

When the student finished working on his project, he was interested in expanding his project.

Period.

And then, he wanted to add a two-car garage and a workshop.

Just break it up into two independent sentences.

Syntax guideline two.

Do not separate a subject from its verb.

Every clause of a sentence has a subject and a verb.

Try to keep them close together so that you know that the subject performs some action.

In this example, the computer stations that are in the PC labs have software that you can use for the courses.

In this example, the computer stations is the subject, "have" is the verb, and there is a modifier kind of separating the two.

Rewrite that sentence so that the subject and verb are
closer together, and it's a little more succinct.

Guideline three, do not delete optional parts of sentences.

Oftentimes we drop parts of a sentence when it's implied.

If you have more than one verb that's used in the same subject, the tendon tendency is to drop the second subject, it's implied that the second verb is used in the first subject in this example, you must have your acceptance letter before registering for classes.

It doesn't sound like a difficult sentence, but the second verb before registering for classes, the second clause, does not have a subject.

Who is registering for classes?

Well, you must have your acceptance letter before "you" register for classes.

Avoid the use of passive voice.

When I first started working here, this was probably the dominant guideline that I was given.

Avoid the use of passive voice.

For those of you that don't know what passive voice is, it's basically a verb is an action, the subject performs some action, and that's called active voice.

If a verb is passive voice, that means that the subject is receiving the action of the verb.

It's not doing the action, but it's receiving the action.

So in this example, construction materials class was taught by an experienced professor.

The subject in this case is "class," and it's receiving the
action of "taught."

It's not -- the class is not teaching anything.

The class is being taught by an experienced professor.

So to change the passive voice to active voice, an experienced professor taught the construction materials in class.

And for English learners, knowing who is performing what action may get a little confusing.

So keep things in active voice as much as possible.

Use logical word order such as sequentially or cause and effect.

Keep things in order as we go, in chronological order.

The events in the first part of the sentence should occur first, and then the events in the second.

We will send you an application when you return the reply card.

The reply card -- returning the reply card is actually occurring first.

But having it at the end of the sentence may be a little disconcerting for someone who is, again, trying to decipher each individual word.

When you return the reply card which happens first, we will send you an application.

Guideline 6, do not interrupt the main clause with a relative clause.

And this goes back to keeping the subject and verb together.

Not having a major interruption in the middle of the
clause.

The computer software used in our classroom can be purchased at the campus bookstore.

Computer software can be purchased is the main clause, and it has a major interruption modifier used in our classrooms.

So pull that modifier out, and it's our classroom software can be purchased at the campus bookstore.

Saying the exact same thing, but it's just much simpler and succincter.

This one I think is probably important.

Avoid the use of implied negatives or double negatives.

Again, if you are a person who is deciphering the words, double negatives is very tricky.

We seldom turn down students who have good drafting experience.

By the way, all my examples are from my program in CAD and building construction.

We seldom turn down.

So if you are a good drafter, are you going To be accepted or not?

It can be confusing exactly what we mean, because seldom turned down are two negatives put together.

Well, rewrite that sentence, we almost always accept students with good drafting experience.

It's just one simple, positive statement.

The final syntax guideline is place pronouns after and close to the referents.
This is a good grammar technique use in general.

You do not use a pronoun before you actually define it.

So after turning "it"Yon, we're not sure what "it"Yis yet, the computer will ask you for your log-in name.

You used a pronoun before you defined it.

You should always define a pronoun before.

So after turning on the computer, it will ask you for your log-in name.

And then a few quick semantic guidelines.

Keep in mind the world knowledge of your audience.

In our case, or in my case, the audience are college-aged deaf students.

It was a real shock to me when I realized that I don't consider myself as an older person but I think I'm evolving into that.

(Laughter)

All of my students, all of them, almost all of them, are college-aged deaf students, and none of them were born when I graduated from high school.

And that was just a awakening for me.

(Laughter)

None of them have any memory of the '80s, Ronald Reagan, that whole era.

(Laughter)

And if you talk about the Vietnam War, or Watergate, Watergate was in the news recently, if you try to talk about that, they just get glassy-eyed because that's not
a familiar world to them.

(Laughter)

Use difficult technical words sparingly.

If you use a technical word, and oftentimes it's necessary to do so, define it and define it clearly, define it early, and then be consistent in using that same technical vocabulary.

If I have a mechanical drawing, I shouldn't refer to that same drawing as an assembly drawing, even though it's the same thing.

Avoid the use of idioms, metaphorical expressions.

Again, a lot of hearing people tend to have a lot of colorful language that we use, and people who are deaf or hard of hearing oftentimes will be unfamiliar with it, and they oftentimes take things literally, which you may not want to happen.

The final guideline, number six, is to provide clear navigation mechanisms.

When you are so busy trying to decipher the information, it's very easy to get lost in the materials.

Our online courses have a lot of -- has a whole menu system, has a lot of branching pages to them, and it's very easy to get lost.

Always have some kind of reference somewhere to let the user know where you are, and how to get back to a different place in your online material.

If I had a site map, especially -- like RIT, the institute, has a humongous and very decentralized website.

I want to say that every area is responsible for their own website.

So to get to my program, the CAD program, you go to
RIT, then you go to NTID, then you go to academic programs, and then you go to the college bulletin, which then takes you to the CAD program, and then you can finally get to the CAD programs.

It's a ways to get down there.

So as best as you can, provide some kind of easy accessible navigation system.

So that they can find their way around.

So that concludes my presentation.

These six guidelines I hope by sort of looking at these guidelines will help you to develop usable materials that the deaf and hard of hearing community will be able to access easily.

I will be happy to answer any questions that you may have.

And please don't forget to fill out the survey, and then what do they do with it?

Just drop it off?

>> You can drop off your evaluation on the chair, or up on the table.

Did anyone have any questions?

You have a question right over here, Jim.

>> JAMES FUGATE: Do you mind -- because we're recording everything, if you could use the microphone.

>> Audience member: You mentioned that there were programs for signing Avatars.

You do have any recommendations, or some suggestions of ones that might be most useful?
>> JAMES FUGATE: Yes.

There is a program called sign tell and if you go on the Internet, if you give me your business card I will be happy to send you references.

Also, I have an eight-page paper on this presentation that will be available on the website.

At the end of the paper lists all my references.

So a lot of that information is available there.

But if you want to give me your business card I will be happy to send you that.

>> Audience member: What sort of resource would you use to have them look at your syntax guidelines -- not your guidelines, but your syntax after you've composed materials to see if you've followed these guidelines?

>> JAMES FUGATE: Well, good question.

There is no software program that you can feed the text through and have it -- that might be an interesting one to create for someone to create.

At least I don't know of any software.

I have not found any software program that will do that.

So what resource you use, I guess your eyes to kind of go through and read through it.

It's important to note that these rules, these sort of guidelines, they're not really rules, but they're guidelines.

We do not want the language that we use to be so simple.

I had an English professor here at NTID who said, "We want students to see complex sentences, and that's the
only way they'll learn it by being exposed to it."

I guess what these guidelines do is just take the bulk of your document and simplify it to a point where the important information can be -- can come across.

But you don't want to never use any kind of complex sentences or passive voice.

These are just simply guidelines.

But that would be an interesting project.

I will mention that over at RIT and have a graduate student create a program for that could you come to the microphone?

>> Audience member: We're interested in the software that you are talking, about the cartoon picture that you talked about.

>> JAMES FUGATE: Like the Avatars?

Yeah, I had a question earlier about that.

>> Audience member: How can we get that?

>> JAMES FUGATE: I don't represent these companies, but there are a couple of these companies that have developed them, or are developing them.

They're available for purchase obviously.

One of them I know that not necessarily made for the Internet, but it's a program that you install, and it just always is live there on your desktop on the computer, and then if you have -- if you see some text that you want signed, you just highlight that text, and then you just do a right click, and it will pick an option and the little window will pop up of a character signing that text.

Give me your business card as well, and I will send you -- I will give you the list of companies that I am aware
of that are doing these signing Avatars.

>> Audience member: Okay.

Thank you.

>> JAMES FUGATE: Sure.

>> We actually have to conclude the session.

Many sure that Jim would be happy to answer any questions if people would like to stay after.

So I want to thank Jim for his wonderful presentation.

(Applause)

>> And I encourage everyone to please, again, fill out your evaluation forms.

You can leave them at the top of the room the chair, or you are welcomed to leave them here or hand them to me.

You can also go online and the next session starts at 10:00.

So enjoy.

Have a good day.

* * * * *

This is being provided in a rough-draft format. Communication Access Realtime Translation (CART) is provided in order to facilitate communication accessibility and may not be a totally verbatim record of the proceedings

* * * *