

SOFIA ENAMORADO:

Thanks for joining this webinar entitled "Accessible Video at Amazon." I'm Sofia Enamorado from 3Play Media, and I'll be moderating today. I'm joined today by Peter Korn, accessibility architect at Amazon Lab126. And with that, I'll hand it off to Peter, who has a wonderful presentation prepared for you all.

PETER KORN:

Thank you very much, Sofia. And thank you, 3Play Media, for hosting me and the opportunity to talk about the work we are doing at Amazon. Great. So I'm going to be talking today about the work we are doing at Amazon to make video and media accessible, but I'd like to start with just a few words about Amazon.

Amazon opened 27 years ago in July of 1995. Our work is guided by four key principles. This is customer-facing work rather than customer obsession, innovation, and a lot of things that we have done have been pioneered by Amazon, whether it's one-click shopping or reviews from customers on products. And Amazon has-- includes a number of companies that you may be familiar with, companies like Audible, Evona joined the fold a little while ago, Goodreads, and so on that are all part of the larger Amazon family.

And since this is a talk about accessibility, I also want to mention that we have a thriving collection of Amazonians, as we call ourselves, with disabilities. This is part of the Affinity Group, AmazonPWD, or Persons With Disabilities. And many of these Amazonians help with product design and development and internal beta testing to help us make our products great for customers with disabilities.

The new era of accessibility at Amazon started about four

and 1/2 years ago in May, 2013, with accessible book reading, Kindle reading on iOS and Android. About four years ago, we brought the Android accessibility features to our Fire tablets. This included TalkBack screen reading, magnification, and 1.15x large fonts. About three years ago, in October of 2014, we turned large fonts up to 11, or more accurately, 1.5x. And then about a month later, we introduced Amazon Echo and Alexa to the world.

We've been increasing caption coverage in Amazon Video for some time, and just about two and 1/2 years ago, in January of 2015, we reached 100% captioned coverage of our Prime Video catalog. And then four months later, we announced something called Amazon Video Direct, which is self-service video publishing. And a requirement to be part of Video Direct is that the content submitted to us be captioned. We have a list of companies that folks using the self-service Video Direct platform might use for captioning, and I'm delighted to say that at the top of that list is 3Play Media.

About two years ago, in October of 2015, we brought VoiceView to the Fire tablet. This is the screen reader we developed from scratch. Also, the Amazon Echo gained two companions-- Echo Dot and Amazon Tap. A little over a year ago, in May, 2016, we brought the VoiceView screen reader to Kindle e-readers. Now the iconic e-reader and all devices that Amazon made, where you could read books, had a screen reader on it.

And then a few weeks later, we introduced VoiceView Preview on Fire TV, and that rounded out, then, the VoiceView screen reader on all of our devices, save Echo, which was self-voicing. So at that point, all Amazon device family talked. And we followed that release of VoiceView

Preview in May with an update to a full final release in December of 2016.

On the software side, this past September, we brought caption support to Twitch, our service for self-streaming of videos. And last November, we brought out Amazon Rapids, a wonderful application for children who may be new to reading, which was a highly accessible application. And then a month later, Amazon Video came-- Amazon Video on living room devices became accessible. All of those-- nearly all of those devices that Amazon Video runs on are now self-voicing and talk for our blind customers.

Things continued to accelerate as we moved into 2017. In February, we introduced a toll-free customer service phone line staffed with folks trained in assistive technologies like screen readers so that customers who are blind or low vision or are using other assistive technologies would be connected with customer service agents who understood how those technologies worked to help them with customer service on our retail website. We also introduced the accessibility microsite. This is a one-stop location for everything having to do with accessibility at Amazon, and that is amazon.com/accessibility.

Then in March, we introduced Kindle reader for PC accessibility. This allows the Kindle reader to work with the NVDA and JAWS screen readers. Finally, this past June was an exceptionally busy month for us. We introduced audio description on Amazon Video on June 9. A week later, we introduced the Element Electronics and Westinghouse smart TVs, started shipping Fire TV Edition smart TVs. These are full televisions and 46-inch, 50-inch, 55-, 65-inch televisions with a VoiceView screen reader and Alexa built in. And then at the very end of June, we

started updating the VoiceView screen reader on all our Fire tablets with support for refreshable Braille displays.

Customer obsession is a core leadership principle at Amazon, and I wanted to play a short video now of some customers talking about their use of Amazon

[VIDEO PLAYBACK]

- Words appear. How do you use Amazon? Feedback from customers with disabilities. Dena Wainwright, enterprise online accessibility program manager, Wells Fargo.

- My daughter has a Kindle Fire, and I have the Amazon app. I use the website and I use the Kindle app. Mostly its content, and its online shopping. I was so pleasantly surprised when I got the Kindle. I did not expect to be able to set it up by myself for my daughter.

- Luke Hsieh, assistive technology advocate, Community Access Center.

- [INAUDIBLE] I have the latest Kindle Fire, 10 Kindle Fire HD with a keyboard. Well, I use it for books, for demonstrations, watch movies. I'm a Prime member. I have Amazon credit card. I have Amazon Echo. I have Amazon Echo Dot.

- Louis Herrera, outreach specialist, SoCal Gas Company.

- To me, as a totally blind user, you can't beat the screen reader. The VoiceView software is just wonderful. The voice quality is great.

- Hina Altaf, assistive technology, slash, accessibility

specialist, Center for Sight and Hearing.

- I am on Amazon 24/7. Even my son, who is only four, he says, "Mom." I said, "So son, guess what I'm doing right now. Amazon!" I use my iPhone to do shopping as well, and I use desktop, laptop. I use it to listen to audio books through Kindle. I also use it to look for recipes, ask questions, temperatures, calendar, schedule appointments, and check for weather.

- Imran Ahmed, JAWS script writer and instructor.

- Expecting accessibility from Amazon, that's been amazing. And I'll give you an example. You know, I've been interested in Fire Stick, but I wasn't sure how good the reader is on the Fire Stick yet. And I said, well, it's not too expensive. It's not a big investment. I will buy it, see what happens. And with low expectations. And going in with low expectations, it astonished me like how well it's doing out of the box. And then in the course of a month, or like four to six weeks, it improved even more to a point where one app wasn't working very well with the screen reader, and then it started working extremely well.

- Michael May, CEO, Seattle Lighthouse for the Blind.

- The two big problems for blind people are reading and driving, or driving, getting around. And the importance of being able to shop online for me, for a blind person, is huge, because it means that the transportation issue is the biggest problem for blind people. All of a sudden, I don't have to go somewhere to get my products. And then when I get to the store, how do I pick between all of the different peanut butter brands on the aisle? How do I pick between all the

different products? Or maybe I just want to window shop. I just want to browse and see what's around. Window shopping is not an option for blind people, generally.

Audible books was really key for me, because the loaner Talking Books didn't really have current titles. So the fact that I could get good Audible books was great, and then that came into the mainstream. And once that was in the mainstream, then more and more books were in audio. And that just spiraled into a whole new option of accessible materials for me.

- Judy Dixon, consumer relations officer, Library of Congress.

- We have an Amazon Echo. In our house, she is called, "She who Shall Not Be Named." We have a Tap, and we have three Dots. I like to cook, and I do a lot of cooking. So when I'm in the kitchen cooking, Alexa in our house is a kitchen appliance. And she lives on the back of our kitchen table. So while I'm cooking, if I run out of an item, I can ask her to put it on the shopping list. While I'm cooking, I can say, play me some Billy Joel. And then while we're having dinner, we play Jeopardy. And so she performs many, many functions. And then we have two grandchildren, and when they come, they-- it just-- she is the total entertainment for hours.

[END VIDEO PLAYBACK]

PETER KORN:

So with that as a backdrop for Amazon accessibility in general, I'd now like to switch gears and focus on the main topic of this webinar, which is Amazon Video accessibility. Amazon Video is over 10 years old, delivering video to

many, many millions of customers around the world. There are four ways to watch an Amazon Video title-- Prime Video, which we have tens of thousands of titles available streaming free with Prime, what we call subscription video on demand. Customers can also rent movies or purchase them. These are transactional video on demand. And then finally, we have a growing selection of ad-supported videos, or AVOD.

And these video-- this video catalog comes from a variety of sources. We have major studios, such as Paramount, Sony, Lionsgate, smaller studios, such as Studiocanal, television studios-- Fox, NBC, PBS. We have a growing collection of Amazon original titles like *Man in the High Castle*, one of my favorites, *Transparent*, *Bosch*, more all the time. And then Amazon Video Direct, the self-service collection, where you can publish your own videos on our service.

And there's a lot of variety in the video catalog-- TV shows, movies, a growing collection of shorts, instructional videos. There's a lot of great children's content, which also feeds into the Amazon FreeTime subscription service for children, and these Amazon originals.

Turning now to accessibility, we have a huge amount of closed captioning on Amazon Video. 100% of the Prime Video catalog is captioned. And for those few cases where we haven't gotten captions from one of our studio providers or, perhaps, older legacy content, if this video is at all popular, we will pay for captioning ourselves. And as I mentioned earlier, captions are required for submission through the self-service Amazon Video Direct system.

Amazon Video works with assistive technologies on a huge number of video playback devices, devices that have

screen readers on them. We work with those. And for the growing number of what we call living room devices, things like game machines, Roku, even many smart TVs-- those devices these days pretty much all have text to speech built into them. And Amazon Video works with that text to speech.

Another thing we've been doing since June 9 is audio description. So at launch on the 9th, over 100 movies from major studios had audio descriptions on them and 10 Amazon original series like *Bosch*, *Man in the High Castle*, *Transparent*. And these are multiple seasons, full seasons of these at launch. And more titles are coming.

And audio description works on many, many playback devices today on Fire TV, Fire TV Stick, of course, our just released Fire TV Edition smart TVs from Westinghouse and Element Electronics, our Fire tablets, on iOS devices, phones, and tablets, and Android devices.

And just quickly to note, all the many devices that you can enjoy Amazon Video on includes Xbox One and One S, Sony PlayStation 4, a number of Roku streaming devices, many smart TVs and Blu-ray players, including players from Hisense, LG, Samsung, and Sony.

So now I'd like to get into a few demos, starting with our VoiceView screen reader-- sorry, starting with closed captioning, actually, and then moving into the VoiceView screen reader on Fire TV.

Fire TV includes quite a few accessibility features built in. From the home screen, I arrow over, pressing the right button, to Settings. Select Settings. Then right arrow over to Accessibility. Select Accessibility. And here is where I can turn closed captioning on and off, turn the VoiceView

screen reader on and off, as well as turn on the experimental high contrast feature.

Let's take a look at closed captions. I have now said that closed captions should be on, and I can adjust the captions in quite a variety of ways. I can change the text, the text background, the window background, or I can, instead, pull from the user's global accessibility settings, which can be found at the web address amazon.com/cc.

Let's take a look at some of the text options. I can change the size of the text. I can change the color of the text. And I can change the opacity of that color, the font choice, et cetera, et cetera. This is the full [? CEA708 ?] caption setting.

Taking a look now at caption playback and caption use during video playback, we have the second demo. If I press the Menu key, I can go here to Subtitles and Audio, choose whether subtitles are on or off, and then what-- I have some Quick Setting capabilities for the subtitles, not the full UI that I showed you within settings, but a quick set of settings to make things a little larger or a little smaller.

Moving now into the VoiceView screen reader, this next demo shows how I can turn it on from anywhere using my remote and what happens when I first turn it on and the experience of a beginning user. Fire TV also includes the VoiceView screen reader built in. I can turn this screen reader on at any time from anywhere by holding down the Back and menu keys together for two seconds like this.

[BEEP]

VOICEVIEW:

VoiceView ready. Welcome to VoiceView on Fire TV. If you started VoiceView accidentally, press the Back button to turn off VoiceView. Press the Play/Pause button on your

remote to begin a brief VoiceView tutorial. The Play/Pause button is the middle button in the bottom row of three small buttons.

PETER KORN:

The very first time I launch VoiceView, I'm invited to go to the tutorial. Let's take a quick look at it by pressing the Play/Pause button.

VOICEVIEW:

VoiceView tutorial-- are you new to VoiceView on Fire TV? Press the Play/Pause button on your remote to continue the tutorial. The Play/Pause button is the middle button in the bottom row of three small buttons. To exit the tutorial, press the Fast Forward button. The Fast Forward button is the right button in the bottom row of three small buttons.

PETER KORN:

So I will now play. I'm going to interrupt the full tutorial video just to make sure we have enough time for questions at the end of the presentation. This next demo is a deep dive into the VoiceView screen reader. This is, once I've finished the tutorial, what it's like as a blind person to use the screen reader on Fire TV, Fire TV Stick, or the Fire TV Edition smart television.

VOICEVIEW:

Home. Use left and right to move between items. Main Menu contains top level choices, such as Search, Home, Movies, and Settings. When an item is selected, the lower portion of the screen updates to contain related content.

PETER KORN:

So what we've heard now with VoiceView reading the selected item or the screen reader focused item, Home. It told me what has the screen reader focus, what's selected, Home. Then after a brief pause, it gave me a usage map. It told me that I would move left and right on the remote and move across the Main Menu row, and I would press Select, choose an item within the main menu. Then further, after another pause, it read orientation text.

VoiceView watches your use of Fire TV, and the first time that you encounter a new screen or a new part of a screen that is fairly complex, VoiceView reads orientation text to you, helping the new user understand how this screen is laid out.

So if I press right here, I will go now to your videos.

VOICEVIEW:

Your videos.

PETER KORN:

And because I am still on the main menu, it's not reading new [INAUDIBLE] text. And again, because I'm not on a new [INAUDIBLE] screen, it's not reading orientation text.

VOICEVIEW:

Watchlist, *Sherlock*, Season 4, button. Use up and down to move between categories, such as New Releases or Comedy. Use left and right to move between items in the category content grid. Moving focus to an item will automatically speak details, such as the description and rating after a brief pause. While speaking, you can skip through info using the Fast Forward or Rewind buttons and stop speech with the Play/Pause button. *Sherlock*.

PETER KORN:

So what we just heard was the new item that I selected, *Sherlock*. It then told me the insets for this part of the screen, [INAUDIBLE]. And then it read me the orientation text for this portion of the home screen, the content grid, which acts very differently. And one of the interesting things it told me was that in the content grid, as I select items, there is information that's a description for what is selected. This item is described by something else on the screen. And VoiceView will read that description for me and allow me to move through it rapidly. Let's take a look at that as I select right and go to another video on my content grid.

VOICEVIEW:

The Expanse, Season 1, Prime, button. *The Expanse*, 4.5

out of five stars from 7,615 customers. IMDB rating 8.3 out of 10. 2015. Rated TV-14. Closed captioning available. Season 1. The series is set 200 years in the future, after mankind has colonized the solar system. A hardened detective and a rogue ship's captain come together for what starts as the case of a missing young woman and devolves into a race across the solar system to expose the greatest conspiracy in human history.

PETER KORN:

Now this is an awful lot of information. If I am sitting down wanting to watch something with my 7-year-old daughter, I'm going to be very interested in the maturity rating of the title. And I don't want to have to wait a fair amount of time to get to that, and if I miss it, I don't want to have to wait through that large amount of information before I can get to it. So let me show you how VoiceView uses Fast Forward and Rewind buttons to allow me to move through this information much more efficiently, to put the blind user in full control of their device.

VOICEVIEW:

The Expanse, Season 1, Prime, button. *The Expanse*.

PETER KORN:

Fast Forward.

VOICEVIEW:

IMDB, 2015.

PETER KORN:

Fast forward. Fast forward.

VOICEVIEW:

Rated TV-14. Closed captioning available. Season 1.

PETER KORN:

[INAUDIBLE].

VOICEVIEW:

The series-- Season 1.

PETER KORN:

Back.

VOICEVIEW:

Closed captioning available.

PETER KORN:

Back.

VOICEVIEW:

Rated TV-14. Closed captioning.

PETER KORN:

So I was using the Fast Forward button to move rapidly forward to TV-14. And then Rewind moved back to it by first time through. And when I'm done, and I don't want any more information, Play/Pause to get the screen reader to [INAUDIBLE].

So let's take a look at some of the other videos that we have here. We were watching *Z, The Beginning of Everything* a little earlier using closed captioning.

VOICEVIEW:

Amazon. The Last. The Collect. Z, The Beginning of Everything, Season 1, Prime, button. Z, The Beginning of Everything. Resume 27 minutes remaining, one of four. Use left and right to move between items. Details contains info about a video [INAUDIBLE] and buttons in a row like Watch Now or Get. Additional rows of related content are below these options.

PETER KORN:

So there's a lot of detailed information here on the screen, and I would like to read all of those details. So what I do, and this information isn't normally part of the user interface that I would normally navigate to-- there's no button or text boxes in the text that you'd see dominating the bulk of the screen-- is I will long press of the menu key. The menu key is the voice cue key. It is the key that VoiceView uses for all kinds of interactions directly in the VoiceView screen. I'm going to press and hold it for a moment.

VOICEVIEW:

Review mode on.

PETER KORN:

And now to a long press of the Back button. Sorry, the left button on the four-way remote.

VOICEVIEW:

Z, The Beginning of Everything.

PETER KORN:

Now I can navigate using left and right on the four-way remote to move through all of this content.

VOICEVIEW:

4.5 out of five stars from 14,849 customers. IMDB rating 7.3 out of 10. Season 1, episode 1. Air date, November 3rd, 2015. Rated TV-14. Closed captioning available. Pilot - Zelda Sayre yearns to break free from the monotony of Montgomery. She sees her chance when she meets a young soldier named Scott Fitzgerald. Starring Christina Ricci, David Hoflin, Kristine Nielsen.

PETER KORN:

Now you and I, who are looking at this screen, and notice something interesting about the names of these actors and actresses. Christina is spelled one way. Kristine is spelled in a significantly different way. If the only way that a blind customer could navigate the screen is through these large chunks of information, they might never know how these actresses names are spelled. But in review mode, I can change the review granularity. Right now I am reviewing by item, but instead, by pressing the up and down keys, I can rotate through to--

VOICEVIEW:

Window. Character.

PETER KORN:

Now I'm in character navigation.

VOICEVIEW:

C-H-R-I-S-T-I-N-A, alpha.

PETER KORN:

And that is how Christina has spelled her name.

VOICEVIEW:

Word, Christina Ricci. David Hoflin. Kristine.

PETER KORN:

And now if I switch back to character.

VOICEVIEW:

Character. K, kilo, R-I-S-T-I-N-E, echo.

PETER KORN:

I can spell the name of Kristine Nielsen. And I get phonetic spellings if I pause so that I can tell the difference between

E, C, B, E, C. It all sounds fairly similar, but our echo, bravo, tango, Charlie, et cetera.

So now we'd like to take a look at what we can do with video. And this is what we see here with Netflix.

VOICEVIEW:

On the Profile Selection screen, who is watching Netflix? Peter. One of three buttons.

PETER KORN:

I'm the one who's watching.

VOICEVIEW:

On the Browse screen in the Spotlight row, one title in this row. *Ozark*. Watch Season 1 now. Desperate times call for family unity. Now family night means stacking millions in drug cash inside a cabin's walls. Play. In the New Releases row, 75 titles in this row.

PETER KORN:

And so on. However, one of the wonderful things that we have done with Netflix, Hulu, and other folks is something called Content [INAUDIBLE]. I'm going back to the home screen.

VOICEVIEW:

Home.

PETER KORN:

And there's a particular show I want to watch that is on Netflix. I can just ask Alexa to bring me to that show like this. *Daredevil*.

VOICEVIEW:

Daredevil. Three items. Movies and TV. Movies and TV. *Daredevil* button. *Daredevil*. 4.0 out of five stars from 1138 customers. IMDB rating 5.3 out of 10. One hour, 43 minutes. 2003. Rated PG.

PETER KORN:

All right. So this, you have three movies. That's not what I'm looking for. I'm going to arrow right.

VOICEVIEW:

Daredevil Director's Cut button. *Daredevil Director's Cut*. 4.0 out of five stars from 1138 customers. Two hours, 13

minutes. 2003.

PETER KORN:

Again, two hours, 13 minutes. That was three. That's not the one I'm looking for. Right arrow.

VOICEVIEW:

Marvel's Daredevil button. *Marvel's Daredevil*. 2015. Blinded as a young boy, Matt Murdock fights injustice by day as a lawyer and by night as the superhero Daredevil in Hell's Kitchen, New York City.

PETER KORN:

This is the one I want, so I'm going to select it.

VOICEVIEW:

Marvel's Daredevil. Watch now with Netflix. One of four. Playing. 53 minutes, 18 seconds remaining. Press OK to pause.

[VIDEO PLAYBACK]

- Get out of my way! Get out of my way!

[END VIDEO PLAYBACK]

VOICEVIEW:

Press OK to pause. In Options menu, Audio and Subtitles. Paused. 53 minutes, five seconds remaining. French. Audio. One. English-- Audio Description.

PETER KORN:

Netflix [INAUDIBLE].

VOICEVIEW:

Press select to choose English-- Audio Description.

PETER KORN:

Netflix also offers audio description, so I could choose that and enjoy a growing number of titles on Netflix with audio description.

VOICEVIEW:

In Options menu. Audio and Subtitles. Press-- playing. 53 minutes, five seconds remaining.

[VIDEO PLAYBACK]

NARRATOR:

The skin around his eyes was peeling. Hazardous

materials barrels on top of the [INAUDIBLE] as rescuers help the injured.

[END VIDEO PLAYBACK]

PETER KORN:

And let's take a look at audio description on Amazon Video. Now we have-- this being a TV show with multiple seasons, I can arrow through the options here on the Detail page and not only resume the current episode and season that I'm watching, but I can--

VOICEVIEW:

Watch from beginning, two of four.

PETER KORN:

--or--

VOICEVIEW:

Seasons and Episodes, three of four button. Season 2, episode 4. TV seasons and episodes. Contains a row with all available episodes from all seasons. Above this, a row listing the seasons can be used to quickly move focus to a specific season in the row below.

PETER KORN:

So we're going to press up arrow as instructed to get to the season selector.

VOICEVIEW:

Season 2, two of two. Season 1, one of two.

PETER KORN:

So let's go down now into this season.

VOICEVIEW:

Season 1.

PETER KORN:

And across, over several episode 0s, which are teasers, we get to the actual first episode of *Man in the High Castle*.

VOICEVIEW:

Season 1. Season. Season. Season 1, episode 1.

PETER KORN:

And now I'm going to down arrow.

VOICEVIEW:

Resume. Watch from beginning. Two of three.

PETER KORN:

And let's watch this--

VOICEVIEW:

Use left and right to move between items. *The Man in the High Castle*. Watch from beginning, two of three. Use left and right-- playing "The New World."

[MUSIC PLAYING]

Pause.

PETER KORN:

Now one of the things we've recently introduced is audio description for Amazon Video. And we have over 100 titles from Warner Brothers, Disney, Paramount, et cetera, that have audio description as well as over 10 Amazon Studio original TV shows, full seasons of these TV shows with audio description. And I press the Menu button, twice in this case, because we have VoiceView running.

VOICEVIEW:

Menu. *The Man in the High Castle*, season 1, episode 1. "The New World," next episode.

PETER KORN:

And I arrow up to Subtitles and Audio.

VOICEVIEW:

Watch from beg-- sub-- audio language, English. Drop-down list.

PETER KORN:

And I select the Audio Languages drop-down list.

VOICEVIEW:

Audio language, English. One of two. Checkbox checked. Audio language, English. Audio description, two of two. Checkbox not checked.

PETER KORN:

Select it.

VOICEVIEW:

The Man in the High Castle season 1, episode 1. "The New World." Audio languages, two. Audio language, English. Audio description, drop-down list.

PETER KORN:

And press the Back button to resume watching the show.

VOICEVIEW: Loading one items.

[VIDEO PLAYBACK]

NARRATOR: Amazon Studios presents.

[MUSIC PLAYING]

A map shows the former United States divided into the Japanese Pacific states and the greater Nazi Reich. Titles appear over iconic American monuments and projected images of war. Alexa Davalos, Rupert Evans.

[END VIDEO PLAYBACK]

VOICEVIEW: Pause.

PETER KORN: And so we hear the narrator describing the visuals that are accompanying the show. We're going to skip forward a few times. Let me get into the meat of the show.

[INTERPOSING VOICES]

NARRATOR: Executive producer Stewart Mackinnon.

VOICEVIEW: Skip forward.

NARRATOR: Frank Spotnitz.

VOICEVIEW: Skip forward, 10. Skip forward, 10.

NARRATOR: *The Man in the High Castle*. Teleplay by Frank Spotnitz.
Directed by David Semel.

PETER KORN: So that, now, is video audio description from Amazon Video. And I'm now going to get back to our slide deck and finish the remainder of the presentation, once I reopen that and share the appropriate screen. All right.

In the interest of time, I'm going to skip over the demonstrations of the Fire TV Edition televisions, but

simply say that with VoiceView, I now have access to all aspects of the television user interface, including the electronic program guide, input switching, and, of course, I have Alexa for all of that. So I can use Alexa to choose things like a particular television station or a particular input.

We've done a lot to help support developers creating accessible apps on Fire TV. We have developer documentation talking about all of the assistive technologies available on Fire TV, how to implement accessibility on Fire OS and Fire TV, and the VoiceView accessibility features. And I want to just quickly touch on those.

You saw in the demonstrations that when I went to an item like the home screen, I would get a hint, use left and right to move between items, in this particular case. This is hint text. This is part of how we are extending the accessibility API. Fire OS is a derivative of Android. The accessibility API is a derivative of the Android API, but we're making these extensions. Similarly, orientation text that helps the new user find out what's here, and we read orientation text only the first time you encounter something, unless you ask for it with a short press of the Menu button. Similar hint text here and orientation text here on the content grid.

Finally, when we have an interface like this, we will add a desc-- we will note that the paragraphs of text above are a description for some other item. That is to say this item is described by the other. We very much want to hear feedback about your experience using accessibility. We have the device-accessibility@amazon.com feedback alias, the website that I mentioned earlier with a one-stop shop for all accessibility information about Amazon, the

closed caption link for your personal closed caption settings that are available on any Amazon Video device, and then a page listing all of the Amazon Video-- all of the titles with descriptions available in Amazon Video.

So with that, thank you so much for attending this webinar. As we say at Amazon, it remains day one, particularly for Amazon accessibility. We have a lot more things we are working on, and we continue to look forward for ways we can help and delight our customers. With that, I turn it back to Sofia.

SOFIA ENAMORADO:

Thanks so much, Peter. So someone is asking, is 100% captioning available on all of the devices where Amazon is available, or does it vary from device to device?

PETER KORN:

I believe every video playback surface for Amazon Video has a caption on/off switch and the ability to adjust those captions. Some of the very basic devices, some of the older devices, we don't have on device capabilities to adjust all of the caption settings. And that's one of the reasons we have the web interface at amazon.com/cc. So you can pre-select-- preconfigure four different caption slots, caption setting collections, and then on every device, you can at least choose which of those four you want to enjoy on that device.

SOFIA ENAMORADO:

Cool. Thank you. Someone else is asking, how do you make the decisions that involve balancing design versus accessibility issues? For example, I wasn't sure about the color contrast on one of the menus I saw in the presentation.

PETER KORN:

So we very much strive to ensure at least three-to-one contrast ratio on large text, 4.5-to-one contrast ratio on smaller text in line with WCAG 2.0 AA, And also, a three-

to-one contrast ratio on important parts of images and icons. It's certainly possible that there's a bug somewhere, and something slipped past us. Computer science, being a human endeavor, it is not perfect. And if you can maybe send me email later pointing that out, we can double-check it.

SOFIA ENAMORADO:

Perfect.

PETER KORN:

Other questions?

SOFIA ENAMORADO:

Thank you. Yes, another question. What is Amazon's biggest challenge when making content accessible, especially at scale?

PETER KORN:

I would say the largest challenge is simply getting the content, the accessibility features from the studios. We have tens of thousands of titles-- I think hundreds of thousands of titles at this point-- in our video collection. And we look to studios to provide captions and to provide descriptions for us. The vast majority of titles come already captioned, so handling the popular ones that aren't captioned ourselves is now something we do just standard business practice.

For audio description, we've just gotten started a little over a month ago. So it's, perhaps, too soon to say what all the challenges will be. The main question, of course, is getting that from studios, where they have it.

SOFIA ENAMORADO:

Thank you. Someone else is asking, are there user controls for audio description like male versus female voice, speed, et cetera, like there are with captions?

PETER KORN:

So audio description today is overwhelmingly done with a human narrated voice. A human being, whether they are male or female, young or old, does that recording, and it's

burned into the mezz, as they say in the business. It is part of the audio channel for the movie. So we don't have the ability to filter that out and make changes to it, nor because it isn't text to speech do we have the ability to change how it is spoken. It is essentially a somewhat dramatic reading by a human being.

SOFIA ENAMORADO:

Thank you. Someone else is asking, what are the main components of the Amazon accessibility team, and how many staff are involved?

PETER KORN:

So we have a longstanding policy at Amazon not to go into staffing numbers. I can say that we have accessibility people throughout the company working on the various different aspects of what we do. We have a team focused on device accessibility. Those are the folks that developed the VoiceView screen reader. We have a team in the content organization that's building accessibility into e-books. The folks on the video side, the folks on the retail website, et cetera-- so we try to put the accessibility people close to the teams that they are working with to make whatever that team's output is accessible.

SOFIA ENAMORADO:

Thank you. Someone else is asking, I work at a university. Is any of this technology used to deliver the services open source, slash, available to the public, or is it proprietary property of Amazon?

PETER KORN:

So when it comes to content, the implementation, whether it's closed captions or audio description or the accessibility of our Kindle content, is tightly coupled with our content formats. We're not using any kind of open source or standard content files. And so it wouldn't make sense to try to decouple the accessibility implementation from that content format, which is unique to us. So no, that's really not an option.

SOFIA ENAMORADO:

Thank you. Someone else is asking, how do you control the quality of audio description in captions?

PETER KORN:

Well, so with captions, we have our own quality control system. We have, in fact, rejected captions from a number of sources when they didn't meet our quality bar. And I'd say at this point, that's fairly well understood, and I'm not aware of any substantial rejections at this point. With audio descriptions, again, it's so new, it's really hard to say what issues we might be having there.

We've been delighted by all of the captions-- sorry-- all of the audio descriptions and the quality of the audio descriptions that we have received for Amazon original titles and for the things we've gotten from studios. We haven't heard any issues or complaints so far. There's not a lot of folks doing audio descriptions, and the pioneers in the field have really set a very high bar. So I'm not really aware of substantial complaints or quality issues with descriptions so far.

SOFIA ENAMORADO:

Thank you. And I think we have time for one more question. Someone is asking, how does Amazon plan on expanding audio description with Amazon Video going forward?

PETER KORN:

How do we plan to do it? We absolutely plan to do it. We've got quite a few descriptions in the pipeline as we're working with studios to ramp them up. We are-- we are now just about at the place where new Amazon original titles are described at launch. Our most recent launch of a kid's title, Nico-- I forget the full name of it, Nico and something-- is described at launch. And that's certainly our goal to have everything that we make fully described, and we're building it into all of our contracts with studios,

saying, if you have a description for a title, then give it to us the same time that you give us the title in the first place.

SOFIA ENAMORADO:

Thank you. Thank you so much, Peter. That was a really, really great presentation.

PETER KORN:

And thank you so much, Sofia and 3Play Media, for being such.