

LILY BOND: Welcome, everyone. And thank you for joining this webinar, entitled How Yahoo is Making Their Technology Accessible to Everyone.

I'm Lily Bond from 3Play Media, and I'll be moderating today. And I'm thrilled to be joined by Mike Shebanek and Larry Goldberg from Yahoo. Mike is the senior director of Yahoo's accessibility team, and Larry is the Director of accessible media at Yahoo. And they have a really great presentation prepared for you.

This webinar is being presented in conjunction with the Online Learning Consortium. And they wanted to let you know about a workshop that they have coming up in September. And with that, I will hand it off to Mike, who will start out the presentation.

MIKE SHEBANEK: Fantastic. Well, thanks for having us here. We couldn't be more delighted to be here to talk with you today. Thanks for joining and taking time out.

I just want to encourage you to send us questions. We love being able to answer the things you're most interested in. We have a lot to share with you today. So hopefully that'll prompt some interesting questions for you.

As Lily said, my name is Mike Shebanek. I'm the senior director for the Accessibility Program at Yahoo. I'm here with Larry Goldberg, who manages our media accessibility.

A quick overview of what we want to do today is give you just a little bit of background on the size and scope of our program at Yahoo and tell you just a little bit about Yahoo you might not be familiar with; also, of course, the focus on our Accessibility Program, which we hope is much broader and deeper than you might have thought before you started the chat; also, our accessibility labs, which, of course, is something that we're really well-known for; and a deep dive into our closed captioning.

So Yahoo's based in Sunnyvale. It's a Silicon Valley company. Of course, you know it for Yahoo Mail, Yahoo News, Weather, Sports, Finance, and more. We've been around about 20 years.

One of the things that most people don't know about us is that we have over one billion active users every month. So the number of users we can impact with accessibility, the number of people we want to invite to use our services, is really, really giant. And of course, that's a

worldwide number.

Now, when most people think about Yahoo, they probably think back to the old days when the internet was just getting started with the old Yahoo home page. If you've been to Yahoo recently, you know Yahoo's very modern, very current in using the latest tools and technologies. And that poses, of course, some very interesting opportunities and challenges for us as an accessibility team-- so very photographic-driven site, lots of data, lots of navigation.

But of course, the world has moved on now, as well as desktop and sort of the web experience, to mobile. What's really exciting for us is over 600 million people every month are coming to us through their mobile phone, their tablet, or other devices. So we support accessibility on lots of different platforms. We're providing accessibility on Android apps, on iOS apps, and we even actually have some Apple Watch apps, which you may not be familiar with.

We work across the entire company. So we're responsible for the accessibility of everything we make. And that includes a lot of different products.

So on this screen, I have some icons that depict some of the different products you may use or may not be aware of-- things like Yahoo Mail, Yahoo Messenger, Yahoo News Digest, Yahoo Sports, Yahoo Esports, Weather, Finance, Search. We even actually have Tumblr and Flickr as part of the Yahoo family. So the diversity of problems we get to see and solve is actually pretty exciting and, of course, allows us to do some really fun and interesting things.

So given that Yahoo is so big and it's a worldwide company with a billion users every month, you might think we have an army working on accessibility. Well, we have four people. And two of them are on this webcast today. So there's me. There's Larry Goldberg, who focuses on media.

We have a gentleman named Darren Burton. Some of you may know him from AFB. But he's come to Yahoo over the last couple years-- thrilled to have him here. And he's working on our mobile app accessibility. And then Gary Moulton, who leads up all of our web accessibility efforts.

Now, what makes the Yahoo team particularly interesting is the way we're organized. Traditionally, accessibility teams are sort of separate. Sometimes, they're in the legal team.

Sometimes, they're in a compliance area of an organization.

We are actually in the product group. So we're able to engage teams very early on. And we're part of an organization that we call User Experience Research and Accessibility. In many companies, these are two completely separate organizations.

But we're uniquely put together. And that gives us some interesting leverage to be able to interact with users and do user studies together and encourage people with disabilities as part of our traditional user studies and user research. So this is a unique aspect of what we do at Yahoo and something that's really helped us along the way.

Now, I wanted to take a couple of minutes and talk about the uniqueness of Yahoo in terms of its accessibility. So I named this slide Reaching Higher. And really, this is sort an insight into sort of how we think about accessibility, our goals, and what we strive for.

And I'll be the first to say we're not perfect. But we try really hard to really raise the level and raise the bar in accessibility throughout the entirety of Yahoo. And we'll talk a little bit more about that.

So the first thing I would encourage you to think about-- something that we think about every day-- is the difference between the usability of a product and the accessibility of a product. If you've been in this space for very long, you've probably come across, as we have, products that actually will tick all the boxes for accessibility checklists.

Now, we use the WCAG 2.0 AA standard. It's an industry standard. And we go through apps and we use that as sort of a guideline to see how that app is expected to work for someone with assistive technology.

But we've seen apps and products come through that check those boxes, but when you put it in front of a user, it's still very difficult to use. Sometimes, there's just too many steps or things aren't in a logical order. It's just too much work to get something done.

So we always, always check with users to make sure that what we're doing is actually something they will enjoy and can learn and use successfully. That's a really important difference.

The other thing I mentioned, too, is we really have strived to make accessibility integral to the development process. So we talk with teams when they are conceptualizing products, when

they're mocking them up, when they've got nothing but drawings on a whiteboard.

And we'll sit with them and talk with them about where we can anticipate issues might pop up so we can mark those down and start working on those problems or issues as they're beginning to develop the product. And we find that, of course, it's much, much faster, much less expensive, much easier to integrate thinking about the accessibility early on than trying to tack it on the end after a product's well-architected and already out the door.

The third thing is universal design. When we first got engaged with some of the engineers, they said, well, why don't we just make a separate different product for people with disabilities? That would be great.

Well, we know that everyone wants to use the same product the same way. So the idea here is inclusion. We want people to share the same experience with the same product-- to not have to go to a separate place or get separate support or design it separately, learn something completely different.

So making the products we make accessible for us is the mission. That's the goal. And we think it should be the goal for everyone-- not making necessarily sort of special edition products just for people with disabilities.

And as I mentioned, too, we are super user-focused here. So it's cool for us to be part of the User Experience Research and Accessibility Team because that team is also incredibly user-focused. And as I said, users at the end of the day are what this is all about, so really important for us to keep that in mind.

Now, I added four more things here-- what we call Reaching Even Higher-- because for a lot of accessibility teams, they might have already sort of incorporated those first few bullets and said, well, yeah, OK. That kind of makes sense. Let me offer you a few more that we really have tried to strive for, as well.

So one of them is something that isn't often really discussed or maybe even thought about it, but it's really important to us. We're releasing products or product updates often. On the web, it can be almost every day. Mobile apps can be as often as two weeks or a month.

But there's a continuous stream of products coming out of our company. And for us, it's really important that we establish a level of accessibility that's predictable and continuous and comes

out with each iteration, each update, and each new product so that users can rely on it so when they start using it, they don't lose service or find out that something they used to do yesterday doesn't work tomorrow. So that for us is-- that consistency and reliability-- is really important.

The other thing that we've really taken on is training and evangelism, and this is both externally and internally. So we do a lot of different training events inside Yahoo for accessibility. I'll just tick off a few. And if you want to ask some questions about this later, I encourage you to use that opportunity.

But one of the things that we do is we do a lot of developer one-on-one reviews of apps or web properties where we sit there and walk through with them to explain to them what the issues are and brainstorm on some solutions. We do developer training with designers and product managers, as well, not just engineers. We also do tours of the lab and demonstrations of assistive technology so they can understand how that works.

And of course, we're always evangelizing the benefits of accessibility to these teams-- how it creates usually better code. The more detail they put into it, the better it is for every single user, making their apps even more simple than they might have imagined initially.

We've also worked really closely with our marketing communications team-- and this webcast is part of that-- to make sure that users know what's available to them. We've recognized there's a really big gap between what's actually possible today through assistive technology and what users know about.

And so bridging that gap is really important to us at Yahoo to make sure that people know they can use Yahoo Mail, that they know they can actually play fantasy sports for the first time ever, things like that that they might not be aware of. So think about that as you're doing the work that you're doing, and also take advantage of those communications to make sure that people who can benefit from this have access to it.

And then, of course, the last goal is really just making sure that if there is an issue, if there is a problem, there's some things not right, which happens, that there's a feedback mechanism. So we've worked really closely with our customer care team. And we've created our own website to provide [AUDIO OUT] directly to our accessibility team to make sure that we can hear those issues-- and sometimes there are praises, which is always wonderful-- but to really establish that communication with our users so that we can improve the products and take care of

things that are at issue for them.

I put this slide up. It's called It's Always About the User. And if I could just hammer this home, this is probably the most important thing you'll hear today.

It's easy to get focused on technology. It's easy to think about bug reports and how we fix things and how cool it is that something's possible. But at the end of the day, if it's not benefiting the user, it doesn't really count. It doesn't really matter.

We really are here to make sure that we encourage people to connect with the people that they love, to be able to have a productive life, to be able to enjoy what they're doing, and to be able to share with those around them. So we really focus a lot on the users of our products and listening to them and always thinking about whether the technology problem is solved or not. Does this actually benefit a user? Can they actually use it-- so super important.

I'm going to switch gears a little bit here. And I have a picture of a conference room-- pretty typical. It's got a whiteboard, some windows in the side, a big conference table, and a telephone. This is our accessibility lab.

And we decided early on that we needed actual space to develop and promote accessibility on our campus and throughout our company. So I'm going to click the slide here. And you're going to see the exact same room after we turned it into our accessibility lab.

And hopefully that's shocking, a little bit. It's quite a place. And we would love to have you all come visit sometime if you're ever in the area. But short of that, we're going to talk about it here on the webcast.

This is such an amazing thing. And we've opened it up to different companies to come visit it, to different organizations and groups, individuals, to really share the heart of where we work and what we do.

This is located centrally [AUDIO OUT] our campus. It's right at the drop-off point. It's got great access for wheelchairs. It has lots of light, of course. It's a comfortable spot.

And we use this for a bunch of different things. So I mentioned one-on-one user studies. Let me walk you around this room sort of virtually and describe what's here.

So we have tables along the outside. We have a giant screen TV where we can project

anything in the room up on the big screen for anyone. There are speakers, desktop speakers, on just about every system here. We have mobile devices set up on stands so they're easy to touch and find by feel if necessary.

There's a couch in the corner. There's actually a bookshelf here. We have a little library here about topics on disability. And we have on the top of that a whole array of different gadgets, which we'll come to you in just a minute.

This is the entrance to it. So it's a wide, easy access, it's on the ground floor, and of course, welcoming with the sign and things. When you first walk in the room, in the corner there, you can see sort of our lead desk. So one of our specialists will usually be sitting there.

We have pictures up on the right-hand corner of our users. And that, again, just reminds us that we're not here to just make technology. We're here to affect people's lives. And that's really important to us.

In the left side there, you'll see some colored, numbered stands-- 1, 2, 3, and 4. And we actually use these for some of our activities. So I'm going to pivot around here so you can see the other half of the room. You see it's a pretty big space here.

Each of those different stations can be set up for what we call lab tours. So here is the first station. And you can see there's little gloves on the left. We've actually sewn a couple of the fingers shut.

So for our developers or designers, they can come in and put those on and actually experience what it's like to not have full dexterity when they're trying to use the keyboard. So this actually has a switch control attached to it. And for the first time ever, a lot of our technologists can experience assistive technology.

And this is a really crucial point for us because we've found after years and years of doing this we can identify issues and we can write reports and we can send emails, and sometimes they get done. But in our experience, when we can bring those engineers and developers, designers, to a place where they can experience firsthand how assistive technology can be used, that experience stays with them forever.

And that's a really important point because then they have started anticipating the issues before we even have a chance to report them. They'll understand when we write a bug report or ask for a feature or ask for a fix how it affects the product and who it's affecting.

And we find that they're more likely to take advantage and fix that, fix it quickly, and in a lot of cases, invent something even better than we thought as a solution. So giving people a place to have these experiences has been the magical key for us in changing the culture and the DNA of Yahoo around accessibility and universal access.

I'll just quickly go through a couple of these other stations. If you have interest in what these are, how we use them, please feel free to ask those questions later.

This is an alternate input device. You can see that there's actually an iPad on the right connected to a large screen. And we do because we find that we tend to bring in groups of three or four people at a time.

And if you have a mobile device you're testing, it really ends up becoming a one- or two-person activity. But when we put something on that big screen and we have other developers who obviously can see, they're able to sort of interact and participate in the conversation in a really different way than when we just have a handheld there.

The next screen shows someone wearing these really funny goggles. And we have lots of these gadgets. These actually refract or diffract their vision. You can see someone in the background observing.

What we have is we have some that create color blindness or all kinds of different vision loss, whatever it might be. And we ask them to perform certain tasks. And all of a sudden, the idea of magnification becomes much more interesting.

The idea of, as it turns out, contrast turns out to be a huge benefit for people with low vision. So lots of discoveries happen when we put goggles on people and it gives them a chance to sort of simulate and understand what that's like.

This next picture just shows sort of a typical day in the lab. So we've got an engineer and a designer working with Darren, our specialist, walking through-- in this case, I think it was Yahoo Mail-- using a screen reader. And so this is a great time for them to sort of walk through each of the issues and find out if it's actually usable and not just accessible.

The lab has been for us an incredible resource. It validates the work we do. It's centered to the campus. People drop in all the time.

And when we did the grand opening late last year, we invited everyone from Northern California, no matter who they were, to come and take a look. So we had people from other companies. We had assistive technology specialists. We had users. We had advocacy groups, legal teams, all kinds of people. And you could see it was an incredibly successful event. And a lot of people really wanted to get in back.

This was the end of the night. This was actually after hours, when we were supposed to be closed. But we were thrilled that there was so much interest. And we just had a good time with that.

So let me leave you with this in terms of the lab. As I said, experiences really last a lifetime. And you can see two images here-- one where we have blinders on a person and they're being led by another person.

None of these people happen to be blind. So this was an interesting experience, to lead someone and to learn what that's like, but also be led. And then we had them use an iPad or a phone and use VoiceOver to try out what it's like to do a screen reader.

And similar on the right-- using the goggles. So the feedback we've gotten from people is, wow, this is incredible. I've never experienced this. How do I get the rest of my team to come try this out? And that has created this chain reaction of interest into the accessibility area, and also into the lab and helped us sort of, again, change the culture and the DNA of our company.

The lab is based in Sunnyvale, but we have another lab that we just opened in Boston. So I'm going to hand this over to Larry to talk about the Boston Yahoo Accessible Media Lab. Larry, go ahead and take it away.

LARRY

All right, Mike. And I think I'll still need you to advance the slides, so I'll let you know.

GOLDBERG:

So we have an image here of our first lab, Accessible Media Lab, in Boston. We just moved. And you'll see what that looks like in a minute.

I joined Yahoo about two years ago after a couple of decades at WGBH in Boston with the National Center for Accessible Media. And having worked on legislation, advocacy, and public policy around making media accessible, it was great to dive right into the heart of a company that had to go and make it all work.

And we have found tremendous interest and experience doing that. And because Yahoo has become so deeply involved in providing particularly video to our users, in our lab, we have virtually every video platform you can imagine. Yahoo has apps and connections to every kind of platform.

So here is our new lab. It's right near Copley Square in Boston. If you're in the neighborhood, please let us know and we'll show you around.

We have smart TVs, Chromecast, Fire [AUDIO OUT] Apple TV, Android tablets, Android phones, desktop computers-- all of these devices where Yahoo has an app or is part of a smart TV. And we're providing captions on every single platform.

And I was thrilled to come on board where some work had already been done. The entire archive of *Saturday Night Live* was exclusively available on Yahoo online. And all of that was already captioned. And since that time, we've done nothing but increase the availability of captions on all of our platforms.

It's great that I have a long-standing relationship with the folks from 3Play. I actually knew the founders before they started the company. So it was a very comfortable place to go when we really wanted to ratchet up our captioning on all platforms.

Their technology is incomparable and really helped us take off in terms of providing a lot more captioning on both video on demand-- Live we're handling through another company called VITAC-- and on our original programming, as well as programming we get from our partners. We'll talk about that in a minute.

[INAUDIBLE] look at the next slide. The curve-- as everything in Silicon Valley loves to do is turn yourselves into a hockey curve, hockey stick curve. At Yahoo, we measured a 90-day period recently. And we had not only 648 million caption streams viewed by our visitors, but that represented something like a 600% increase in the amount of captioned video available on our platforms. As it turns out, we are approaching a really good level. We are not done yet.

But 100% of the video that we produce-- and that's everything from Yahoo News with Katie Couric, Yahoo Tech with David Pogue, Finance, Sports, Esports, but our partners' videos, as well-- so 100% of our own video is captioned and a growing percentage of the video that we carry from our partners. 38% now of our video starts actually have closed captioning. Next.

Some of you who are on the call today may be aware of a law called the Twenty-First Century Communications Video Accessibility Act. For many providers of video, that's why they provide captions.

At Yahoo, our captioning goals go far beyond that. We, in fact, are captioning far, far more of our video than we're required to by law. And we do that because we just know it's a better user experience. Anyone who's worked in the field of captioning can recite all the reasons why you want to add captions-- for use in gyms and bars and on second screens and when you're at home watching TV but you want to have a pad in your lap, a tablet.

But we also find that our users just really are staying with our videos longer. They click on them more frequently when there's captions to be seen. And we see that in social media, on Tumblr, on Facebook, and many other places.

So of course, we caption for our core audience of deaf and hard-of-hearing people. But our users far beyond those numbers are enjoying our captions. And that drives us to do more and more and more.

We caption through a fairly complex system. We are distributing video from venues all over the world to four different data centers. We have repositories and dropboxes there. We have our partners such as 3Play automatically drop into our system, retrieves the videos that we want captioned, zap those captioned data files right back to us, and ingest them into our system all within a few hours or less, unless it's live programming, at which point we're actually doing it within seconds.

So we are growing our live captioning. That live captioning is including the [AUDIO OUT] on Major League Baseball. You can watch an entire baseball game every day on Yahoo from all over the country. We have PGA golf. We have live events, such as concerts-- so we're not captioning concerts yet-- and a lot of news programming, and of course, last week and this week, live convention coverage from Cleveland and Philadelphia.

Now, I mentioned that we caption 38% of our total streams. What else? Well, let's get up to 100%. That's the ultimate goal.

We also want to start adding a lot more languages. And we want to make those captions even more useful to folks. And we do that through [AUDIO OUT] user input, traveling to conferences, listening very closely to our caption users. So we're pushing more on Live and

we're pushing more on full, comprehensive captioning. Next.

In the Twenty-First Century Communications and Video Accessibility Act, full caption settings, user-controlled, were required. And we did a bang-up job.

And you'll see on a couple of screens the user control over the color of the captions and background, font size, edging-- all of that look and feel is highly adjustable. You can make yourself some pretty beautiful captions that go far beyond the old-fashioned white on black.

As you can see, we grew from 2,000 minutes to 200,000-plus minutes in 2015 with a great deal of help from 3Play, our engineers. Many teams across Yahoo made that happen in a pretty short period of time.

As we see on this slide, of all those minutes, only 770 are required by law, those requirements being previously broadcast on television, full-length, with captions. Well, a lot of what we caption and carry is web-only.

Web original programming is not required to be captioned by law, but we do it. 98.5% of the captioning we're doing goes beyond what is required by the CVAA. And we're pretty proud of that.

As I mentioned before, we're doing live captioning. And that's been pretty cool. Back in October of 2015, we carried the first free global NFL game out of Wembley Stadium in London and we quickly got live captioning going for that and captioned the original broadcast audio.

But we had a second audio stream from our daily fantasy announcers. And we captioned that, too. So you had alternate audio with captions on both.

As I mentioned, and I think probably anyone who is familiar with webinars from 3Play, the FCC did create regulations and standards and requirements for phasing in captioning online. And we, of course, adhere to all of those and beyond. I had a chance to work on many of those. And the practical implementation has worked really well.

And it's working on mobile devices, in the home, smart TVs, on set-top boxes-- so pretty amazing how that turnaround happened. And all of that went into effect by January 2014.

And under the CVAA, the FCC does reserve the option of penalizing companies that are not in compliance. I don't believe they have taken that effort yet. They're giving it some time to just

answer complaints and see if companies can rectify.

But the fines can go up to \$100,000 a day or \$1 million per incident for not captioning or providing access on any of the other parameters of the CVAA. So we take it seriously, as does our legal team.

I mentioned that the video players on every single platform have to follow certain rules. The persistent settings, I think, is one of the most important. Once you turn your captions on and you pick your color and your opacity and your edging, it is supposed to stay that way even if [AUDIO OUT] your device, even if you go offline.

The next time you come, the caption should be the same. They should be on-- the size and all of the other parameters. And we've been doing pretty good on all of our platforms.

The other one I like in terms of requirement is preview-- that you can actually get a sense of what your captions are going to look like before you exit the settings and start watching captions. [AUDIO OUT] you perhaps by mistake put red captions over a magenta background, you'll have a chance to see that might not be so readable. And so that preview function works very well here on Yahoo's platforms, and on many others, as well.

Also required under the law is a way to provide feedback immediately if you're having a problem with captions. And there's a link to click on right in our video player that sends an email directly to our consumer representatives and to all of us in the accessibility team. So we're pretty good-- rapid response on any problems with our captioning.

Here's a screenshot of our desktop video player-- the first level of settings for closed captions. Here you see something you will not see anywhere else on any other platform. The last item in the list of options here is Position.

And you can actually move the captions to the top or bottom of the screen, which happens to be one of the strongest pieces of feedback I get-- that captions too often cover on-screen text. So you can go right into your Preferences here and pick top or bottom and move them out of the way.

That's not required under the CVAA. But our developer [AUDIO OUT] develop it themselves out of their own creativity. And I just thought it was fantastic. And of course, you have sizing and so forth.

Here is Will Ferrell as Alex Trebek on *Saturday Night Live*. But more importantly, it's on an iPhone. And just like all the parameters you can adjust on a desktop or other device, in the settings on an iPhone, just like in the settings on an Android device, you can choose your colors, your font, your opacity, and so forth-- looks pretty good. Here's the controls in an Android device, where in the settings, again, under Accessibility, you can adjust the size, color, and default on your mobile device.

I love watching streaming media on a smart TV. Here's a program that we had available last year called *Other Space*. It was a lot of fun-- a half-hour comedy. And this is on a Samsung smart TV. And just like watching regular TV captions, you can watch streamed media on your smart TV, and again, choose all your settings and make it look as big and as nice and crisp as you can on any other platform.

This is the Apple TV menu. Again, in the settings, you can adjust all your choices, set some defaults and pick them as you like them, however you like them and whatever you like them.

I mentioned partners. Aside from our own original programming, we have quite a bit of programming from such providers as Conde Nast and HGTV, the Food Network, NBA, and so many more. But I'll point out two on this slide right here.

The New York Times is one. When I first came on board, I was watching a lot of lists where a lot of caption users were complaining that the really excellent videos on *The New York Times* website were not captioned. Well, we happened to license those videos for streaming on Yahoo.

So I just said to our people, why don't we caption them? It's relatively inexpensive and easy to do. And to this day, the only place you can watch captioning on *New York Times* videos is on Yahoo News. So they're excellent videos. And we do a great job captioning them.

Also in the upper right corner, you see a little image of a movie trailer. Many, many, years ago, technology was developed to show captions in movie theaters. But the trailers were never captioned in theater or on TV or online.

Well, we have relationships with every Hollywood studio. We have trailers for all the new movies. And if you go to Yahoo Movies' website, you'll see captioned trailers for every new movie. And again, this is the only place you will see captioning on movie trailers-- in the US, anyway. Next.

This slide is titled Captions on Video Auto-Play. It's very interesting. A lot of people don't like to have the audio turned on on the videos they're watching. And many times, a video will start playing as soon as you hit a web page.

Well, Yahoo decided that because we don't want to be intrusive by forcing the audio on-- and you can see a speaker with the audio control as an icon-- we just turn on the captions. So you really can get the experience of that video you're watching with the captions on, and you don't really even have to turn on the audio.

And that's actually now a technique that is used throughout the industry-- you'll see a lot on Facebook-- to turn on captions on muted autoplay. And it really is a great user benefit.

MIKE SHEBANEK: Thanks, Larry. I just thought I would wrap up a bit to sort of give you a feel for what you might not know about some of the results of Yahoo's accessibility program and some things that we've covered a little bit today.

Of course, the Accessibility Lab and the Media Accessibility Lab have been an incredible resource for us inside of Yahoo. And as Larry mentioned, if you're ever in Sunnyvale or in Boston, you want to come by and visit, we would love to host you. We consider that an open resource for people to come in and understand what we do and how we do it.

For us, this is in a lot of ways noncompetitive. We want to share this and try and evangelize some of our techniques. So we're happy to share those with you today, as well.

We've also been able to achieve what we consider to be best-in-class Android accessibility. And whether we believe it or not really isn't the point because users tell us that. In fact, we've actually had some engineers at Google come by and say how are you doing so well with this, and can we learn from [AUDIO OUT] as a developer implementing all these things?

So we've been thrilled to be able to take advantage of those opportunities and deliver some really amazing things like Aviate or Yahoo Mail in Android, which are just outstanding examples.

We are also the first company ever to be able to produce an accessible fantasy sports app. And fantasy sports, of course, is massive. We are the home for fantasy sports at Yahoo. And not only can you actually use the app, but you can actually be the commissioner of your fantasy sports league.

In this case, we've done some work in the screen reader space. So even if you're blind and use a screen reader, you have full access to run your own league and enjoy it that way and share it with your friends-- so some really big wins there.

As Larry mentioned, we're the first to caption movie trailers. We're the first to caption *The New York Times* videos. We've also sort of blazed the trail for delivering captioning on autoplay videos.

And I'll just mention we were thrilled and honored to be able to receive the Hearing Loss Association of America's National Access Award just this last year. So we share this with you to let you know that what we're doing, we find it seems to be working very well. We've been able to achieve some things that we're very proud of.

Let me kind of wrap this all up by just recapping what I think are the key takeaways here. As you've sort of experienced today on the stream, for us, creating experiences trumps simply reporting the issues.

And if you can find ways to get your engineers, your developers-- if you are an engineer or developer or a product manager-- find a way to get that experience of using assistive technology yourself. It is something that not a lot of people have access to in the product development world. But it will change your perspectives forever and make you a better product manager, developer, engineer, or whatever it is that you do.

And for us, of course, nothing can replace user input during development. It is always about the user and what they tell us they need and how they use our products. And so we take that very seriously and integrate it in. So for us, user first-- user's always first.

If you're interested in following us-- we'll move on [AUDIO OUT] questions here in just a moment-- if you're interested in following us, we would love to hear from you. We have a website. So it's <https://yahoo.com/accessibility>-- pretty easy to find.

We also have an email address. And you're welcome to send us email directly. It's accessibility@yahoo-inc.com. That's yahoo-inc-- I-N-C-- .com.

We're also on Tumblr. We try and post every week or every other week just sort of the things that we're working on-- things you might not know about-- accessibility of Yahoo products in our program. That's yahooaccessibility.tumblr.com. And that's one word-- so

yahooaccessibility.tumblr.com. We encourage you to follow us and send us feedback.

Thank you so much for your time. We are very interested to hear your questions and take time to answer those. So let me hand it back to Lily.

LILY BOND: Thank you so much, Mike and Larry, for a really great and [INAUDIBLE] presentation. So to begin, there's a question here asking, how did you originally get buy-in for all of this accessibility?

MIKE SHEBANEK: Great question. It's interesting. Obviously, we were recruited and asked to come. So there was certainly an interest in providing resources to our teams.

And just to be clear, we're a service organization. So it's our job to assist the other teams in doing their work-- being on time, being high-quality, and addressing the needs of as many users as possible. So for us, it was really important to simply not overpromise and to overdeliver.

So we were very clear with our teams up front. We made an unusual pact. We said we will never ask you to solve a problem that we can't help you solve. Of course, we believe we can solve the problems. But that really gave our teams the sense that you're working as a partner, you're not trying to stop us from getting our work done.

And when we sort of established that working relationship, we said we'll work as fast as you work. We'll give you feedback as soon as you need it. And we had some really early-on good successes with that which created some credibility, which helped us engage with other teams.

And the lab was a terrific resource. When people came in and understood what we do and how committed we were to making great products, which is what they're committed to, it became a teamwork and a partnership.

And they became our evangelists. So they would start sending their peers to the lab and start telling them about you got to go check this out, this is really incredible and it's helping us make better stuff.

So starting small, overdelivering, running at the speed of those other teams built credibility. And that credibility just kept spinning up and up and up and allowed us to sort of expand the program and reach further into the company.

LILY BOND: Thanks so much, Mike. Someone else is asking how many staff man the accessibility lab, or is it more for employees to access, like, a library/lab?

MIKE SHEBANEK: Our team is located outside that front door, that hallway I showed in one of those slides. So there's usually one of us always near the lab. We have established sort of what we call open lab Wednesday.

So without any appointment or any prior notice, we encourage anybody at Yahoo to just drop in and say hi and check things out. They can sit. And if they want to just read a book, one of those books in that library, if they want to work on a computer or try a particular technology, whether it's magnification or screen reader or closed captioning, whatever it happens to be, we can go ahead and help set them up to do that.

So we have some sort of self-guided scripts, so they can sit and work through those. We have about four or five of those. And then we also-- more often, we'll just sit and they'll say bring your product. And it's usually something in development that's not quite finished.

And so we'll sit [AUDIO OUT] and they'll walk through what they're working on. And we'll comment and provide some feedback on how they can improve the accessibility and usability of it. So we can do that by appointment or just have people drop in. But we usually have somebody just sort of positioned near the lab all the time.

LILY BOND: That's great. Several people are asking how Yahoo approaches video and audio description, if that's something that you do or is on your roadmap?

LARRY GOLDBERG: I guess that's for me as the accessible media guy. Having worked in the world of video description-- I'm still stuck on that term, but yes, audio description or descriptive narration-- I am very deeply dedicated to that.

We were looking at launching some video description tests last fall on our long-form programming. Today, we don't really have appropriate programming to test it on. But we're looking at it all the time.

It's a unique development difference because it's not like captioning, where you can embed data. You're actually adding an audio track. And your video player has to be able to handle that.

It's on our roadmap. And I think once we have the appropriate programming to go along with

it, you'll see some advances in that from us, as well.

LILY BOND: Great. Thanks, Larry. Along the same lines, someone is asking what do you have planned for accessibility in the future?

MIKE SHEBANEK: Oh, good question.

[CHUCKLING]

We can't give away too much at the moment in terms of what's coming down the pike. But I would say that you're going to start seeing a little more invention from us in addition to enhancing the quality and the breadth of accessible products that we produce.

So I'll kind of leave it at that and maybe entice you to come back and visit us. On the 3Play webcast in the future, we can talk more about the latest things.

LILY BOND: That does sound enticing. Another question here-- does Yahoo use the Flash video player or HTML video player?

LARRY GOLDBERG: I believe in the past weeks, we have almost 100% phased out of Flash. But for a few special cases-- a lot of advertisers are still using Flash. So we can't go completely away from it. But we are very close to having 100% HTML player-- HTML5.

LILY BOND: Great. Thanks. Another couple of related questions here-- how do you discover different assistive technology programs and testing products, like the goggles, for example? And similarly, how do you find and recruit assistive technology users?

MIKE SHEBANEK: I'll take that one. Maybe Larry can add, as well. We actually have a really cordial relationship with the other accessibility professionals in Silicon Valley and around the country-- in fact, around the world, as that matters.

We get together casually at these things called Bay Area Accessibility Dinners usually once a month or once a quarter, depending on the time of the year, and just sort of share and comment and talk and present sometimes things we're doing, things we've found, things of interest. And that carries over into email and things.

So we're at conferences quite a bit. We are in touch and invite and interact a lot with the technology vendors. So we have assistive technology companies come by and visit us or let us know sort of what's coming down the pike really in an effort to make sure that the things that

are available to users are going to work compatibly with the products and services coming out of Yahoo.

So some of it's just personal investigation. Some of it's professional. And some of it's very social.

But through all of that, we're really quite up-to-date on the latest tools and technologies-- even in some cases pre-release technologies that are coming out from the major vendors like Google and Apple and Microsoft and others. So we can always sort of be current and up-to-date on what's going on.

LARRY

GOLDBERG:

I'll just add to that that even if you don't have the kind of longstanding relationships like we have, there are local affiliates of national disability organizations, like the American Council for the Blind, National Federation of the Blind, independent living centers. So if the question really is how might you find some good user testers, there are great local organizations.

And people just love having a chance to play with your technology. So we will often reach out either to the national organization or to the local affiliates to find some people to try stuff out.

LILY BOND:

Thanks. Another question here-- does Yahoo have any assistive technology platform specifically designed to assist students in higher education?

LARRY

GOLDBERG:

I would almost ask back, what might those sorts of AT devices be like? In higher ed and even K-12 these days, there are many platforms that are using mainstream platforms. So we don't develop anything specifically for education, higher ed or K-12.

But much of the same technology we're using is HTML5 streaming or webcasts and so forth. But maybe there's something deeper that you're looking for.

MIKE SHEBANEK: Hey, Larry, it might be interesting just to take a minute or two and talk about something really near and dear to our hearts at Yahoo called the teachaccess.org. I know you've had a big hand in getting that off the ground. And it might just be interesting to sort of let people know some of the other activities we have sort of helped launch in terms of industry moving forward.

LARRY

GOLDBERG:

Sure. Sure. Teach Access is a project-- what might be in Silicon Valley called a moonshot project. But basically, the idea is to solve all accessibility projects within one generation, all the problems.

We are focusing intensively with all of our tech company partners on bringing, teaching about how to make technology accessible to higher ed and to virtually every student who goes through a technology program-- computer science, human computer interaction, user experience research-- and working with partners in major colleges across the country trying to get at least some level, shallow or deep, to be taught to all students who are going through those programs so that when they come to our companies, they're already 10 steps ahead of where they might be today.

So we're looking at this as a multi-year deep learning project. It has caught on tremendously. So Yahoo and Google and Microsoft and Dropbox and LinkedIn and HP-- every one of them has recognized that their workforce is just not coming to them with the requisite skills.

So if you look at teachaccess.org, you'll see new job descriptions being created, a brand new tutorial that's a quick-learning opportunity on how to develop accessible web apps and websites. And we've gathered together on this major initiative. And we're doing everything we can to bring this learning about accessible technology right into higher ed, and then even into secondary ed eventually.

MIKE SHEBANEK: Yeah. So if you're wondering what sort of the critical skills are in this space as the professional that companies are expecting or needing either graduates or people transferring to the companies to know or to have, take a look at teachaccess.org's tutorials. We're getting the experts in the field together to sort of coalesce what those skill sets are so that you're better prepared to join in this field, and also bring up the skills of those around you who might need it.

LILY BOND: Yeah. Thank you, Larry and Mike, for mentioning that because it's a really exciting initiative. And I've been really impressed with the progress that you have made with it. I'm excited to see what is still to come. So another question here is how do you make social media accessible when you're posting to platforms?

MIKE SHEBANEK: Well, it's going to depend a lot on the tools provided by the social media platform. So in some cases, providing-- and we're working very hard on this ourselves, and so more on that later-- but to enable people to post images or videos or things along with text onto sites.

So part of it's the navigation problem-- making sure that the controls are easily accessible [INAUDIBLE] visible-- easily accessible perhaps with screen readers, alternate input devices, keyboard switches, and such. And then part of it, honestly, is educational. It's informing users that other users expect you to post accessible content.

So if you have a short video and it's only 30 seconds or something and you really want to share it with other people perhaps who can't hear, how do you caption that? Can you caption that? We're building video players that are able to display those captions. But it's really up to the content generator to add those captions to it-- when it comes to images, making sure that that site asks the question, will you please add a caption to this?

And that has some really great benefits. Not only does it allow someone to read a description of what might be in the video, it's another way [INAUDIBLE] to communicate and share with your friends. But it also allows us to add tags, keywords, and do some searching on that to make it more visible in the sense of being able to discover it, and also more applicable to more people.

So there's a lot of things that can be done. And we're looking very hard at all of those for our own case.

LILY BOND: Thanks. Someone else is saying how do you keep up with your work with having only four people on the accessibility team? Is it simply having a good workflow system?

MIKE SHEBANEK: That's a great question. It's interesting. We have worked really hard to build ourselves tools and techniques to make us more efficient. So we focus really hard on our own capabilities.

Part of that's creating self-service training, tutorials, and things. Part of it's building tools that we can reuse quickly and repurpose. And part of it's just being smart about where we apply ourselves, either in the development cycle or how we communicate back to our developers.

So it takes take some hard work to sort of be efficient. And of course, I guess what's hiding in that question is how do you get it all done with four people? And the answer is, well, of course, you can't because even with us at maximum, we still have more we want to do.

So I don't think we'll ever be at that place where we say, wow, yeah, we've got enough people. If we doubled or tripled or quadrupled our team, we'd still have more we want to do. So for us, it's about the reward of getting the work done and getting the work done well and creating a good environment for collaboration and some invention and creativity. So--

LARRY GOLDBERG: I would add-- I'd add one more thing. And that is the ultimate goal always is to try to hand responsibility back to the content creator or the developer of the platform. And I've been so pleased in our work with captioning that I have trained the people who are producing and

distributing our video that they need to book captioning services, whether live or video on demand.

And these days, they're doing it without me even asking. So that burden has been lifted off of my shoulders. And with only a few glitches, I am finding that things are automatically being booked for captioning without my even knowing it.

And that really helps tremendously. So you make it part of the production process and development process, and our four people can become in essence 40 or 400 by pushing some responsibilities up the line.

MIKE SHEBANEK: Yeah. That's such a great point. I'm glad you brought that up. And it's worth another minute to sort of explore that.

At the end of the day, it really is the product team's responsibility to develop a great product. And as I said, we're a service organization. So we're there to help them.

Our task is as much to teach them how to fish, if you will, if you use the old metaphor, rather than catch a fish and hand it to them. So we really try and balance making sure that at the end of the project, they're able to do this the next time on their own or almost on their own and really try and aim for you know how to do the basics now. You can get almost 80% or 90% of this right.

When you come across something that really either has never been solved before or something we need to create a new solution, that's when you want to engage the accessibility team-- not for simply adding labels or adding role descriptions or changing contrasts. Those are things that are pretty straightforward. There's good tools for that. There's good documents for how to do it and how to test it.

So part of our job really is to leave them in a place where they can take on more ownership of that the next time. And so that's a significant part of our effort. And that's really paid off for us, as Larry was talking about.

A lot of these things are now happening on their own, as they should. So we're just trying to keep those wheels spinning as fast as possible.

LILY BOND: Thanks-- really great responses, Larry and Mike. I think we have time for one more question here. Someone is asking, I've heard about auto-captioning. How does it compare to captions

created by humans? And would you recommend it?

LARRY

Yeah. I like humans. I think humans are really good technologies.

GOLDBERG:

[CHUCKLING]

The desire for high-quality, independent speech, large vocabulary automatic speech recognition has been a holy grail for all of technology, government, and defense industries for more than 40 years. Oddly, it's something that has yet to be well-conquered in terms of the kind of quality that we demand for at least pre-produced video or video on demand.

So automatic speech recognition can get you maybe 80%, 85% accurate. As soon as you add any background music or noise or heavy accents or odd vocabulary, the comprehension level goes way, way down. So we're dedicated to using vendors and technologies that may do a rough draft using automatic speech recognition, but immediately put human editors into the stream.

And even in our live captioning, where you don't have the ability to clean it up, we still use humans. They happen to be in that case stenocaptioners. And today's webinar is being live-captioned by a stenographer.

Wouldn't it be great if a machine could do that? Yes, it would. But as Vint Cerf, the father of the internet and a hard-of-hearing person himself, now Google's chief evangelist, once said to me, oh, computers will be able to do that in 10 years.

And it will always be 10 years off. And we still haven't seen any development that has gotten us to the point where we can achieve the 99%, 9 and 1/2% accuracy that really is necessary for good comprehension.

LILY BOND:

Thanks so much, Larry. And with that, I think we're just out of time. Thank you everyone for joining. And Mike and Larry, thank you so much for a great presentation.

What you guys are doing at Yahoo is really inspirational. And it's setting a really great precedent for other companies. And we appreciate everything that you're doing. So thank you.

MIKE SHEBANEK: Thank you so much. I've really enjoyed being with you. My pleasure.

LARRY

Thanks a lot.

GOLDBERG:

LILY BOND:

And thank you to everyone for joining-- a reminder that you will receive an email tomorrow with a link to view this recording, as well as the slide deck. And I hope that everyone has a great rest of the day.