

**LILY BOND:** Welcome, everyone, and thank you for joining this webinar entitled Solving Web Accessibility-- Leaving No One Behind. I'm Lily Bond from 3Play Media, and I'll be moderating today.

I'm really excited to be joined by David Berman today who is an internationally acclaimed expert in web accessibility as well as the top rated speaker on the subject. Thanks to his leadership and experience in the field, David has been appointed as a high level adviser of the United Nations Global Alliance for Information and Communication Technology and Development, and he's spoken in over 40 countries in the past few years. He has a really great presentation prepared for you, which should take about 45 minutes. David will be answering questions during the presentation as well as at the end.

And before I hand it off to David, we have a poll for you to get things started. So the poll should read, what is your predominant role in the online publishing process? And you can select writer, producer, designer, developer, or other. So thanks everyone for responding. The results is 10% are writers, 4% are producers, 25% are designers, 20% are developers, and 41% are other. So that's a really broad range, and that's really great to know. I am going to hand things off to David.

Again, we're really excited to have you here, David. And you should now be able to share your screen.

**DAVID BERMAN:** All right, am I coming through five by five, Lily?

**LILY BOND:** Yeah, you're coming through great.

**DAVID BERMAN:** Fantastic. So Lily, it's great to be here. And thank you for setting up this exciting event. I want to get right into it. And I found the poll really intriguing because we've got such an interesting mix here of everyone in the role of publishing online, which is great because one of the things I really want people to take away-- there's three things I want you to take away today. And one of them is that in order to get this right, in order to get all the benefits of making our online products accessible, we need to have everyone involved. It has to be a cultural change. It has to be a different approach to how we roll.

So Lily, I'm wearing some goggles here, though, today. Can you see these? I'm wearing these goggles. And on my left eye, I've got a goggle which simulates seeing only a very limited field

of vision. And on the right eye, I've got your *Trailer Park Boys* Coke bottle glasses. And although we can't really simulate disability, certainly a kit like this-- and this is a kit designed by a friend of mine.

He's a doctor in Pittsburgh, Pennsylvania. And he designed this kit which has a whole bunch of different things we can use, like to simulate different color deficits and whatnot. And it helps us get a sense of what's possible and how to include everyone by being able to simulate what's going on.

But you know, something happened to me. I'm going to start showing my slides now. Something happened just yesterday for me.

A friend of mine, he was traveling to Colombia. He was planning on a trip to, sorry, Costa Rica for an event. And he wanted my opinion because I've been to Costa Rica. And I heavily recommend you all go there someday. But he wanted to know what cellphone carrier to use so he could stay online.

And I went to the national carrier, the largest cellphone company, in Costa Rica. Its name is Kolbi. This is what their website looks like. Now, my Spanish isn't that good. So I happily allowed Google Translate to intervene and present this to me instead. Google Translate said, hey, do you want to read this in English, David? I know you tend to prefer English. And this is what I got.

And you see, although Google Translate was able to translate things like Start and Home and Business, you can see across the top, all of the Spanish in the middle of the screen, or most of it, is still in Spanish. Now, if they had made their website accessible for people with disabilities, if their website complied with the international standards, this wouldn't have happened.

Because part of what we do is make sure that text is in a format that machines can intervene and translate. I'm getting the signal that my audio quality is poor. I'm wondering if we should pause and fix that. We're thinking it's picking up from the wrong source. And I'm wondering if we should just let my tech here, Ben, just fix that quickly before we go further.

**LILY BOND:** Everyone sounds good. Everyone has been saying that it sounds OK, a little bit clicky, but not bad enough to stop.

**DAVID BERMAN:** OK, promise me you'll tell me if it gets worse, and we'll intervene.

**LILY BOND:** Yeah, we'll let you know if it gets worse.

**DAVID BERMAN:** Fair enough. So it comes down to-- OK, thanks everyone. So the question goes back to, why should we care about online accessibility? And we find that there are essentially five main reasons to care. And the first one is that-- ties into what I was showing you before-- we want to find a way to include everyone. And indeed, we now live in a time where, for the first time, we've lived probably in about approximately the three thousandth generation of humans. And this happens to be the first generation where it's possible to include everyone in communications.

And I feel very strongly because we can, we must for social justice reasons. But it's also excellent business. And so I want to walk you through five reasons why we should care about accessibility. And the first one is what I was demonstrating with the Costa Rican wireless website, which was that there's so many people. We've got perhaps about 7 billion people on the planet right now. And Lily, how many of those, how many people do you figure deal with a substantial disability in their lives? What percentage do you figure?

**LILY BOND:** I would guess probably 35%?

**DAVID BERMAN:** All right, so let's try the number. So if that was 35%, then if we've got 7 billion humans, then 35% is close to 2 billion people who we'd be leaving out of our message. Do you think anyone else has an opinion on that percentage?

**LILY BOND:** I'm sure they do.

**DAVID BERMAN:** So actually, I think it's actually a lot more than 35%. If people are willing to do a little exercise, I'd like to just try this out. What I'd like to do is I'd like to list a bunch of challenges. And I want to see how many people in our audience today have at least one of those challenges. So OK, Lily, here's my list.

Are you blind? Are you hard of hearing? Are there certain frequencies of light you can't see? In other words, do you have a color deficit, are you colorblind? Do you have trouble seeing things from a distance? Do you have to magnify things? Do you have a mobility challenge in terms of let's say carpal tunnel syndrome? Do you tend to spend a lot of time in a wheelchair? Do you need assistance walking? Have you ever had your arm in a cast for over two days? Do you have a hearing problem? Certain frequencies you can't hear? Are you pregnant? Are you drunk? Do you wear glasses? Are you stoned? Do you have a cognitive challenge? Do you

have attention deficit disorder? Are you already bored with my list?

There's more things. But there's quite a list already. Lily, let's ask people if you have at least one of those things, yes or no.

**LILY BOND:** Sure, so I'm going to launch a poll, everyone. And if you just want to answer, the question is, does at least one of the things David just mentioned apply to you? And you can select Yes or No. OK, about half of the people have responded, so I'm going to give it a couple more seconds. David, you should see the results.

**DAVID BERMAN:** Yeah, I see it. Wow. So 75%. The 25% of you who are no, I'm thinking if you're planning on living past the age of 45 or 50, you may want to flip to a yes because we also have things that we humans, we're working with hardware, 70,000 year old hardware which is designed to run to about the age of 35 or 36. Couple hundred years ago in the Middle Ages, that was the life expectancy. But because we live long, things start to fail at a certain point. So if you're planning on aging, you may want to be in the yes camp as well.

So wow, Lily, look at that. 75%, 76% percent of people, 76% of those 7 billion people live with a substantial disability. So when we're designing to include everyone, that's a lot of people we're dealing with. So for instance, we had a situation with the Canada Revenue Agency, which is up here in Canada. It's like the IRS in the USA. And we had the situation where we were able to drive down the costs of running their entire website by a substantial amount of money. Over \$1 million was saved by making the site accessible. And here's why.

During tax season, every time someone calls the tax department, it costs about \$26 to field that call if a human has to interact. But if someone can self serve, it costs less than six cents. And so every time we can drive down, we can make the website more accessible for all, then the budget benefits as well as the people. And this is the thing. The second takeaway I want you to take today is that when we design for the extremes, everyone benefits, but only if we do it well.

So if we do it right, then we can do it in such a way that, well, we tend to think about disability in the most extreme cases. Like, someone who hasn't heard anything in their lives, or someone who's never seen and perhaps never will. In fact, the vast majority of disability is much more subtle and perhaps temporary. Someone with a post-traumatic stress disorder is just interrupted by disability during their day. And so when we design for the extremes and we do it well, all our audiences benefit. And we get a better experience.

**PRODUCER:** We're not seeing any slides. We're not seeing slides.

**DAVID BERMAN:** So Lily, I'm told we're not seeing slides. I'm just going to remedy that.

**LILY BOND:** Great, let me know if you have trouble.

**DAVID BERMAN:** Are you seeing our slides? Because I'm not seeing it.

**LILY BOND:** No. You know, I'm going to take back the presenting right now. I think the poll might have removed your slides. So I'm going to make myself the presenter and then hand it back to you.

**DAVID BERMAN:** That's OK. We're now all experiencing a temporary visual deficit, which gives us a sense of what it's like to deal with a presentation where you can't see, you can only hear. And what I'm showing now on the screen is a Google search window. And the reason I'm doing that is because I want to point out that for many of us, the most frequent visitor to our website is Google. Ta-da!

So most e-commerce online experiences begin with a search, Google holding more than 70% of the market share. And the thing is that Google search engine has the cognitive ability of perhaps a 4-year-old. So when we make our website comply with international standards for accessibility, we're also making sure that a search engine can understand. When a search engine can understand what we're presenting as well as it's confident it's understanding, we're going to get more relevant search results. And we're also going to get our results higher. So of course, everyone wants better SEO. And complying with accessibility standards will give us better SEO.

The third reason is an internal reason. I'm showing a picture of Stephen Hawking as an example of the type of person that we don't want to exclude from our own workforce. If we imagine that between 35% and 75% of people live with substantial disabilities and we don't have a website, an internet, an intranet, documents, presentation software that can include everyone, then we're actually driving down the likelihood that we're going to be able to attract and retain the very best people for our organization.

So if we want our organization to be competitive, we want to of course have access to everyone in the workforce. And that includes people living with either subtle or substantial disability. So that's our third reason.

Now, the fourth reason is just it's the right thing to do. We live in an age, there's a lot of social justice still to be solved, but there's a lot of great victories. And we live in a time that we have a lot to celebrate. In the last 35 years, more people have been liberated by information technology than all the wars in human history. And that's because these tools, these platforms, this internet, all of this makes it possible for us to, for the first time, communicate with everyone and include everyone. And not just share information with everyone, but let everyone be involved in the process of creating and sharing.

But for some of us, the fifth reason is the reason that compels you to attend today, and it's the legislative reason. The reality is that depending on where you are, like in the United States or Canada or Australia or Norway, there's different levels of expectations from a regulatory perspective. And in America, there've been a lot of cases, legal cases, outside of legislation. Governments demand certain standards. And I'm going to touch on a few of those a little later. But of course, we want to avoid getting sued. So although I prefer the positive reasons, it makes sense that we want to be in alignment with regulations. And as expectations arise, as they should, it makes sense that it's going to be that organizations that choose to ignore online accessibility are, of course, going to be leaving themselves more and more vulnerable.

Now, I'm in Ontario. I'm in Canada. I'm very proud of it. And part of the reason I'm proud of it is because we happen to be a hub of accessibility. In Ontario, we have the world's most leading legislation for the private sector in the world. Ontario was the first place on the planet to say that it's the law that all private sector as well as public sector and NGOs need to have a certain minimum level of accessibility for their online products.

But also, we benchmark because I was involved with the web index-- I'm not sure if you've heard of it. It's through the Worldwide Web Foundation. They do a worldwide index. And the benchmark asked me to-- they asked me to study legislation from over 40 countries in order to validate their results for how countries are doing in terms of making an internet that's truly useful.

And what we discovered was time and again, countries like Canada, countries like the United States, countries like Norway are doing really well. But when we actually look-- we do a Google trend search, we find that here in Ottawa, in Toronto, up here in Canada, we tend to be ground zero for web accessibility because the Canadian government was the first government in the world to say, if a publicly facing page is not accessible, then it has to be taken off the internet.

And the Ontario government or province or state, our part of Canada, it was the first place to say that companies had to do it as well. And so for this reason, we tend to be a hotbed of interest, expertise, and some really good news stories. So this legislation in Ontario I'm speaking of was called AODA, the Ontario with Disabilities Act. And it was passed a few years ago. As of the 1st of January last year, any company operating in Ontario that has at least 50 employees has to comply with a certain minimum standard.

Other parts of Canada are also online. Manitoba, another one of our provinces, has now passed similar legislation. I was just in Norway, where Norway has arguably put legislation in place, in motion, which will leapfrog Ontario as being the toughest in the world on business. And the United States has a long history of accessibility as well. But I want to take you back in time for a few minutes and point out that activity in this area has actually been going on for quite a while.

If I take you right back to 1876, Alexander Graham Bell, when we think of Alexander Graham Bell for designing all these phones, we just can't imagine life without anymore. And yet, Bell didn't set out to design the telephone. He was simply trying to create technology that would help professors in a school for the deaf in Massachusetts be able to do their jobs better. And in the process, he ends up designing the microphone, the transducer, the transmitter, the loudspeaker, all these pieces which we just consider part of our day to day lives. These are the inventions that came before. And then, of course, he gets to the telephone.

Now, Alexander died. But he left behind a remarkable company, Bell Labs. And even in the 1930s, if you had a hearing aid, developed by Bell Labs, it was kind of this big, cumbersome thing that hung around your neck. And it kind of said, look at me! I don't hear so well! And it had a poor signal to noise ratio. They wanted to do better.

And so after the Second World War, scientists at Bell Labs were able to mash up what had been learned about quantum physics. And they invented the transistor. I'm showing a picture of a transistor, and I'm showing also a picture of a hearing aid from the 1940s where you can see the hearing aid is tiny. It fits inside the ear.

But Bell invented the transistor just because they were trying to create a better hearing aid. So once they were done that, they said OK, we're done. We're out of here. And it wasn't until a gentleman from Japan, from Tokyo, Akio Morita, had the idea of saying, this transistor, this intrigues me.

If people with extreme hearing challenges like the idea of having a device that can make it easier to hear wherever they are, maybe everyone would like that. And he went ahead, and he bought the worldwide rights to the transistor for \$25,000. And he created something called the transistor radio. And he created a company called Sony, which we of course-- it's in the headlines every day these days. But it all starts with designing for the extremes. So when we design for the extremes, everyone benefits.

And now, here we are in 2015. And those transistors are, of course, we're all carrying a few million of them in our pockets, and in these laptops, and all the stuff that's making this whole webinar possible. But also, when we think of design, we often think of design as a matter of decoration. And yet, for me, I think of design as more of life and death. Are we seeing the slides still clearly? We are, good, OK.

So here, I'm showing a picture right now. On the left side, I'm showing the CN Tower in Toronto. And it's with a classic traffic signal. And so on the left side, you can see that they have the standard signal for it's safe to go with green. And on the right side, this traffic signal is red. And it's a signal to stop.

But I'm now going to just click my magic button and remove all the color from this photo. So now, the same pair of photos are being shown. But now, both lamps just look a shade of gray. And here's the thing. The largest source of accidental death in North America are traffic accidents. And slightly over 10% of men have some level of color deficit. So if 5% of our population have a color blindness challenge, and the only way to tell if it's safe to stop or go at an intersection are these green or red, that's a problem. It's a life and death issue.

And yet, up here in Canada, we've got a solution. We designed a form of traffic signal that you see in most traffic signals in the province of Quebec are more like this picture I'm showing now. I'm showing now a picture of a traffic signal which still uses the classic red, green, yellow approach, so legacy users understand them. But it also has a standard where if you have to stop, there's two lamps rather than one. And the stop lamps are squarish whereas the go lamp is roundish. And the caution is a diamond.

And so in this way, we're using shape. We're using the number of lamps. And we're also using the classic colors. So it's OK to use color to communicate. We just don't want to rely solely on it. And again and again, as we sort out accessibility problems, that's the way we get it done.



In fact, I'm showing a traffic signal that's all of nine blocks from 3Play Media headquarters in Cambridge, Massachusetts. I was visiting family there recently. I'm showing this picture of a traffic signal, and it's got an arrow pointing to the left which is red which, to someone who can perceive color, says don't turn left. Especially if you're dealing with Boston drivers. But for someone who can't see color, what is this saying? It's saying kill yourself as quickly as you can. Turn into oncoming traffic. I'm surprised a signal like this is still legal in Massachusetts.

The thing is that if you don't know that much about this stuff, you've been very clever because this is the perfect time to learn. It's never been easier to create online accessibility. It's never been easier to create websites that are accessible or documents that are accessible. It used to be we'd run these courses on how to make your sites accessible, your documents accessible. And they used to be two-day courses. They're only one-day courses now because it's become that much easier.

So it's a perfect time to learn how. But when I tell people again and again is before you learn how to fix things, you have to understand the challenges we're dealing with. If you understand the challenges we're dealing with, then you'll make sure to implement the fixes in the right way. And also, you won't waste time. I remember working with a client who would spend weeks solving a problem that didn't even need to be solved. Because they didn't understand why.

They were following all the rules of how to make your website accessible. But they didn't really understand why they were doing what they were doing. And so they'd spent thousands of dollars on things that didn't even need to be done. So it's good to understand the challenges. And so I'm going to just quickly walk through the type of difficulties people live with. And I find it useful to organize them into four groups.

We have permanent disability, which is what we tend to think about right away. But in fact, most disabilities are temporary, episodic, whether that's the eye doctor has put drops in your eyes. Or they're required as time goes on. We even have disabilities that society creates for us, like for instance deciding that it's not OK to be left handed.

Now, in order to walk through all the disabilities, though, I've organized them in terms of the human senses. Because essentially, disability typically is the permanent or temporary absence of a given sense. And I'm going to present them in the order that they tend to affect online the most.

So the first group are visual challenges. And this can be as extreme as that someone can't see at all ever. Or it can be much more subtle. They only see certain frequencies of light. Or maybe they temporarily can't see because they're in a smoke filled room. The second group we deal with are dexterity or mobility challenges. So again, this could be extreme. This could be someone who's quadriplegic, who has no use of their limbs below their neck. Or it could be quite subtle, someone who has complete movement, but it hurts every time they move, and they just don't want to move any more than they have to.

The third group are hearing challenges. And if your content, if your documents, don't have any audio in them, then this doesn't matter for you. But if you've got any sorts of multimedia, then it matters to take care of people who can't hear at all, or can't hear at all at certain times of day. Like let's say you're at the gym, and there's five TVs on, and they turned all the volume off on all of them because otherwise, all the channels would compete. Or maybe you don't hear certain frequencies.

The next group are language and speech difficulties. Some people just don't know the language you're working in. So when I go to that Costa Rican site in Spanish, I, due to my own lack of education, don't know Spanish that well. And so I have a temporary challenge. But also, people's brains are wired differently. And so you have some people have language comes in a different way, it goes out a different way. And so you want to include everyone.

And this is part of-- this leads into the challenge of cognitive challenges in general, which are varied. And we all suffer from to some extent, and it's only those that surface enough that we want to bother giving it a name that's enough to get on our radar. Now, the good news is we've developed all sorts of amazing assistive technologies over the last three decades. And I'm going to show you some examples of what those are. Because if we understand the technologies that our users are using to use our website or our documents or our apps, then you're going to understand why we're going to redesign the site and how to do it best.

And essentially, it's always a matter of either swapping in one sense that's not available for another or magnifying one that's already there. So for instance, if you can't read small things, you can see, but you can't read small things, then we would perhaps choose to magnify. And it's a great time to live because all the major operating systems we have now have magnification software built into the operating system. There's third party things that help, but we all enjoy the ability to swipe and pinch and zoom on our mobile devices. So we all have the opportunity to use magnification. Now, some people can see. But they see differently.

So for instance, I'm showing an experimental product being developed right here in Ottawa that allows someone who sees only certain things to wear a pair of goggles that interprets it. So this picture I'm showing of a young woman wearing these goggles as she's walking through a building. And an onboard computer is interpreting the light that's coming in and organizing it in a way that's better for how her brain works. And that's amazing.

We also have technologies that help-- let's say you can't use a mouse. Let's say you don't have use of your hands or your arms, and you need some way to navigate. So there's all sorts of technologies that we have that allow you to perhaps emulate mousing by moving your hand or pointing your nose. And in fact, we've been working on-- I'm just going to show this on camera because I'm having so much fun with it lately. We're working on a particular case where we're working with this new eye tracking devices that have been developed in Scandinavia. And so we're working with one case where we have a person who is quadriplegic and also doesn't have use of their voice.

So it's hard for them to even make small movements with their head. But this device allows them to just, with moving their eyes, they can move the mouse on the screen. And by blinking, that's like a mouse click. And that is potentially absolutely revolutionary. Another technology we all enjoy these days is the ability that if we can't type, either because we don't know how to type or we can't move our fingers, or maybe we're driving, then we can speak and have voice recognition take advantage of this.

You know, the history of voice recognition-- Apple is selling iPhones today. And the biggest feature they push is Siri, a voice recognition technique. And yet, decades before Siri and Google Now, the company that developed Siri for Apple is the same company that bought the company that bought the company that developed Dragon Naturally Speaking that, back in the '90s, was developed originally to help people with more extreme situations.

So again, it's that when we design for the extremes, everyone benefits. Now still, when you can move your eyes, you still may want to crawl a keyboard. So we have on screen keyboards. Again, often now baked into our operating systems that allows us to be able to use the combination of the eye tracker or, in this case, I'm showing a picture of a girl using a sip, puff device. The girl, imagine if she has no use of her limbs. She can still sip and puff on this tube that's in her mouth in order to emulate left and right click.

And by moving her head around, that's like moving a mouse around. And so with that, she can potentially use any website-- no, she can't use any website. She can use accessible websites. So if we want to include all these people in our audience and get our messages and buy our products, we simply have to design our products in a way that works for them.

Another example is Braille. We tend to think of Braille on a business card. But we use Braille also for-- here's basically a smartphone designed for people who can't see. And it doesn't look like a smartphone because it doesn't have a screen. But you can see it's got what we call a dynamic Braille display. There's a line of dots. I'm just going to show everyone up there, to the camera. This line of dots pops up and down as we move through our document. And so it allows us to both, so someone who can't see can hear a website. They can also feel a website.

And indeed, I'm showing a chart now just to give you a sense of the uptake rate on this type of technology. Because for those who are heavily involved with screen readers, software that reads things out loud, historically there was a software called JAWS which kind of owned the territory. I'm showing a graph now that shows how JAWS had almost 80% of the market share back in 2009, whereas something like voice over on iOS for our Mac and all our Apple devices or iPhones are gaining market share. But then, the graph goes on to demonstrate that here we are in 2014. Well, we're in 2015, but the data's from 2014.

And VoiceOver, which is the screen reader baked into iOS and Mac OS devices, almost has a 40% level of use. And this software called NVDA, which is open source screen reader software for Windows, has almost 50% uptake globally, which is fantastic. Because frankly, if we're going to help billions of people, they can't all afford a \$1,500 screen reader from JAWS. And NVDA is free.

And this is what's kind of exciting for me. Because I was in India at a conference, meeting with the government of India working on some issues. And when we talk about accessibility, in North America, we say accessibility, that tends to mean accessibility for people with disabilities. But in India, accessibility, the first thing that came to mind was simply having access to the internet. Because although we tend to think of the internet as ubiquitous, in fact, for 70% of people on the planet, the internet is not available yet. And yet, this is the decade where that changes.

By the end of this decade, the majority of humanity will be online. And so things have to be

affordable. For instance, what I'm showing here is a picture of something called the Jaipur foot. The Jaipur foot is a prosthetic limb that was developed that costs less than \$50. It's not that fancy. It's not that light. It's not your \$3,500 prosthetic limb that you'd maybe get installed in a hospital in Boston. But it's available to tens of thousands of people affordably. And whether we're dealing with accessibility online or offline, we need to make it affordable. That 70% of humanity who hasn't yet joined the internet, the reality is we know that the majority of them are going to have their first experience on a mobile device, which is why focusing on accessible mobile means so much.

We see the use of mobile screen usage, screen reader usage way up. And as well, mobile has made it possible to make accessibility affordable because it used to be, for instance, let's say I'm colorblind. Oh, I'm color blind, actually. That's why I wear nothing but grays and blacks. It used to be if I wanted a device that I could point at my jacket and tell me what color it was, I had to have a dedicated \$200 device for that. Now, I just need an iPhone with a \$5 app for that.

And it was the same with counting money for someone who can't see. Mobile and tablets are making it possible to make all sorts of accessibility affordable for everyone. And it's also going the other way. It makes it much more likely that someone can be operating technology when they have a temporary disability, such as driving down the road and wanting to text.

So the possibility, the dream, of the completely accessible digital online experience has never been more possible. The ideal is that everyone can access everything at any time on every browser on every product. And that's impossible. I don't want you to feel intimidated by that. Because we don't have to be perfect at this. We just have to exceed an international standard. And I'm going to show you what that standard is. So I don't want you to be intimidated and think oh, I've got to get this perfect. We just have to get it at least so good. And if you can do even better than that, even better.

Part of the key is, and I'm showing here a typical plan for making a website accessible, is we have to get in our heads that accessibility isn't something we do at the last step. It isn't something we do just before we're going to go live. Let's check the site and see if it's accessible! And discover it's not, and then ask the development team to fix it. Because you couldn't come up with a more expensive, more painful, and less effective way to make a site accessible.

Instead, it has to become how we roll. It has to be part of every step of the process of making a site accessible. Now, people are often intimidated by all sorts of different acronyms they see. Things like WCAG and AODA and Section 508. What do all these things mean? Well, the good news is that there's one international standard called WCAG 2.0, W-C-A-G 2.0. And no matter what country you're in, no matter what jurisdiction, everyone's pointing to this standard. Even the American standard of Section 508, there's legislation in front of Congress right now to have it [INAUDIBLE] to point to WCAG 2, one international standard.

So the good news is that no matter who you're working for today, throughout your career, if you get to know WCAG 2, you know everything you need to know to make products accessible and also to be able to verify they're accessible. Now, WCAG 2 is organized into three levels-- A, AA, and AAA. And the idea is that there's a whole bunch of rules in WCAG 2. And if you follow all the level A rules, then we can say your entire product, your app, your site, your intranet, your document is level A compliant. If you follow all the level A rules and the AA rules, we can say your product is AA compliant.

Now, there's also AAA rules. They're for extreme situations mostly. And it's very unlikely you'd ever need or want to even create a product that would comply with all the AAA rules. But I want to-- this is the third thing. I think there are three key messages. The third thing is this. If we understand why we're doing it and we understand how to do it, we can create WCAG 2 AA products that contain no trade offs.

Understandably, writers, developers, designers I work with are really concerned that if they go through the steps to create an accessible site, they're going to end up with something that is going to compromise the experience for everyone else, quote unquote, the other 25%. But it doesn't have to be that way. Without exception, we can show you how to comply with every level A and every level AA rule without any trade offs. And with benefits. We can drive down costs. And I'm showing a chart now of all these different countries in the world and how every one of them has chosen some flavor of WCAG 2 or WCAG 1, they're moving towards WCAG 2, either A or AA. So we only have to learn the one standard.

I mentioned-- I looked ahead, and the majority of our participants today are from the United States. In the United States, we have something called Section 508, which was the first legislation of its kind in the world, so USA, USA! However, any month now, the bill that's stuck in Congress. It's all been written. It's all been agreed upon. It's just a matter of when it's going to be confirmed. It's going to update Section 508 to simply point to WCAG 2 level AA. And

even the current Section 508 already, if you complied with WCAG 2, you would be compliant with every part of Section 508.

So again, you just have to think about WCAG 2. There's one other international standard. It's only for PDF files. I'm just mentioning it to be thorough, something called PDFUA. It's very simple, similar to WCAG 2. When we get to PDF files, we either say it's OK to comply with the PDFUA standard, which is an ISO standard, or to comply with WCAG 2.

Now, here in Ontario where I'm standing right now, we have legislation that demanded that people had to get their sites accessible. I mentioned also the Canadian government standard which came first that demanded a similar thing. But they all pointed to WCAG 2. And essentially, WCAG 2 is made up of 25 level A rules and 13 AA rules. So if we're ignoring the AAA for now, we're looking at potentially 38 things you need to get to know. And I'm not saying that's trivial. There's work involved. But we can break them down in a way that they're bite sized. And I'm just going to introduce you to one or two of them just to give you a sense of the kind of things that we're talking about.

The first part of WCAG 2 is about perceivability. And so the first rule is called rule 1.1.1. And it's called non-text content. And it makes sure that every time we have anything that's not text, such as a graphic, a picture, a photo, a video, an audio file, that we have text that describes what it is. And so the classic thing people often say, alt tag, or an alt attribute, to be more accurate. I'm showing a picture for instance, here, where we have a logo appearing of the Canada word mark. And the alternate text for that is "symbol of the government of Canada."

Now, this plays out in different ways, depending on how you word it and how you deal with charts and diagrams. But no matter how it plays out, we can make sure that we have alternative text not just in websites, but we have techniques to make sure that documents in Microsoft Office, like Word and PowerPoint and Excel spreadsheets, also have a recipe for how to comply with this rule and all those platforms. In fact, we just were excited to announce today that we're soon releasing an accessibility ribbon we developed for Word users so that all of the accessibility features in Word are collected into one ribbon to make it easier for you to make it accessible.

So if you're interested in this, we're releasing a beta version end of this month. If you're interested, please email us at [ribbon@davidberman.com](mailto:ribbon@davidberman.com) if you'd like to be part of the beta. But we also have recipes for InDesign users to get this right. We have recipes for LiveCycle

Designer users. We have recipes for the PDF user, for every platform of apps. And this is how it works. We take each rule, we break it down, and we simply say, here's the way to get it done. And here's advanced techniques to save money.

Now, the second group-- and this is the last rule I'm going to mention today-- has to do with multimedia. So the second group of rules in WCAG 2 are all about audio or video content. It used to be if you met me seven months ago and it was time to talk about how we make captions for video, I'd be showing you some really clever techniques we've developed on how to take your video, upload them to YouTube, and figure out how to get your rough captions and put them down and all that. But this is actually how I met 3Play.

We stopped doing our own captions because it's so awesome. All we do is we send the video to 3Play Media. And for what seems to be a shockingly small amount of money-- I'm told, you didn't hear me say this, because don't up my rate-- for a shockingly low amount of money, we send them a video. And for such a small amount of money per minute, they come back to us with the captions. And they're done.

And it's not just that they get back with the captions, but they have such a beautiful online editing process where they present them to us, and then we have to go through them and just make sure all the proper nouns were right, because how are they supposed to know how to spell my last name? We fix them up. We press a couple button. In a couple minutes, our captions are ready. So we've stopped doing our own captions. We ship them all to 3Play. I recommend you do the same.

Anyhow, there's a lot of rules to go. And we could march through the rest of those 30 some rules. But I just want to really bring it to you that for client after client, we've yet to meet one where we couldn't take their site and-- we take a site. We audit it. We find what's wrong. We do a gap analysis and say, here are the things that need to be done. We work with that development team until the site is accessible. And we've yet to meet a site where, at the end, the site was either just as awesome as it was when we started or even more awesome for that, quote unquote, mainstream user.

And we don't have to have trade offs. So fear not. Now, also part of the power of having WCAG 2 is it means that we have an international standard for auditing, for reporting, and for testing to prove to the outside world, to prove to regulators or potential people who are going to take your software and plug it into their world or your document and include it on their



website that you can assure them that your product is also meeting or exceeding this minimum level of accessibility that we're bringing in and has been certified as such.

So that's the package I was hoping to share with you today. And to give you an introduction, to give you the sense that we can design without trade offs, we can design for the extremes, everyone benefits. And making your site accessible is simply good business. It drives down costs. It reaches more users. And it's just the awesome, right thing to do. Does that cover what you wanted to cover today, Lily?

**LILY BOND:** Yeah, thank you so much, David. That was an incredible presentation.

**DAVID BERMAN:** I'm wondering if there's any questions that we'd like to take, or if you had anywhere else to go.

**LILY BOND:** Yeah. So I am going to take back the screen. And we are going to open it up for questions. A reminder that you can type your questions directly into the box in your control panel on the bottom right. And we have some resources on the screen that might be useful to you as well. So David, if you're ready to field some questions?

**DAVID BERMAN:** Absolutely. I'll stick around as long as people have questions. I obviously have a passion for the topic.

**LILY BOND:** Great. So first of all, just really quickly, some people are asking if a recording of this presentation will be available. Yes, we will send everyone a link to the recording with captions as soon as that is ready. So David, a quick question here, what is the minimum that I have to do to comply with the law?

**DAVID BERMAN:** Hm, that's a really good question, Lily. I'm asked that a lot. It depends, of course, what law you're dealing with. And typically, it cuts down two axes. The first is, what jurisdiction are you in? Are you in Massachusetts? Are you in the United States? Are you in Australia, Norway? And so each jurisdiction has potentially regulations around it. And then secondly, who are you? Are you government? Are you private sector? Are you NGO?

And typically, the laws cut that way. Some of them also will cut based on how large you are. So for instance, up here in Ontario, you need a WCAG 2 level A compliant site if you're private sector and have at least 50 employees. But if you're government, you need to be level AA. Now, if you're private sector, you'll have to go double AA as well eventually, but not till 2021.

If you're in the United States, it's fuzzier because the Section 508 legislation only applies to

government right now formally. And then, there's separate state laws. For instance, in California, in New York, in Illinois, in Pennsylvania, there's specific laws governing those areas. And some of them-- should I turn on my video again?

**LILY BOND:** Yeah, why don't you turn on your video for the questions?

**DAVID BERMAN:** OK, I'm back. So some of them are thinking about applying to the private sector. But in the United States, it's more of a case by case because it's more based on lawsuits. Because although there isn't a formal law saying, for instance, someone in the private sector or someone in education must comply, there have been some successful lawsuits where some very large organizations have had some very contentious and expensive experiences by neglecting how accessible their situations are.

We're hoping that over time, going forward, that it won't just be for certain industries. There's also specific legislation in America, for instance, that covers transportation organizations. Air in particular, but industry by industry isn't as simple as having one rule for everyone.

Australia is the only other-- Australia and Norway are the only other countries in the world that have formal legislation that applies to the private sector so far. But the EU is coming on board soon. And this is something that's simply building worldwide. It's not going away. It's like the cuts in sidewalks. They were originally put there for perhaps wheelchair users. But we all love them, and we'll never give them up. Anyone with a stroller or a child or dragging a suitcase wants those cuts in the curb.

**LILY BOND:** Great, thank you, David. There's another question here. What are your thoughts on web design accessible validators?

**DAVID BERMAN:** We love them. We love the idea that people have gone out and created validation tools that mechanically scan your site to find the challenges. The problem with them is that sometimes people assume that because they've run their website through a validator and it says, hey, there's no more problems to solve, that they assume their site is accessible. But there's two big problems with that.

And one is that only some of the rules for accessibility can be tested by a machine. So we break down-- when we're testing a site, we break down the criteria from WCAG 2 into those that can be machine tested, those that can be somewhat machine tested, but a human still has to look at them, and some of them that require human intervention.

The second problem is that even if you comply with every rule of WCAG 2, you still may not have an accessible experience for your audience. So if you're trying to make sure you comply with the law and you need an audit report that says you comply with WCAG 2 AA, well great, and here it is. But if you're truly trying to create accessible experience to make sure no one's left behind, then you also need to do usability testing with real people who use specific assistive technologies to make sure their experience is as awesome as you hoped it would be.

So validators are great for some rules. But you still also have to have an understanding of why you're doing it and to know how to do human testing, as well.

**LILY BOND:** Thank you, David. Along those lines, there are a lot of people asking if you have any recommendations for software that will test your website for accessibility?

**DAVID BERMAN:** Yeah, I have a bunch. Gosh, well, just off the top of my head, I'll mention some favorites. There's something called the Wave Toolbar, which is free. And you can find it from an organization called WebAim, W-E-B-A-I-M. The Web Toolbar is a plug-in for Firefox or for InDesign as well as there's a web based version, but it's nice to have the toolbar because you may not be online yet. And it gives you kind of a quick hit, a quick look at what challenges there are with your site.

We also really enjoy using, for PDF, I'm just going to touch on different types of documents. So for the web, there's a host of validators available and online tools. Also, for documents, let's say we're thinking about Word documents. Microsoft has an excellent accessibility checker built into Office 2010 and Office 2013 for Windows. Unfortunately, they don't do it for the Mac. But the accessibility checker built into Word helps you validate whether your Word file is accessible.

For PDF files, Adobe builds an accessibility tool right in. But it's not as strong as a donation-ware product out of Europe called PAC, P-A-C, 2.0, for Windows, or 1.3 for Mac. And it will do much deeper testing of your PDF file as well as giving you much clearer information as to what's wrong if there is something wrong. Lily, I could talk for this one for about an hour. Should I keep going on that, or should we move to another question? Because I could keep suggesting them.

**LILY BOND:** [INAUDIBLE].

**DAVID BERMAN:** OK. Yeah, if someone wants a longer list of our favorite tools, email me, or email Lily, and

she'll pass it along. And we'll send you more.

**LILY BOND:** Great. So there's another question here regarding brand and color. What challenges have you encountered working with websites that are constrained to a client's branded color schemes, particularly when those branded colors have contrast issues to start with?

**DAVID BERMAN:** That's a great question. Because you see, just to put this in context for those who aren't as familiar, WCAG 2 includes specific rules about having sufficient contrast between the foreground color, the color of lettering, and the background behind it so that for people who can see but have some sort of limitation on their vision, they'll still be able to discern what's there.

And so this is measurable with something we call a contrast ratio. So even if you don't have-- if you see things quote unquote perfectly, then you may wonder, well, how am I supposed to know if there's enough contrast or not? Well, we have some great tools, such as the Color Contrast Analyzer, great free tool out of Australia, Color Contrast Analyzer for Mac or Windows. You point it at any pair, and it'll show you what's the contrast ratio. And you can decide if it exceeds the numbers. And depending on which rule you're following, you're looking for a 3:1 contrast, or 4:1, 5:1.

But the question here is this. The question someone's saying is, yeah, that's all great, David. But what if my client has a brand, their logo, their official colors of their organization, happens to not follow that rule? And there is an exemption in the WCAG rules, at least at level A, where you can get away with that and use alternate text to get around it.

But what we really need you to do is go deep enough that anyone designing branding today shouldn't be designing a word mark or a logo that doesn't comply with WCAG 2 standards. Because they're really handcuffing anyone working with that artwork going forward. However, when we do have a client that's got that constraint, what we do is we rely on alternative text. Or we make sure we repeat the information. So let's say your XYZ Corp, and your contrast ratio of XYZ in its logo isn't great enough. Then we'll make sure that editorially they repeat those words as well on every page so that the logo becomes a decoration rather than the thing that's actually communicating the information. And that way, we make sure that no one is left behind in terms of knowing their name.

**LILY BOND:** Great, David. Thank you. So there's a question here from someone who says that they're taking away three main things in terms of designing a website. Alt text on images, alt text on

PDF, and captions in video. As long as I do these by 2021, well I be in compliance?

**DAVID BERMAN:** No, not at all. What I'm showing is that whether you're going for level A or AA compliance for WCAG 2, you either have 20-some or 30-some criteria you must meet. And so I was showing the alternative text and multimedia as just a few of the examples of those 30-some criteria that must be met in order to be able to stamp your app or your site or your document as WCAG 2 compliant.

**LILY BOND:** Thanks for the clarification. So another question here, what level are state universities required to be at, and in what time frame?

**DAVID BERMAN:** So by state, I'm assuming we're talking about states in the United States of America? And the expectation do vary from state to state. So it's a bit of a big question. But for the most part, there's no specific timetable in place for the vast majority of educational institutions in the United States. Rather, there's a risk of lawsuits that can be mitigated by making sure you're more accessible than the state or college down the street.

**LILY BOND:** Thanks.

**DAVID BERMAN:** And the person who asked me that, I don't mean to sound flippant at all in my answer. But I'd be happy to give a more robust answer to the person who needs guidance on that. I'd rather speak to them specifically about what jurisdiction they're in and what kind of school they are and how large they are in order to give them guidance on what they should do by when.

**LILY BOND:** That makes a lot of sense. So there are a bunch of people here asking if you have a good reference for WCAG 2 level AA compliance.

**DAVID BERMAN:** So Lily, by reference, do you think they mean examples?

**LILY BOND:** I think they're looking for a standards guide of what they need to--

**DAVID BERMAN:** Oh, yeah, totally, right. OK, got it, sorry. So the ultimate place to go is the people who publish the WCAG standard, W-C-A-G, is a group called the W3C, which is short for the World Wide Web Consortium. And they're at [w3c.org](http://w3c.org). And they have a sub-site called Understanding WCAG 2. And it is the playbook that we all go to ultimately for all the specifics and answers about the standard.

However, it's a little bit overwhelming for some. So a lot of good products have been

published. We, ourselves, we sell a manual that costs under \$100 that covers it all. We also run courses, one day crash courses to bring everyone up on the standard. If you're looking for an online product, I'd go to the W3C site. And then, if you need that demystified, come to us or any number of great organizations on this planet who specialize in helping people comply with WCAG 2.

**LILY BOND:** Great, thank you. Another person here is asking, do you have to be proficient in JavaScript or CSS to understand and implement to be compliant?

**DAVID BERMAN:** Well, there's no question that if your site uses AJAX or you're using any sort of scripting, that in order to-- some of the success criteria are really very specific things developers gotta do deep in the code to make a website accessible. Others are purely editorial. Others have to do with things like choosing the colors right. So some rules are really about the designers doing the right thing. Some are about the writers. Some are about the translators. But some of them really are about code. And for those things indeed, if your site relies on JavaScript or any scripting language, then you're going to have to know how to make accessible JavaScript in order to succeed.

**LILY BOND:** Great, thank you. Someone is asking, in terms of WCAG, if you have a website in mind that you would suggest visiting that is a prime example of an accessible website according to WCAG 2 AA.

**DAVID BERMAN:** So the W3C site I mentioned before is a prime example. You can imagine they work very hard to make sure that the [? understanding ?] site, in fact the whole w3c.org site is compliant with WCAG 2 AA, actually AAA. So I'd say that's the best one to go as an example of a site that's compliant.

Another site that's perhaps much more complex, though, that we often like to roll out is the government of Canada site, which is [canada.gc.ca](http://canada.gc.ca). It's perhaps the most robust site that is WCAG AA compliant in the world in terms of the depth-- in terms of how long it's been compliant, and therefore the robustness of the compliance.

Another site that's very impressive to take a look at is the new site from the UK government, which is [uk.org](http://uk.org), which is just a thing of beauty, not just in terms of accessibility, but in terms of taking usability and plain language writing to such an extreme, I'm a little scared. So [uk.org](http://uk.org). But in terms of seeing how to do accessible multimedia, accessible carousels and getting all these tricky things right within some pretty tight constraints, check out the government of

Canada site, really good example.

**LILY BOND:** Good suggestions. Someone is asking if you could speak to how online web courses can be sure to be accessible to all.

**DAVID BERMAN:** Hm, that's a really good point. When we talk about online web courses, I imagine they're thinking about either a real time course, but it also could be distance learning, which is people do things at their own pace. And this is a big topic that has a lot of technicalities to it. So for instance, we run one day workshops specifically on how to create accessible online learning. And we run yet another one specifically on how to create accessible online events because there's so much to it.

So for instance, today, we're on GoToWebinar. And there's a pack of very specific techniques and gotchas and workarounds that we coach people on to make GoToWebinar just so. But tomorrow, we're doing a webinar on Adobe Connect. And it's a whole different pack. And then there's Saba software, which is another big one. So these real time things, none of them really have it licked. And you know, I've seen the frustration even in-- I'm sure some of our audience members today are frustrated with some of the shockingly poor accessibility issues there are for GoToWebinar not just in terms of the experience that we're having right now, in terms of, let's say, trying to ask a question.

But even in just how to register, and how you get your invitation, and how the invitation email's not accessible enough. And it's not just GoToWebinar. All of them, we've done studies and we've worked with one major vendor. And not one player has it right yet. There isn't a WCAG 2 level AA platform out there. And so what we end up doing is we end up instead-- because we can do it. We've done it. What we do is we've cobbled together several technologies. So it may be that we're augmenting with, let's say, ASL in a separate window on a different platform. Or maybe we're using something like Skype to take care of certain members who are not pleased with-- we'll have several windows open and several technologies running at once.

Part of the key, though, is knowing who's in your audience. Because if we have a limited audience, if we know what special requirements they're seeking, then we can design a particular event to make sure everyone's included and everyone can communicate. But of course, we look forward in the future to a time where people won't have to self-identify and make special arrangements.

So that's what I'm talking about, this type of synchronous event. For online learning events

that are asynchronous, that is to say like an online course, there's a whole other bucket of challenges. But we've got the recipes of, let's say, how to make something like Adobe Captivate, which is an example of a tool used to create online courses. And even the learning management systems, how to make all of that work accessibly. It can all be done, but it requires some pretty special knowledge still. Hopefully that'll continue to evolve over the years to come.

**LILY BOND:** Great. So David, I think we're going to do one more question. Most of the questions that are left might be better to reach out on email with some links. So how about we do one more question and then finish up?

**DAVID BERMAN:** Good, Lily, let's do that.

**LILY BOND:** So someone is asking if you recommend any particular accessibility training courses or programs.

**DAVID BERMAN:** It's such a temptation to make a shameless plug for my own company's services. But people do tell me often that I'm the best there is at demystifying this stuff. We ourselves produce workshops in this area. And we do them publicly. Or we bring it on site, and we customize them for a particular organization.

We have done them all around the world. Is that fair that that's my answer? It seems very self-serving. OK.

**LILY BOND:** [INAUDIBLE].

**DAVID BERMAN:** Aw. OK, but don't come to us for captions. That's 3Play.

**LILY BOND:** Ha ha, thanks. So with that, I think we're going to finish up. We will reach out to any unanswered questions. And thank you, everyone, for joining. And thank you, David, so much for being here and for such a great presentation.

**DAVID BERMAN:** Well, Lily, thank you so much for all the work you went through to make this happen, and to Tole and to 3Play Media for giving us the opportunity to share our passion for this topic. I really appreciate everyone taking the time to come. You know, I make the argument that it's good business and it's good for our careers and it's good for our earning power to know this stuff. But ultimately, why it really matters is we have the opportunity to leave a legacy with all our power and our opportunity and our technology.



We have the chance to leave a legacy that we're the generation that included everyone for the first time. And I'm so proud and thankful to have the opportunity to share that message as broadly as possible. So thanks again to everyone. And thanks to produce-- I also want to thank Ben Armitage, my producer here in Ottawa. He's quiet and he's been working on this for weeks to get it so right and one of the people behind the scenes you never get to hear from. And my whole crew here at David Berman Communications who work so hard to make this stuff work well as well.

**LILY BOND:**

Well thank you again so much, David, and thank you, everyone, for joining. And have a great day. We'll get back to you with the recording of this webinar as soon as possible.