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Hi everyone, I believe it's about 10:15 so we're going to go ahead and get started with our next session here. Thanks again for being here.

[Background noise]

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Hello I'm Arva Adams from the U.S. Patent and Trademark Office, also have some experience at the Government Printing office – now the Government Publishing Office, which is right behind us. DOD and DHS, did some projects for DHS as well. Just wondering how many of your managers are still reluctant about 508, thinking that it's too hard to implement?

One thing waivers, the cool part is unlike reluctant managers who are reluctant about user experience and you have to convince them why they need to user feedback. UCD, or user-centered design testing, is that it's the law, but too many people still rely on waivers.

What we found at the patent office is by integrating 508 into the acceptance criteria… um… do we have a lot of people using the Agile process today so they understand what I'm talking about? – not quite yet? The acceptance criteria is something they call - in waterfall they would just call it tasks, and in Agile they call it a user story.

The acceptance criteria is a list of things that before the product owner can accept the story, all of these checked items have to be done. Yeah, all the criteria where the story's purpose have to be met.

If you put 508 in each of the user stories' acceptance criteria, then you don't end up getting a whole bunch of 508 errors at the end, right before you are about to launch.

What I'm going to explain today is how 508 will also fix a lot of your UX issues for the general public and everyone. For different environments, for leading and listening to your material in different environments and then how we were successful in getting 508 to be a less scary thing and be done without waivers.

So that was a good thing, and then I would like to ask your feedback on ways we can measure that, because I still haven't been able to nail that down.

So we all know captions – that's one of the key accessibility features that we know we must have if we're going to display a video, we have to have captions by law. Of course they do – their main task is to make sure that people who can't hear the audio, can read the audio and understand the message.

But nowadays with everybody multitasking we have this scenario a lot, we've got two people sitting in the same room doing the same thing. One person's watching the game, one person's watching a video in this case about patent prior art, which it means prior studies when you submit a patent.

So here this gentleman is listening to the video but his girlfriend wants to watch the game and so he is using the captions. While neither of them may have a hearing disability you are actually creating a better and more usable experience because he does not have to wait until she is off at work before he can watch that video.

If you can think of some other scenarios that are similar… the metro… loud environments, airport, anywhere. Captions are good for anyone. The content might require it or be more helpful with it.

Somebody might have an accent that you don't understand or if the audio is really bad when it was recorded, the captions will help with that too. And I think, uh we've all seen recently, sometimes Facebook videos are now launching without audio and just captions.

I read one study that said 17 percent or something really low - of people actually browse people on Facebook with audio when they do a refresh of the Facebook system then they try to get us to run the videos loudly and we all turn it off. Captions are good for all users. [low volume] [Laughter] that too.

There are lots of U.S. – I'm sorry there's lots of design pattern library web design systems. Are you all familiar with the U.S. web design system the GSA put together, 18F started it? There are other ones out there.

We have one on if you Google USPTO design library we have one – it's on GitHub, it's open source. CFPB's – Consumer Federal Protection Bureau has one of the first ones, if not the first one. Theirs is good.

If you can use bootstrap, if you like, you can use Google material design, but the cool part about starting with the foundation is you don't end up having an unknown person designing 508 issues into your product. Most of the design libraries have been tested. Definitely our newest web design system, CFPB's has, and USBTO's has.

It's where all the color contrast, typography things those have already been tested and so if you start with this as a foundation, then you can save a whole bunch of time in fixing errors, that you just didn't realize were errors.

So one of the common errors – now with the 508 refresh that happened, not last February, but the February before, we went to single A contrast – there's different levels of contrast - to AA. And some accessibility - strong advocates will say – obviously - that is triple A is the best, to cover the most users.

Sometimes you are in a bind and you have to use colors that differ although you can't use colors only – we all know that you have to have a backup signifier. Sometimes you are forced to use AA, but AAA is the goal but our Section 508 mandates AA now, so we had to do some fixes on some of the things on our websites.

There are a bunch of tools out there. This is one that I use, Contrast A. If you just Google "contrast color checker" you can come up with some of your favorites.  There are some that are downloadable, that my security office hasn’t approved yet, so I haven’t been able to use that.

A great one that the Social Security Administration came up with is a favelet called Andy and it does more than just check for contrast, it does checks for many types of errors. So it’s a favelet - you put it into Google Chrome and then ANDI just runs and reports arrows on the top of your page.

It doesn’t load anything onto your system. So it’s A-N-D-I if you Google it, it’s the first thing that comes up. And that’s the one that I believe the US Access Board - who owns section 508 - would like to eventually make that the standard tool for accessibility checking.

So we know that contrast helps people that have color vision issues where uh and other vision problems where they can need really high contrast to be able to see. There are ways they can set their browser to try and emulate the best experience for them.

It does not always work based on how we design our page and how the Google Optimizer or whatever they are using – contrast optimizer works. So the best thing to do is for us to make it - the contrast - compliant right off the bat, and we have to by law.

But on top of the users that have physical eye problems, there is also a user – there’s one example of somebody that has perfect vision but is in an airport and just trying to get some work done.

So here is the website – when the clouds are behind them and they are sitting by the window by the runway there and the contrast looks fine but then look all of a sudden here comes the sun shining into the window and you’ve got this dulled out – I’m sure when you’re walking down the street using your mobile device, trying to figure out your maps.

If you use a map right in direct sunlight, then it’s hard to read, you have to duck under a tree, that sort of thing. So the higher the contrast the better it is for all users.

So you resolve some of those accessibility issues right off the bat instead of finding them later at testing and then having to backpedal. Also the US Web Design system has typography rules that are already 508 compliant and accessible.

Some people will argue that serifs are not the most accessible in italics, so you might want to take this and replace it with a san serif font which are easier to read smaller and also if people have issues with seeing where things blur – the serifs are the first things that blur italics and serifs.

Many times I can’t say across the board but starting with these typography guidelines can get you off to the right start without having to do too much research.

In addition to just being 508 compliant, you will see that on the left is a website that uses straight out of the box html as the browser interprets it and displays it.

And on the right is CSS-styled typography with more fine spacing, better kerning, and good H1, H2 header tags, font treatment, as you can see just from trying to scan this topic, which probably many of you don't even know.

[low volume] If you're trying to absorb this information very quickly, you'll find that the one on the right is a little more understandable. And easy to absorb the information.

Style tags are huge, we must use them for the screen readers – the screen readers what they do - like JAWS will read - will tell the user what is a title so that they understand that they are about to enter a section. So it will say title, h1, it goes really fast.

But it will tell the reader that they are about to enter a new section, so they know, they may want to skip over that section – go to the next heading and the next heading… without… just like the person who can see, scans through all those headings perhaps.

The screen reader will allow them to scan through the headings so they find the topic that they want.

TH and TD are two of the biggest mistakes I see. They are table header and then TD I can't remember what it stands for – it's like the range too right?

So you have to make sure your headers and your tables are tagged, and then hopefully, PowerPoint does not necessarily do this but the web does – HTML, CSS does you can tag the range of what the header refers to in the table so you have the header up here and then TR is the range.

And then you say A1 to A7 from the table grid. That helps the user a lot. But you have to have those TH tags in there is to be accessible. Alt tags are also definitely needed I think that's the first thing people learn is alt tags. You want to do meaningful alt tags.

Never start with image of because the screen reader already says image of, so if you do that it duplicates it. That's another mistake I see a lot.

Alt tags are good. If people, your audience is in a place with shifty internet or no internet at all and it half-loads the page, at least they can see a placeholder of what was there so you know like an elephant eating leaves or whatever they eat. I don't know where I came up with that.

The other thing that I see a lot is two calls to action. The top one - learn more at and then you name the page. Section 508 was released February 2018 and you just put that tag in the text. You don't say click here to access this. Because now you have given the user two calls to action. The screen reader hates that. Because it's really hard.

There is a way that a lot of visually impaired users browse, and they go from link to link to link to link. So all they hear is click here click here click here click here and they don't know what they are clicking on.

If you name the link what the actual link goes to then they can just skip through the links and find what they need quickly. For other users [I think it's on the next slide], for users that aren't using screen readers… the two calls to action can be confusing.

It's just not necessary in this day and age. It might have been popular practice in the 90s or so or early 2000s because people didn't know quite yet to click here and that the internet was kind of new and another reason it's not accessible is that not everybody clicks.

And definitely a lot of people are using mobile, so then they are tapping. I see mobile apps saying tap here for this, when they don't really have just label or tag correctly and design correctly so that people know that they are links.

So tab and read orders is another big thing we run into. They definitely help the screen reader to go from top to bottom and you want them to read the address, country, and everything that you have in the order that you are seeing it up on the screen.

Now on top of that people who are filling out forms don't like to take their hand off the keyboard and focus the mouse on the correct place that they are on the form.

So here is an example of that with the wrong read order. When you tab. The person is trying to fill out this quickly. They don't want to take this off the screen – off the keyboard, sorry.

They hit tab and it goes to country and then they tab again and it goes down to city, tab again it goes to the next button. And then you have to shift tab if your user even knows how to do that.

Most of the time they will take their hands off the keyboard and use the mouse and get the focus back where they need it, curse at the designer [laughter] and they are not happy with your form anymore.

Imagine doing TurboTax last month when – if the read order was wrong, it would have taken you two to three times as long. PDFs also should be in the right tab order. Adobe tries to get the tab order to guess that from the way that you design the page.

But if you do complex desktop publishing it does not always get it right. You have to use the built-in PDF checker in the newest one, Adobe DC has it. That is the easy-to-use one that I have seen so far.

But all of Adobe's for the past few years have an accessibility - but not only a checker but a way of improving your read order and shifting things around.
You can see exactly how the screen reader is reading through your content and then you can move them up and down as you need to – to get the screen reader to read correctly. Make sure you tag everything correctly as h1 or h2. And that also helps Adobe understand the order.

So you know that the stories must be accessible by law. What I have seen - when I first got to the Patent Office and got embedded into projects as a the UX designer and tester was that people were creating one blanket 508 story and then saving it until the end.

Sometimes they try to jump ahead of the game and put those blanket 508 stories at the end of each sprint. But both times it turned into waivers and a lot of people coming up with errors that they would take months or weeks at the very least to fix.

So then they would just go and get a waiver and say they would fix it later. Sometimes the budget was cut and they would never fix. So then you've got an inaccessible product up there on your website for a long time.

So this is what I saw first. Here I have an example of three common defects. This is the model when you test 508 with a blanket user story at the end. In the agile process, you basically define the user story being the task.

Like I would like to develop a form that tells the user or asks the user what their name and address is. That's an example of a user story for people who are using waterfall. And then you go and get the product owner acceptance criteria and find out what the owner wants.

The owner states that they have to be able to enter their state and that must be usable and whatever. They must use this button style and then they cancel button must exist. There is a list of criteria for designing this form.

Then you talk to the dev team ordinarily and see what is possible. There might be something that the product owner dreamed about but couldn't get in there because of technical difficulties or time constraints.

Then you massage the acceptance criteria, test the prototype with users, develop the user story after the test, then you do the user acceptance testing – where you test the user story against the acceptance criteria.

And then you test the development version with users and then here comes the 508 test. And then you find a UX issue in there that some users are squinting, a UX issue with bad color choices - they might be compliant but they just may not work well for the user.

Or they are single A compliant and they can't find a call to action. That goes back to the proper linking and creating good text for links. And they will find defects that are show stoppers.

Like the UI is lost when zoomed. The 508 refresh requires that users can zoom up to 200 percent and still be able to use the website. You'll see that a lot with modals. The modal will come up – they'll zoom in to 200 percent and then the call to action button is way at the bottom and there is no scroll. Things like that pop up.

Doing this blanket user story means they all pop up at the end. And then usually there is no time any more to do it. What we started doing is putting the 508 into acceptance criteria right at the beginning. And so then the developers know right away if you have the same problem we have - which is that some of our contract developers might not be quite up to par with 508 as they should be or as their boss claimed they were.

Then at least they know right then that they have to start studying up on it. It is not a hard thing to do. It's just that they need to know what they have to do. Right at the beginning of the sprint or the beginning of the project and they will study up and maybe their boss can send them to the class.

Then you go through all the same steps that we usually go through when testing the prototype. All this time you are doing this 508 you have that in mind the whole time.

And you might even try and find some users that are using JAWS or have low vision, see what problems they have and in that you end up finding things like missing captions. This is when you find early on any main contrast problems, bad calls to action etc.

Now I left one UX issue in there because you never have perfect sight when it comes to testing but [laughter] a lot of these things were caught very early on. Like the color contrast would definitely would be flagged because it either passes AA or it does not, if the testing is done well. Read order is caught, the zooming issue is caught early on. Basically all these things are caught.

At the end if you take that blanket test away and you have the 508 in the acceptance criteria than you would just have this one issue they can't find a call to action, the product owner won't panic, and then you won't have to redo the whole interface you just have to change one little thing and move on.

We do like to do a final sanity check at the end must to make sure we aren't missing anything with 508. It is just a sanity check but is not starting from scratch.  Some resources that I have -- one suggestion that I have, it is not a requirement nor does anyone recommends that you use JAWS as a way of testing – ever.

But it was really a great eye-opener when I rode my bike over from the printing office down to the MLK library here and just listened to one of my websites on JAWS and it is crazy. It talks really fast and goes through everything.

It really helped me understand what not just being compliant but what would make that experience better for the low vision user who is using jaws.

I recommend doing that. I just installed it on our lab. If you want to come by you can listen to your website in our lab which is near King Street Metro [low volume].

Or you could always just go to library, if your site is live and use one of their JAWS machines. Some other resources as part of, I'm assuming most of you are part of the UX Community of Practice listserv. There is also 508 listserv. And it's really helpful, you do some question and you get really good quality answers.

The US Access Board I have had really good luck getting a response from them. They own the Section 508. I try not to bother them for simple little things that the Community of Practice could answer. I try to only contact them for bigger policy issues and recommendations, and they've been helpful.

The Department of Homeland Security has started a Trusted Tester program. It is a few years old. And they just did a refresh on that and they would like to see that Trusted Tester program used across all federal agencies and perhaps other government agencies as well to certify people.

You would go online and take a test, it is not too difficult but there are some challenging things, you learn a lot. You have 10 tries to take that test and afterwards you would be a Certified Tested Tester user.

So you could become the UX Liaison for 508. Most of our 508 offices are severely understaffed, so don't rely on them for testing, they can't catch everything and they can't review everything with quality, so this Trusted Tester Program is a good way of having Trusted Testers embedded all over your agency.

I think it's about half-way rolled out, you can still take two or three modules and more are coming. And you can get your certification and it looks good on your resume. And that is a good tool that you will also learn a lot by studying for that.

Does anybody have any questions or anything about 508 that you constantly run into but didn't know how to resolve? >>[low volume]>> Are you using agile or the Waterfall methods? Agile, OK, so the scrums help.

That's when the design libraries come in. You have this standard. We have a compliance with our USPTO UI design library in our task order, they have to go in there.

On top of 508 issues, we were spending a lot of time arguing over button colors and things like that. I think others can get very married to something they had in their brain and it might not be accessible or even a good idea.

So we put it in the task order that everything must be 508 and then they have to comply with the pattern >> [low volume] >> Right, it might have to wait until next fiscal year to get it in there.

>>[low volume] >>Oh sure, the question was if you don't have time to go page by page through the whole system, if there is a tool you can use. My 508 coordinator Mark recommends that you never use just one tool, always use two tools or more than one tool when you can and also manually verify the errors. Use two tools to compare the notes. Wave, we're using Wave.

The ANDI tool is good. I start to find what the common errors are - in my agency – it's usually forms read order. And then I will skip to those parts. You start to realize what to look for. I know that's not the answer you want because it is time-consuming.

Now that the 508 refresh is mandated we actually do all the 508 testing instead of relying on the 508 coordinator, there is a lot of panic. They just want to run a tool, just like they run the cyber security checks.

Mark's answer has been to run two tools. We use WAVE and ANDI, are the two. >> [low volume] >> Siteimprove may be another. If you go to Section 508.gov they have a list of tools.

Yeah, we get that question all the time, that's why Mark is reluctant to name a tool because next month a better one comes out. We actually have problems, very recently had a problem with people trying to sneak tool names into the passport and say that if you can't test that way, then you're not testing.

And that made him very reluctant to even mention tools. If you want to talk off-line you can email me at Arva.Adams@uspto.gov because we're in the middle of this right now. When Mark comes up with a document, maybe I can share that.

Are you part of the 508 community? We are going to share it with them. >> [low volume]>> The question was how we overcome the security concern with the web fonts and web-based icons.

With cybersecurity and bootstrap, we don't use those we use SVG's. We converted all of the… I think we were using FontAwesome. So we took FontAwesome and converted this all, the new FontAwesome actually has the SVG's already built for you and then we have them all in one SVG file on the server and they system calls up the coordinates.

We're not using the favicons, and it wasn't because of cyber – well yeah it was. Because they turned it off, because of some mistral that's like 20 years old. [laughter]

>>[low volume]>> Right, so it turned out that a lot of big law firms that are our clients also have the same security settings, so at first we thought well maybe just the internal people just have to suffer, they are not going to [low volume] but we found that other people were also having the same thing.

So the SVG – very fast. In the beginning we were loading each bitmap and that >> [low volume]>> The question is what do you do for in-house people that aren't constrained or governed by a task order? They are developers inside. [laughter]

It's in their position description. It's hard, the problem is that sometimes the same with user experience, if you don't have a champion at the 10th floor level, and it is not trickling down, it is hard to enforce.

The first rule is to make sure that you have a champion. Pick your battles [laughter] as far as the 508 goes it is law that. If they are a developer, that should be in their position description. Perhaps just some more education.

If you can't get it get supervisory to have seminars with the dev team [low volume] and sometimes if I can't get somebody on board I will just say do you want to be the one sitting in court? [low volume]

I don't like to use that threat, but if there is a lot of pushback or people running waivers. I say yes, you can get a waiver but that may not help you in court. You need to file a patent and everybody is like [low volume]

Questions? >> [low volume]>> I'm sorry the question was how much detail do we get into in the section 508 portion of the acceptance criteria in the user stories? And the project manager puts in for every UI story automatically puts in 508 standards and that should cover it.

Because the contractor is supposed to know. I will look at some of them and I know that it is a complex form and I just want to make sure they double check the read order, and I'll become more detailed on some complex UI elements.

But they are supposed to know when they become a federal contractor, what 508 is. It's pretty general. It has worked out well so far.

Questions? >> [low volume]>> The question is: What's a minimum body font size? It changes with who you ask. A lot of people say 16 but that is huge when you have a lot of content. So we use 13 or 14.

Fourteen when possible and thirteen is the very minimum. People can zoom in, I think as long as your zoom is okay, and you make sure there are UI elements issues, I think you are ok using 13, because we've got some complex applications especially for internal people like 16 font would just make that page really long and hard to use. So we've got to balance good usability with the font.

What do you use? >> [low volume] >> More real estate, yes. >> [low volume] >> Are you using agile also? That is the most successful thing that I've had is the acceptance criteria in each user story and then at the end so the product owner at the end of the sprint, must verify that the product is 508.

If you have time you can be there with the product owner for complex UIs, but as long as it’s in that two to three week sprint, those 508 issues so far have been cleared up early. >> [low volume] >>

The question is if I have ever done a user testing with people with low vision? And yes I’ll seek them out, luckily I have a lot resources and the vice-president of the disability group advocacy group at my office.

I will send out an email for volunteers and we will nail a lot of questions specifically with Zoom. And sometimes find things that are not necessarily 508 but a pain point.

If two low vision users have the same pain point, then we can flag it and fix that. We’ve got blind users using screen readers too, but yes, low vision is key because sometimes you make assumptions on contrast even if they pass double A that are causing issues.

Do you think you have the resources? >> [low volume] >> Do you have a disability advocacy group at your office? >> [low volume] >>
>> Oh okay, do you have an EEO office? The problem is that you can’t really reach out and say hey I saw you walking down the hall with a cane so [laughter].

I guess if you have an internal newsletter, maybe put out a call, maybe even in the section 508 group. If it’s an external site that people can get to, you might grab some volunteers from there because there are low vision users in there and in fact they may know people at their agencies.

Any other questions? >> [low volume] >> Section508.gov has all the one’s I mentioned, so yes they have the 508 refresh, they have a simplified checklist, and things so you don’t have to read the whole legislation, and they are really good and they have information on Trusted Tester, who to reach out to get an invitation to be a trusted tester.

>> [low volume] >> The question is, to rephrase it I guess, is when accessibility might override good user experience? Something similar to that. >> [low volume] >> Yes, in general the calendar picker was one that we struggled with. And then we found the calendar picker that allows you to tab through it. I can send it to you. >> I need it badly >> Yes, I will get with you and get your email address.

I think I have it from last year. We found one that is accessible when we asked Mark about that issue, that particular one, as long as we have an option the user can also enter in the calendar.

The same thing with color. That was probably the biggest argument that I heard since Section 508 was first written and published and became the law of the land, was that people were saying I want this color on this background. Why are they going to ruin my design?

Basically installers just make sure that you have the alternative that is accessible. You can have a chart with seven colors that might not all have the perfect contrast but make sure that the alternative to the color, like whatever the color, green means go, then make sure it's an icon that says go. Make sure it is an accessible alternative. You do not want to constantly say email this person for an accessible version. That used to be something we relied on a lot and it’s not good practice. It doesn’t make us look good. Sometimes it’s just a matter of rethinking the UX. Are you being too complicated maybe? [low volume] I will send you that one that we found. Thank you. Cool thanks. Appreciate it. [Applause]