Thematic Workshop

THEMATIC WORKSHOPS

The role of Web Accessibility in Digital Inclusion (European Internet Inclusion Initiative)

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1630 CET.

ITU WSIS meetings.

Session: The Role of Web Accessibility in Digital Inclusion.

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>> Good afternoon, everyone. We will get started. I see people trickling in but we want to try to keep the time. Welcome to this session entitled the role of web accessibility in digital inclusion. My name is Kim Andreasson, private sector consultancy, and I will be your moderator today. I don't think I need to tell anybody this in this room about the importance of web accessibility, but to put in it context, the information society is moving ahead rapidly. With increased reliance on technologies, it's ever more important to bridge digital divides.

Web accessibility can be one of those divides. If people, for example, with sight impairment is not able to use websites, they lose out on the information society's benefits. It is important therefore that we try and make sure that all websites are compliant with web accessibility.

However, this is not necessarily the case. A

study in the European Union found that only 10 percent of government websites in the EU were fully web accessible.

That is why I'm pleased to be here today and have such terrific panelists with me to tell us more about the current state of affairs, and also what is being done to promote web accessibility, including the rule of tools and policies. Without further ado I want to hand it over to our first speaker, and I'm pleased to have with us Mr. Shadi Abou-Zahra from the W3C.

>> SHADI ABOU-ZAHRA: Can people hear me? Okay. A little nodding in the back of the room. I'll try to speak up. Welcome to the panel. Thank you for this invitation to participate. I'm reusing some of the slides from a presentation this morning, if you were there, some of you were there. But I think the focus for this session here is more focused really on web, so we will go a little bit further into web itself.

This morning, I go talked about the relevance of the web being part of ICT, part of the whole accessibility arena, physical access and hardware and all those things, mobility, and the web is one part of

that. But we think it's a very essential part of accessibility, because the web is, dominant interface to a lot of technologies that we have today, to the Internet, to mobile, to televisions, it's becoming more and more seamless and provided everywhere.

So, it's crucial, a crucial part of this entire process is to get accessibility, web accessibility right, to, on the one side, the standards which I'm going to talk about in more detail, that is what we work on at W3C, we develop international standards that are provided as on a royalty-free basis, so anybody can use those standards free of charge, without needing to pay royalties for developing tools and websites and whatnot, which is one of the things that made the web so successful, how it could spread.

But also, on the awareness aspect, and I think that's really very very crucial to think about, I think sometimes we lose focus and we focus too much on the standards themselves. Of course, that is very important to have a standard, but as some people have already said, the standards become the minimum, but also the maximum, if there is too much focus on the

standards alone, without the additional aspects of raising awareness of the developers, we still have so many people who say, what does it actually mean that people with disabilities use the web? What does it mean that a blind person is using a computer or a deaf person? What are the problems actually for somebody with learning and cognitive disabilities?

We still have this aspect to tackle. I would actually say that, in my view, in my perspective, this is the primary source of issues is the lack of awareness and lack of skills in addressing accessibility, rather than availability of standards and technology.

So, this illustration on the screen is to show you the breadth of the web, what we now call the open web platform, propagating in different industries, electronic publishing, in entertainment, in gaming, on-line video streaming, all those things, the web is becoming dominant, but also different variety of devices.

As we increase and the Internet of Things becomes more and more a reality, the more the web becomes an

interconnected part, and the interface to all those technologies.

Let's focus specifically on the accessibility standards and what does it mean to make websites accessible or the web accessible, because it's not only the sites.

This illustration shows you the content in the middle. By content, we have a rather generic definition for content. It's really everything that is available on the web. Those are images, videos, documents, applications, everything that you provide as part of a website, you are downloading a document from your website or you have an app to access the website or access the functionality of the website. All this is content. All this is the web.

This needs to be accessible. Under that content, you see there is an acronym, WCAG, the web content accessibility guidelines. I'll explain it more but the guidelines explains how to make content accessible for people with disabilities. On the right-hand side you see the users, who are accessing this content. How do you get to the content on the web, you use a

browser or a media player, something that goes to the website, gets the information, and presents it to you.

People with disabilities also use assistive technologies in this context. All those tools need to provide accessibility feature. For example, to expand text, the text size, you can try that on your own mobile app, go to your favorite website and pinch and try to see if the text enlarges or not.

That is a simple way of getting an idea does the website actually adapt to what the user needs. On the left-hand side, we see the developer. By developer we mean everybody who creates contents and provides content onto the web. They are using authoring tools, those are content management systems, but also desktop software to create websites, but also social media sites. We are all more or less developers mean While. We all publish content on the web.

When you publish a image on your favorite social media site, does it give you the opportunity to provide a description, so called text alternative for somebody who is blind who can't see the image to tell them what the image is. A lot of social media sites

are starting to consider this actually. This is the realm of standards, at the bottom of the illustration you see web technologies. This is the core focus of W3C, html, XML, CSS, we love acronyms, we have so many of them. Those are the programming languages that developers use to actually implement the websites, to develop the websites.

On top of those are those accessibility guidelines that explain to the different kinds of developers, developers who are developing browsers, developing authoring tools, how to create those tools but also the content itself, accessibly for people with disabilities.

Now, I mentioned earlier and I actually constantly monitor myself, so let me put this down (chuckles) the web content accessibility guidelines, WCAG, is meanwhile internationally recognized standard by many governments and organisations worldwide. It's also available as an ISO IEC4500. It is a ISO standard, has a ISO number. It is a cover page that references back to WCAG. The reason why we did this is to allow governments and organisations that cannot

adopt W3C standards directly to have a ISO number for that standard.

It's also referenced in section 508 of the U.S., and we heard earlier this morning that the U.S. Access Board, David is at the back of the room, is planning to complete this refresh process, this October. We hope that this would continue to include WCAG in a harmonized way.

WCAG is also included in the European procurement standard called EN301549. I'll test you at the end if you remember that.

And also in Japan, it's adopted in the Japanese industry standards and so on. In many standards worldwide, WCAG has been adopted and there has been a lot of effort in the past to harmonize, to try to have one standard available with previous versions of the web content accessibility guidelines, 1.0, which started in the '90s we had so many different standards, alone in Europe, I don't remember how many different variations there was.

You would develop a website in France, but you could not sell it in Germany, or and so on. So this

is an important aspect.

I think this is also where my copanelists are going to focus on more, on the testing, how do we test whether the standard has been implemented to what degree. And just mentioning here again, this is the right technical focus. We are not measuring the awareness level. We are not measuring the skill level. We are only measuring the things that we can automatically test or the things that we can test procedurally.

That is really the focus which is really important. The more we can automatically evaluate, take tools to help us evaluate, the more the experts can spend time on higher quality activities, rather than being bogged down by things that can be done automatically.

There has been lots of research work in Europe. In her previous roles she helped a lot of the EC projects, EC funded projects that focused on many iterations and lots of research and development happened in evolving evaluation tools and tools technologies.

(whistling).

Just very briefly, one of those projects is the EIII which I think Mikael will be introducing more later. In that project, they actually came to W3C and started some of the testing work in there, and this work is now growing beyond the end of the project. We are now looking at standardizing, at developing an evaluation methodology for those guidelines.

This is basically an invitation for those who are more interested in technical evaluation development and tooling, this is a place where you can participate.

Very quickly, the two other guidelines I had mentioned earlier, the user agent accessibility guidelines, again those are all the tools that are used to access content and display to the user, like mobile apps. This standard becomes important. And also the authoring tools, things that are used to generate content. That is an overview of the standard. And I hope a good segue into the rest of the panel.

Thank you very much.

(applause).

>> KIM ANDREASSON: Terrific, Shadi, that was an excellent start to the panel to give us the overview (static) of the standards. With that we are going to move from standards to policy, and I'm pleased that we have with us Mr. Donal Rice, from the National Disability Authority in Ireland.

(audio breaking up).

>> DONAL RICE: Thank you. Thank you for that, Kim. Thank you, Shadi. As I just wait for the slides to come up, I'll start by saying that web accessibility tends to be one of the first areas that is legislated for when it comes to ICT accessibility in many countries. It tends to be, when a country starts to look at improving their policies and maybe writing legislation or regulation, in accessibility for ICT, websites tend to be the first area, areas of focus. That is true for developing countries. I also teach in the university of Ireland in Galway and I teach a international programme for at masters level for disability law and policy, and many of the students that come to us from developing countries

tell us that as their countries move to ratify or to implement and align their policies with the U.N. Convention on the Rights of Persons with Disabilities, they are bringing in anti-discrimination legislation and law and web accessibility tends to get a focus. Many countries already have existing policies and laws related to web accessibility. Some of them are very specific. So a very specific example would be the Italian law which is dedicated accessibility legislation and other countries such Austria have incorporated web accessibility as part of their eGovernment laws and policies.

A lot of countries in Europe like Spain, UK, Ireland, Germany and France, have equality and anti discrimination legislation, and that incorporates something around web accessibility. Other countries again may not have a dedicated law or policy, but might have something like a cabinet decision or ministerial resolution. In some countries legislation has been brought in that covers not just public websites which tends to be the first area of focus in new legislation and policy, but also focuses on web

accessibility for business websites. And the German BITV give rights of negotiations to disability organisations. I just throw that in there as an interesting example of a mechanism for a person with a disability or their representative body to take to task an organisation such as a bank or an on-line e-commerce website that isn't, where the website isn't accessible. It gives a right of process for them to negotiate a settlement as it were, with that organisation, with that private entity.

So just another interesting way in which accessibility policy is being implemented for web accessibility.

At a higher level then, and this was spoken about at length by the European Commission in the panel this morning on public procurement, there is quite a suite of European accessibility legislation and policy, that is informing what member states in the EU are doing around accessibility, in general, and web accessibility specifically.

As of April, 2016, it is now a requirement for all member states under the European public

procurement directives to include accessibility as a mandatory requirement in all public procurement tenders.

That is a hugely powerful piece of legislation, as you can imagine. There are all monies spent on procuring websites by a public authority in Europe, which must now include accessibility as a mandatory requirement.

We will hopefully see a great increase in the level of accessibility of public bodies, websites and on-line presences as this directive is adhered to.

There are sector specific piece of legislation, that I won't go into here. But there is a very specific piece of legislation, at the European level, that is currently being negotiated, and is being finalized, and that is the web accessibility directive.

That refers to the European standard which in turn refers to WCAG, which is based on WCAG, which Shadi just spoke about, and this again places a very clear requirement on public bodies in Europe to be accessible.

And it is also looking at how monitoring is going to happen against that. Now, I'm a policy advisor within government in Ireland and when we brought in legislation, it was very easy and clear to explain to other public agencies what they needed to do.

It was less easy to monitor whether or not they actually implemented the regulations and the standards correctly. This web accessibility directive has a piece in it which talks about monitoring, and there is a study currently happening, sponsored by the European Commission to see what will be the best monitoring methodologies to support reporting by member states and their conformance with the new web accessibility directive once it's transposed, sorry, once it's finalized and then transposed.

There is another proposed directive called the European accessibility act, and that again is a very, has got a number of areas of ICT that it focuses on, including eCommerce and services provided on-line by certain types of organisations.

And again, that supports and I suppose works in conjunction with the other pieces of European

legislation, such as public procurement directives, and the web accessibility directive to provide quite an overarching umbrella of requirements at European level around web accessibility.

Just to clarify or just to summarize, the public procurement directives are now in place, the web accessibility and European accessibility act which contain very specific dispositions for public bodies, and private bodies respectively, is entrained and we should see that coming to fruition. The European Commission as Shadi said have also provided a lot of funding for research in the area of web accessibility, and we will probably hear a little more about that as the session goes on.

Looking overseas, or at least overseas from a European perspective to the USA, and again this was ably presented on this morning by David from the U.S. Access Board in that panel on public procurement, one approach taken in the U.S. has to be, has been to require federal bodies in receipt of public funds to include accessibility requirements in their public procurement of ICTs including websites, and this has

had a significant influence on the capacity of web design history in the USA to develop accessible websites.

I'm going to skip to a piece of research that my own organisation did in Ireland when we had the presidency of the European Council in, I think it was 2013. We did a study looking at what were the different policy approaches to web accessibility, and how those policy approaches influenced the actual level of accessibility in a number of European countries.

There was lots of findings out of that, but some of those that are probably most relevant for this panel's session is that levels of attention approaches vary considerably, no two countries have the exact same approach. Accessibility can be referenced in anti-discrimination legislation or eGovernment legislation or legislation to do with the eCommerce. The approaches and policies vary considerably.

There is a significant correlation we found between the levels of support at a national level, so within the civil service and the public service, to

support accessibility, and the levels of accessibility attained within that country.

Say, for example, in Germany, we found that where there were systems in place to support the development of accessible websites by any public organisation, through their central ICT body, for government, that had the significant influence on the level of accessibility.

So providing practical supports at the level of content management systems, at the level of checking, provides quite a good benefit when it comes to accessibility. Public procurement we have already covered.

But I want to talk about the organisational approach. One thing that we have found was for organisations that collected data on how their websites perform, tended to be much more organized in how they approached delivery of services on-line. So say for example, in a number of the websites that we interviewed web managers, these are public sector websites, web managers from, more than half said that they didn't collect any data on the performance of the

website. They didn't have Google Analytics, they didn't count numbers of hits, and they didn't in any systematic way collect information and feedback from users.

So, that I think probably says a lot about the organisational approach to public sector websites. It is just seen as another communication channel but it's really just as long as the information is put up there and the service is put up there, the public body very often doesn't follow up to see how well that is functioning. We found that where there were organisation approaches and policies to learning about people's experiences and using the website, getting feedback from them, even just at the level of looking at Google Analytics, and that those websites tend to perform better.

The other and final finding from the research was, public sector managers when we interviewed them said they would really like more information about how their websites perform in terms of web accessibility, that they had bought a website, procured it, it had been handed over to them by their consultants, but now

they didn't know how accessible it was and whether the level of accessibilities had improved or dis-improved over time. That is why one of the recommendations we made from this research was to say that whatever monitoring mechanisms are put in place as part of this new web accessibility directive in Europe, it would be really useful in the data gathered was operationally useful by public sector managers.

What I mean by that was, that it would give them feedback about how their websites perform, rather than some arbitrary score that doesn't actually give them any information that is operationally useful for them.

My last slide is just to mention that our hosts here have also developed resources on web accessibility, the model ICT accessibility policy report which was developed in conjunction with G3ict contains an entire chapter on model web accessibility policies. So if a country or a region does not have a web accessibility policy already in place, this chapter provides some information and a model policy that could be adopted used as a template for a developing a policy where none currently exists.

So that's what I would like to finish with. I'm just looking forward to some maybe more detail and more technical discussions about how monitoring and information can be gathered that tell us about how policies perform in terms of web accessibility. Thank you very much for your attention.

(applause).

>> KIM ANDREASSON: Terrific. Thank you, Donal. That was a very useful overview of policy. You mentioned the support of tools and measurement. I think that is a very nice segue into the next presentation, so I'm glad we have with us here today Mr. Mikael Snaprud, CEO of Tingtun. He will tell us more about the European Internet inclusion initiative.

>> MIKAEL SNAPRUD: Thank you, Kim. I'll give you a brief overview of the tools we have been developing in the project and higher level results from the evaluation of a bit more than 1,000 websites.

This illustration is the front page of the tool as it looks, where you have an opportunity to search some selected sources of content, first of all the W3C re content and some projects that are containing

information that can be relevant for understanding or fixing web barriers. There is a log-in opportunity that will soon contain a service so that you can check a website, or rather a selection of web pages from that website. And already now you can go in and check like the top level page or any selected page on a website.

We will just quickly have a look at that, to see how this can work out. If we look at, for example, the university where I'm also teaching, that is the university of Agder.no, there is still a little bit to be taught about accessibility at this university. I will make this somewhat larger. We get the list of barriers found. And these are from the 37 tests that we can apply automatically on that page. And we can, for example, look at the details of a button here.

This is a rather common barrier found on many websites, a button for pressing the search submission. It may be hard to understand, if this button is not properly labeled. I don't know what I'm doing. I'm sending my E-mail address or what is going to happen when I press this button?

Here we got the barrier detected. Then some little piece of code, explaining from the website, what is going on, so this is sufficient for a developer to repair this problem. This particular problem would be repeated on many pages on the site. So that could be helpful in many cases.

Further, the tool can provide an overview of many websites. So there is an overview of, for example, 400 municipalities in Norway, but we wanted to have a look at the list of, let's see, European websites. That is 1065. Then the first listed in this list are the best ones. These are the ones that have the best score according to the measurements that we have done. We haven't been able to find any problems on these sites, essentially.

It doesn't necessarily mean that there are no problems. We must admit this and make it very clear, that there are many barriers we cannot automatically detect.

This is something Martijn will tell more about later that we want to connect these automated results, to results that can be carried out by using expertise

and manual evaluations.

Nonetheless, you can go in and look at one of the sites and see which pages have been checked.

So here we have the list of all the pages of that particular site. And we can, if this is loading properly, we can go in and look at one particular page, and see what has been the problem on that particular page. So hopefully, this is something that policymakers, Donal mentioned, can use to tell the developers of content management systems or designing learning materials, that this particular barrier is occurring many times. Let's do something about it, make sure that it is removed and understood, and move on.

So this is essentially the functionality of the tool, that you can interactively get barriers detected, and you can get a benchmarking list. You can also do this repeatedly. So you can, for example, like has been done in Qatar, do this every month. You can see what is going on over time. We will quickly move back to the presentation.

Skip some slides, because we can look at it live

instead. The software here is open source. So you can download the actual checker tools and run them locally if you want. It's designed in a scalable way. So it is capable of running in parallel, so you can add more servers and do more evaluations.

Obviously, it's based on the work Shadi has been explaining about from W3C, and from the auto WCAG. So we want to have the tests defined in such a way that the specification is done in an open process, so that we are all aware of why is the test designed in this particular way. It also does deal with dynamic contents.

So if you have JavaScript or dynamic appearance of your Web Page, this should be taken into account. So as I mentioned, unfortunately, the automation will not cover everything. Our estimates has it at about 20 percent of the tests conceivable that can be automated. We have implemented a part of these tests.

The good news is that oftentimes, the automatable tests are having a correlation to those that can only be carried out manually.

So, there is a connection between these groups of

tests many times.

This is a list of the countries. We have carried out tests of around 30 websites from each country. Here we see that the Netherlands has the best score. And cypress, the websites we have found in cypress have yet the longest distance to walk, to become well performing in this list -- Cyprus. We applied 37 tests, and the sites were selected from a eGovernment report, the benchmarking report in 2012, so we selected a subset of the sites included in this eGovernment report.

In the evaluation, we carried out tests on around 540,000 pages, and 180 million tests. This is to indicate that it's not conceivable to do this manually. It is simply too much data. It is terribly boring to walk through all these kinds of tests. Then we need to make a decent connection or clever selection of them to find out the performance. The average score was 82 in this setup. We see that the European Union is very close to the average score, the sites we selected from, from the European Union.

If we look at the top of the list, it appears not

to be a coincidence that the police station of the Thames valley had a very good score. They indeed had a campaign internally to have a good web appearance.

You can also slice and dice this data in such a way that you can find out if there are particular appearance of special tests. So if we look at the use of alternative images, we see that around 78 percent of the tests we carried out, they were okay.

So it seems that this is now becoming understood, and implemented. If we look at this particular test across the countries, we see that in Lithuania, the description of alternative texts has been implemented in the most cases, while in Greece, there is still a lot of nontextual context that is not properly described.

We don't know why this is the case, but it's something we can observe and maybe something for policymakers to try to fix. Another interesting development is the movement over time. We see that in the score on the roughly 100 sites selected by Qatar has been steady increasing since 2013 when we did the first tests. This is not entirely true all the way

because there has been some sites coming in and out, some tests have been changed.

But on the other hand side, there is no reason that we see that this would impact the score to suddenly increase. We think that there is a trend here, and this is also what Michael Park is reporting from Mada that the way to communicate a benchmarking list is encouraging for those who are working with this on a daily basis.

We are also happy to see that the U.N. is working with tools support and also using results from the project. To summarize, we see that a larger amounts of data, they can be very helpful to explore the status, where are we now, and can we see that any policy measures we have taken, are they having the impact we expect them to, in terms of measurable effects on accessibility automatically.

We can compare countries. We can also compare vendors. It's rather easy to find out who have actually delivered a certain content management system, or tailored a particular series of websites. We can test periodically and see what is happening

over time. For the on-demand testing it's helpful for those who are developing tools to see that this site is actually performing in a decent way before we hand it over to the clients.

And also on the other side of the table, to actually don't transfer the final payment before it is working the way it should in terms of accessibility.

And then finally, to get the full and hopefully true story of what is going on for accessibility, we need to do the manual testing. And then the automated testing can tell where should we go with the manual testing. Obviously if there is no change, there is also no need to go in and test manually.

And in this way, we can cover more tests, and select some more cleverly selected sample of pages. Thank you.

(applause).

>> KIM ANDREASSON: Thank you for that overview. The key point was you focus a lot of the automated testing where it's very useful because what can be automated obviously makes testing a whole lot easier. That was a very nice ending to the presentation

because we are moving into manual testing. With to us discuss this aspects of web accessibility we have Martijn Houtepen from the web accessibility.

>> Traditional accessibility issues here (chuckles).

>> Okay, he has the computer. Like I said his name is Mr. Martijn Houtepen from the Accessibility Foundation in the Netherlands. Please.

>> MARTIJN HOUTEPEN: Thank you. Accessibility Foundation in the Netherlands, let's get my slides up, where are they? Let's see. We are a foundation that focuses on making the Internet as accessible as possible for everyone. Yes, as Mikael said, automated testing can only do so much. That is why my presentation, what my presentation is about. We developed a tool to help people with manual testing. As is part of the European intensive inclusion initiative, EIII, Mikael is also part of that which he demo'd just before, and like Mikael says, about 20 percent and research differs on this, about 20 percent of all the things you could possibly test in accessibility can be automated. For the rest you

need manual testing, or maybe manual confirmation.

And so this makes the testing of a accessibility testing very hard to automate and this is a problem for policymakers because you want to say something about accessibility in your country but you are basing it on a very small subset of the things you should test, total things you should test. There is a relation, as Mikael explained between how well you do on an automated test, and how well the rest of the website is.

So it's not that we shouldn't automate it, test automatically. We should test as much as we can automatically, and using Mikael's tool it can guide to you precisely where you should test your manual, put your manual effort to test this.

We need to understand why we need manual testing, we have to go to the basis of accessibility itself. I hope, I won't get all too technical, but if you want to test something on web accessibility, it contains three parts. You have technology, you have content, and you have context.

The technology part is just making sure that the

website gets to the user, and there are no technical barriers, depending on maybe what assistive software is used, what kind of browser is used, all those kinds of things are very easy to automate. So we should test those automatically.

Then we have the content. Content, making content accessible is often transforming content from one modality to one other modality. And as we are doing this now, and I can look to my left and it's your right, whatever I'm saying, my voice, it's translated into visual text. So if you are not, if you are deaf, you cannot hear my voice, but you can see whatever is read on the screen. It's called captioning. So it transforms the auditory modality to a textual modality.

And automatic tools can detect if there are captions, it can see, okay, they included a file with captioning with this video, and we can see the captions are there. But to make sure that the captions are correct, you need a manual control. So you need to see if whoever did the captioning, whoever now is somewhere off-site typing whatever I'm saying,

did their job correctly, you need human intervention.

If you want to see this go wrong, maybe you can go to YouTube and select some video, and try the automatic captioning, and you will see that it is very good but not yet perfect. It always makes small mistakes.

The third one, the third point of accessibility is the context, and that is the most difficult one. It's telling us, it cannot be automated because the context is always dependent on the situation which you find something.

For example, if you would imagine an image and it is described as donkey, and if we see that image on the page about Hillary Clinton then it is most likely that the donkey is a logo of the U.S. Democratic party, but you are not sure. It can also be that the website is trying to make a statement about Hillary Clinton. Maybe the author doesn't like Hilary so much.

So, just a description, although it was technically correct, a donkey, is not -- you need human intervention to see, is this the right meaning,

in the right context, and this should really be logo of the U.S. Democratic party.

Okay. So, to make this manual testing easier, we have developed in EIII the user testing tool. We made it reference implementation that everybody can take this tool and optimize it for their own best use. The key part of this tool is that it's very easy to use, easy to install, works on every website, and just to prove that, I will demonstrate to you how this works. It's always risky to do a live test. I'll close all these presentations.

This is the website, yes, I'm up on the screen. So you are all seeing this website. We made this website and on the bottom here is the user testing tool. All you have to do to install it is drag it up here into the gray bar, it's called the bookmarks bar. Now I've installed the tool. Just if I want to use it, I click it. I see this has already been done. I'll try another page. It doesn't matter on what page, it works on every page.

So I'll demonstrate on our own website, of our foundation. I hope it's very well. I did not test it

before. So this is the front end of the tool. If I want to start analysis, I press the button and it starts. Now it creates a dialogue with the user, so the user can do the manual testing. One of the things it tests is page styles, if you click it and you get a dialogue and it says, is this page title correct -- page titles. If the page is in Dutch, I'll try to translate, it's about accessibility, our foundation, about accessibilities of Internet software. It's a bit long. But, I should switch to the English version? Okay, thank you. I will switch to the English version. Then we will hope that the English title is updated (chuckles).

Which it is, I can see. Yeah. The Accessibility Foundation, and then our name. It is a good title, does it describe the information on this page? Well, if you agree, you can press yes, if you don't agree, you can press no. Below, there is a bit of explanation on what ever you need to know to make a correct judgment.

This tested the title of the Web Page, the page titles can help disabled users find content and orient

themselves on the website. Make sure each web page has a title that describes the content of the page. This is a very general page, but I can see it's a yes, and I press a yes. And it gets green. It's good news. If I go back to the menu, there is another test you can do. It's headings. This puts all the headings on the page in this list, and for every heading, there is a question, is this a good headings? Because the automatic tool can detect there is a heading but it cannot detect what is the meaning of the text inside the heading. You need people, you need manual testing to do this.

So the header say, to make the page, make people better find information, so just to demonstrate, I will press no, even though I really like this heading. And you can see you get a Red Cross. Go back to the overview. Then this is a red cross and as I do this all these results get feeded back to a database, and this test implementation, we have a test database and but if you develop your own version of it, of this tool, which is relatively easy to do, you can make your own database, with your own results.

So I'll get back to the presentation. I'll demonstrate this area. For this test limitation we have 15,000 tests done on 410 websites. It is not the number of websites you saw earlier for Mikael. But the manual testing takes a lot more work than doing things automatically.

If you want to make your own text, this is all free to use, free to alter, available on GitHub, you can hire a programmer, send him to this URL, and he can make your own specific tool for you quite easily.

And well, I guess that is what I wanted to tell you.

(applause).

>> KIM ANDREASSON: Terrific, that was a very nice complement to what Mikael was talking about with automated assessment and now we got the overview of the manual version.

While we are setting up for the next speaker, let me introduce Fabio Paterno from the institute of information science and technologies, which is part of the Italian National Research Council. We are having some technical issues here again on the cables.

Without further ado, please let me introduce Fabio.

>> FABIO PATERNO: Just a moment. (chuckles).

I should find it. Yeah, it's here.

Here we are. Yeah, thanks for the introduction. I work for the Italian National Research Council, which is a public research institution, and we are based in Pisa in Tuscany where I lead about human interfaces information system. Let's say that what we like to do is to try to design software technologies that can improve the user experience in the possible context of use.

Of course we are particularly interested in usability and accessibility. Are these two concepts the same for you? What do you think? (chuckles) this is a request that maybe we can discuss later on. I can start perhaps introducing our viewpoint, how we have listed them. Let's say generally speaking of course they are tightly related to each other. However, we can also say that usually accessibility is more aimed to increase the population of the various possible technologies, in order to make them actually

accessible to everyone, while usability is more about the standard definition, efficiency, effectiveness of the user interface. If you think carefully, it may happen that we have some system which are usable but not accessible, which means that not everybody can actually reach the desired piece of information.

But those who can, can actually do in a short time in a satisfactory manner. And likewise we can also have cases where we have a solution that are accessible but not usable, which means that everybody can access the desired piece of information, but this may take some long tedious navigation, so the usability is not that good. I'm saying this because now if we look at the current scenario especially for accessibility we have a number of guidelines. The previous folks have described how various countries have actually introduced some level of legislation, but also guidance they mean that they provide concrete indication about how to actually achieve accessibility.

Then a question is, are these enough for universal usability? We are not completely sure about

this, because with the Internet in the near future as much as we work on this area, we will probably need for specific guidance for users, for specific application domains, for specific cultures. So there will be a need for more context dependent guidelines.

So we need also automatic tools that should help encouraging this kind of more flexible process.

Let me for example report on a experience that we did in our laboratory. In my laboratory, we have one a completely blind and she got PhD with me and we started to analyze the programme for blind users from both the useabilities and accessibility point, so we analyzed all the issues, usually access through these screen readers that convert vocally everything which is on the screen. Of course this makes it accessible but they also have lack of page content because they access a piece of information but they see what is around that piece of information, so they do not really understand how they can exploit it. So they got a lot of information through these screen readers, which impose a kind of sequential access.

We said, well, we should think about a set of

guidelines that can still guarantee accessibility but also improve the usability. So we developed this group of guidelines, dedicated for this class of users, which indicates how organise the page content in such a way to avoid this, so they can easily find this desired information, exploit multi-modal how for example to understand when a page is completely loaded in the browser.

Then of course we wanted to empirically validate this work. So what we did, we carried out a user study with 40 blind, or vision impaired users. We gave them two websites, one implemented traditionally let's say, and one implemented using this guidelines.

It's important to note that we are able to save up to 37 percent of the navigation time. This really means that they cannot only access but also in a usable manner they can achieve the desired pieces of information.

So let's say that automatic tools can help in this direction. As I've already introduced, they can help to obtain more consistent validation. They can more efficiently provide whether the guidelines have

been checked. On the other hand it's always important, the data, there are some part they are not able to validate. They always have to be used in conjunction with other methods.

There are various kind of tools that can provide support. For example, there are some tools that log the user interaction, analyze such logs, in order to understand the actual user behavior, how it was initially supposed by the designer of the application. The designer tools become more frequently used in accessibility, they take the implementation of the website, and look with, they actually follow the indications of requirements described in such a guidelines.

However, if you look, for example, the W3C website, which reports on the various tools, we can notice that some of them are quite obsolete. They are no longer actually usable because they were developed for some initial version of guidelines, and then it was rather expensive to update it to the new guidelines. So they are not possible to be still a useful support for those who want to check.

So it's important to have tools that can be more easily updated, in order to capture all the requirements that can be posed.

So public policies, if we look, now we have some indications in various national legislation about how not to have some kind of guidelines in similar indication but really they don't provide a lot of support in order to understand how, for the various public bodies, how to actually use these automatic tools.

Of course, they have to be used in conjunction with a manual validation, because manual validation is clearly more accurate. You can more carefully understand what is the reason for some errors. But the problem is that it takes a lot of time. Now everything goes on the web, it is not possible to manually analyze all the application data we are moving on the web.

So I mean also the user testing is another important source of feedback. But again this should be used complementing such validators because how many users can we involve in our test? 100, 200, but of

course they are a small fraction of the potential target population.

It's important that public policy provide more concrete indications about how to use these measures in order to have more effective results. Let's look at what will happen in the next years.

We try to identify some requirements for a new generation of automatic tools. One is that they should be able to analyze various type of cultures, for example, the first tools we are only able to analyze html. But now a lot of what happens in the website is determined by the style sheet, by the JavaScript. We needed to address also this kind of technologies.

As I said before, they should be upgradeable, and of course ICT technology evolves very fast. There are a lot of new technologies that we need to consider when we provide the services across ICT technology.

So we need also to think that such tools should provide different ways to present their results, because there are different rules that can be involved in analyzing the results. There can be those who

watch, implement the tools so they have a more precise implication about where to to change to obtain something more usable. They are the designer. There are public officer, they want to have overall indication of how well the tool actually supports all the possible users.

So in terms of guidelines independent support as I said before, we have really to think about how to, how tools are able to achieve this result. For this part it's important to separate the definition of the guidance with the actual tool implementation, so that whatever guideline we are considering, the tool is still able to interpret it without requiring changes in the implementation.

And then in terms of important technological trend, to address what is a device fragmentation, now the web is more accessed through smart phones rather than desktop system. With responsive design now this means that the same website depending on the type of device that we are using for accessing it, so we need to address this issue.

Another issue is that what is in a website that

dynamically changes depending on the user interaction, the web services connected to it. It is no longer as in the past that the web was just some pages connected to some links. Now a website is really something that dynamically changes the content. We need to be able to analyze whether or not it's still accessible, even over its evolution in time. We developed this model that aims to address some of the challenges. In this tool we separate to language that we developed for specifying fine guidelines. The implementation and the guide on definition, so that as long as we change the specifications the guidelines that we are interested in, then the tool has not to be changed in its implementation.

We imported them, and then we can automatically validate them. It's possibility to validate the access to different type of devices, so iPhone, smart TV, or whatever you want to use. It's possible to get the input through different challenge. Just to show you a brief video, that demonstrates a little how the tool works, the tool is publicly available. You can access it.

As you can see, it's possible to import the Web Page from a file, or you can paste the web content that is interesting for you, or you can just provide the URL, or the Web Page that you want to validate.

Let's take an example. Here is the New York Times. Let's analyze the accessibility of this website.

So we can take the URL, copy it and paste in the user interface of the model, the mauve. There are possible guidelines that can be accessed through it, the one we developed with Barbara, the W3C, and it's possible to have the further guidelines that you wanted to consider. You can also indicate what type of device you wanted to consider in accessing, because depending on the device, the browser, it's different access. Now you get here the result of the validation.

This is the result, to change the website in order to make it more accessible for that. In order to help with implementing, we give precise indication about where the possible problem has occurred, and the results are a possibility of accessing some

interactive documentation that explains the main characteristic of that error.

The lines of the implementation we have selected are in red, so that this developer can more easily inform their work on updating.

Of course, you can change the way to perform the validation. In this case, for example, we can say oh, let me see the version of the New York Times whether or not it's accessible. So what happens, you select the specific type of device, and the tool simulates it when accesses the application.

So it gets the version of the application that is oriented for that device, in this case it was their phone. So it's possible to see whether or not in the phone version there were more or less problems.

And the last feature supported by the tool is the possibility to check dynamic content. There is a plug-in for the browser, so the user can interact with this web application, which dynamically evolves. At any time it can ask whether the current version is accessible.

This is a further feature. With this, I would

like to conclude my presentation, reminding the possibility that this validations can provide, we always have to be aware that they should be user complemented with other methodologies but we really make the process of evaluation more efficient, consistent, reliable and cost effective which is important when you want to address really large sets of website.

So it's really important that public policy provide the more guidance for applying them in the near future. Many thanks for your attention.

(applause).

>> KIM ANDREASSON: Thank you so much. That was a terrific presentation I know we have some time for questions, about half an hour left. So I want to thank all the panelists for sticking to the time slots.

We do have on-line participants, and I want to make sure that they get a chance to ask questions as well. So I'll mix, I'll start to see if there is anyone in the audience that has a question before I go to the on-line participants. You have a question from

the gentleman in the middle of the room. Please state your name and organisation you represent as well as who you are addressing the question to. Thank you.

>> AUDIENCE MEMBER: Thank you very much.

(microphone feedback).

My name is Elijah from the regulatory board of Senegal.

(microphone feedback).

Sorry for this interruption.

I said that I'm Mr. Modesi. I'm working for the regulatory board of Senegal and dealing with international relationship, in order to let our experts work toward international activities.

I'm amazed by your presentation. I would like to thank you very much, because we have a bit more gap between developed country and our countries. By the time you were working toward the content, how to deal with the accessibility of web, we have not completely covered our areas by Internet, Internet is only generally localized in the cities and we are fighting to have Internet everywhere.

So your presentation is dealing with matters very

important for us, and we need to get these information available to our administration, in order to train our experts, and try to go forward through the monitoring of content. That's why I want to thank you very much, and I want this presentation to be in your report in order to develop ICT in all over the world. That is my intervention.

And I thank you a lot, and I need to come closer to you, in order to get your presentation and see how we can implement it by that time we have not Internet in the rural area, perhaps we can begin to test this, this sort of things in the cities and try to, and see how we can develop in all over our countries. Thank you again. Thank you a lot.

>> KIM ANDREASSON: Thank you for that intervention. I'll turn it to Shadi. You do work internationally. What challenges do you see from a international perspective? Does it vary by country, region, what do you think?

>> Shadi: Thank you very much for your kind words, and we for sure would love participation to learn more. There is, what we have working groups

dealing with internationalization, different languages and making sure that the web works in different languages, things relating to culture and ICT for development. There is a lot of such work at W3C.

We focus on accessibility, but also here we would certainly love more participation from the developing regions. We know it's how difficult it is, to find the time and the skills and availability. But so, this is an open invitation to you.

I also want to say particularly also having a background coming from a country where the internet is still developing, still evolving, I think sometimes it is an opportunity as infrastructures are being built now to actually leap ahead of the mistakes that have been done in other regions where websites and governmental services have been developed inaccessibly, and now we are trying to retrofit. Actually this is the big issue that we are dealing.

I think a lot of the tools that we looked at today are retrospectively looking at a website. We have a website that exists, and now we are trying to, this massive amount of volume of information, trying

to see how accessible is it.

But if we turn it around and during development, every content that is developed as it's being developed has a quality assurance process, so I do think it's possible to check every piece of content, but only if we do it, if the developers are aware and they are doing it as we are developing content.

As we are developing the infrastructure, setting up new eGovernment, as services and sites and all those things, to make sure that accessibility is considered from the beginning, we are starting from a clean slate. So I think this is at least one of the parts of the good news, knowing of course all the challenges that are bound with reaching the people who are off-line.

>> KIM ANDREASSON: Terrific, thank you, Shadi for that addition.

Do we have any remote questions from participants? We do. I'll hand it over to you. Please state who the question is for.

>> Actually the question is for Fabio. There was someone who wanted to know the link to the Mauve

website so that he can be able to test it too. (pause).

Use the microphone so that we can hear.

>> FABIO PATERNO: It's on the bottom of the slide. You can find the URL. It's quite long.

It's java.is -- it was before -- isti.cnr.it ; 8080/mauve web w capital slash. It's a bit long. We will try to find one shot, sorry.

>> KIM ANDREASSON: Thank you for clarifying. We have more questions in the room. Again, please state your name, organisation you represent, who the question is for. Thank you.

>> AUDIENCE MEMBER: Thank you, Kim. Let me ask one -- sorry, Ure, information society, Russia. Let me ask the panelist about some forecasts, five to ten years period what will be happening with the web accessibility. We know the trends that very soon the mobile apps will be dominate in the access even to the e government services, to the public services, etcetera. From this point of view, how you expect to move during this period with your tools which you provide to the, for the testing of the web

accessibility. This is the first question.

The second question is, do you have some statistics, can you share with us the total cost of ownership of websites which satisfy to all the web accessibility guidelines? How more expensive the websites without such support, thank you.

>> KIM ANDREASSON: Thank you, Uri. That was a very good question. I think it would apply to all of our speakers, actually. I'll give everybody a chance to give their two seconds on the five years from now. Let's try and limit it to a minute or two each. We can just go from left to right. So Shadi, what do you see five years from now?

>> Shadi: Right. If I had a crystal ball. But it's an incredibly exciting time. I think W3C we are actually looking beyond mobile apps. We are looking at self-driving cars. We are looking at the Internet of Things. We are looking at all those home appliances, smart home, Smart Cities, all those things, all those technologies that are appearing, and that also need to be accessible.

On the one side, they provide incredible

opportunities. I remember smart home projects for people with disabilities, having custom-made mechanics to control the heating because I'm physically disabled and I cannot, you know, go ahead and switch the heating myself.

So you have custom-made devices that are big and clunky and expensive and so on. And now, you get it on your apps, on the one side, huge opportunity to provide all the functionality at the price of, at the amount of sensors that we have in our phones, the O.C. R, the ability to as a blind person take a picture of a letter and have the OCR read to me from whom is this letter, is an incredible development, on the one side.

On the other hand, as technologies evolve, they often all suppose accessibility barriers that we have to keep challenge and have to address. So it's a train, it's not a fixed point that we say we fixed it and now it's done. It keeps moving and new challenges occur.

I want to segue that into the cost question that you were asking, how much does it cost, to have a fully accessible website.

Again, here the idea of education and awareness, if people are developing accessibly, it's like building a house. Is it more expensive to build a accessible house, or if I design it from the beginning, design it accessibly, I just make the door wider. There is hardly any costs. There are of course, you have to develop your skills, you have to develop your people. There are things that, but if you talk about cost, you also have to talk about benefit, beyond accessibility.

Martijn mentioned the captions. Captions are an accessibility aspect. They are for people who are hard-of-hearing who cannot hear the audio. But they have so many more benefits. People who don't speak the language, and many more situations, if you are in a loud environment, at the airport, they often have the news with captions below, because it's so loud, or in a silent environment, you are in the subway, you don't want to watch the video with everybody around.

So, if you look at the cost, you should also look at the benefits that you are receiving from that. I think the costs are minimal if you consider it from

the beginning. I hope that answers your two questions.

>> KIM ANDREASSON: Agreed.

>> I'd be happy to follow up.

>> KIM ANDREASSON: Thank you. We will keep moving down the table, Martijn, can you tell us what you see five years from now and if applicable you can talk about total cost.

>> MARTIJN HOUTEPEN: Five years from now it's difficult to predict. What we see is that for example, well, the captions I mentioned earlier, YouTube does them automatically, they don't do them perfectly. I guess in five years they will. Facebook started a way, they started with describing pictures, that people post, automatically. They detect what is on the picture, and describe it and say, this probably is a cat, very cute cat. For now, they have the word probably. In five years, they won't. They will just know what is on the picture.

That's a new technology advancement. At the same time I see the mobile devices putting assistive technology, what was once very expensive into

everyone's hand often at low cost. I think it's also a huge factor in getting, especially in second and third world countries getting assistive technology to lots of people, which would totally expand the scope of the Internet much larger.

Development cost, I wouldn't dare to guess.

(chuckles).

>> KIM ANDREASSON: Great. Thank you, Martijn. We will keep moving. Mikael.

>> MIKAEL SNAPRUD: Interesting questions. Talk about the cost part, there will be, for some websites implications of expenses if you don't do it. So I think there are some side effects. For example, if you are running a website for citizen interaction, some people will start to call you and this has a tremendous cost in some of the government agencies in Norway. I'm sure in other countries.

So therefore, this is a good reason to invest, make sure people use your website.

For the apps development and further steps beyond, I don't think really I'm to predict this but I see there are interesting deja vu seemingly now from

the browser wars, that you have different platforms for apps.

I hope that they are going to converge, so that we don't see that there are competition on something that should be standardized.

>> KIM ANDREASSON: Great, thank you, Mikael. Donal, I would tweak the question slightly for you, because you talked about European policies and emerging policies -- merging policies. Where do you think we will be in a few years from now in that regard?

>> DONAL RICE: Policies are always going to struggle to keep up with developments in technology. What I think the fundamentals are always going to be the same, discrimination in five years time will still be discrimination.

We saw an interesting presentation this morning from an American professor, Gregg Vanderheiden, who said that really, we are at a point particularly around public websites, where we are trying to drive more people to use these because they are a cheaper communication channel, with citizens. And yet, we

have very many people who are not able to use, do not have the means to access websites, or do not have the technological capacity.

And I think in five years time, we may see that this situation will become even more pronounced. Our policies are going to need to take into account those people who do not want to or who cannot use ICT.

In terms of the cost, just the report that I spoke about did some cost/benefit analysis around websites that we looked at. We found three scenarios. One is where a website was never meant to be accessible in the first instance.

In those instances, very often an entire redevelopment is necessary. The second one is a website where a checker like Mikael has will find some issues, but those can be fixed over time. The third website is one that is doing very well but things are being missed out such as captions for deaf people on videos, or certain pieces of content are not accessible.

So the costs really depend on whether the website was meant to be accessible day one, whether it was

accessible but new things have happened and now it isn't, or whether it has been a good approach has been taken to keep it accessible over time.

I think a lot of people are with phase 1 and phase 2, there is much less at phase 3. And so, we don't have specific figures. But there are figures that align with standard web development costs in a country.

>> KIM ANDREASSON: Thank you. Terrific. Last but certainly not least, Fabio, what do you see five years from now and also do you have anything to add on cost?

>> FABIO PATERNO: I mean, if I understand well the question, the problem is, now we have a lot of mobile apps that use different technologies. Not only web technologies. So how to address such application.

Well, let's say that actually when we look how these are implemented they often use some web technology because they create local browser, and they have the need to access remote services and so on. All the work that has been done so far is not useless for this part. But I agree with you that this is a

new challenge.

I think that also accessibility should be the, the guidelines should be more able to capture the specific needs of people who freely move, and now they are really designed to think about user while sitting looking at the desktop system. Of course all these things have to evolve. I think this is possible, so because the role of the web standards, they are evolving as well. For example, now there are API to access the local sensors in the smart phones.

This means that the web application can have a similar functionalities in active apps. The advantage is that it can work in different type of smart phones. I agree there are some challenges to address. But I'm also optimistic that we should be able to address and we have to address them in order to guarantee everyone accessibility, even when they are freely moving and maybe also using the smart watch or other kind of devices.

>> KIM ANDREASSON: Thank you, Fabio. I'll take one more question from the room before I go back to the remote participants. We have a question here,

reminder, your name and organisation and for whom the question is for.

>> AUDIENCE MEMBER: Thank you, Chair, I'm from United Nation economic commission for Africa, one of the five regional commission. We are also facilitator of the action line 7, specifically on the eGovernment.

I want to talk about the eGovernment. But we develop also, we are developing several core of indicator of eGovernment. But now I think it is very interesting to have something on accessibility. Tomorrow we are going to have a meeting on a partnership within ICT, I'm going to propose on accessibility. Did you have any indicator now on accessibility within the context of the eGovernment data, is the first question.

The second is, as a U.N. organisation, also we are supporting all African country develop eGovernment policy and eGovernment portal. We need to have a guideline for the government website. If you have it, it is possible to share. If you don't have, we are willing, available to discuss with you to see how we can have a guideline on this kind of issue.

We already have one on open data, for the African country. I think your presentation is very interesting. Can we look at how we can have a guideline on website accessibility for developing countries. Thank you.

>> KIM ANDREASSON: Terrific. Thank you. Those were two good questions. I think I will ask Mikael to talk about indicators because we have done some work with UNDESA and other U.N. agency in the past on web accessibilities and also the role of the EIII in promoting such.

>> MIKAEL SNAPRUD: Yes, so there are different ways of designing indicators, so that you can create a score and then compare and make benchmarking lists.

We have one which is described in the result reports from the European Internet inclusion initiative project, and it's essentially based on the guidelines from W3C, and we group tests according to success criteria, and then aggregate score based on the computation of the past fail rates you connected to the success criteria, and then get the number between 0 and 1.

We do this for the web pages, and then aggregate across these pages for website. That is one way to do it. More details on how to do this mathematically in the reports, if you are interested in looking at that.

There's also been a workshop run by the W3C, I'm sure Shadi can refer more details from that, but a earlier version of what we did in our project has been described in there.

>> KIM ANDREASSON: Terrific. Thank you for answering the first question. There was a second question about the guidelines. I want to hand it over to Donal, because you have done work in this area.

>> DONAL RICE: If I understand your question correctly, you are looking at maybe a guideline for some piece of text that could be used. I think we must always refer to the international standard called the web content accessibility guidelines that Shadi presented on. That would be the cornerstone of any effort to try and define what accessibility is for a regional policy or government policy or something like that. If I'm understanding your question correctly, I would say that referring to the web content

accessibility guidelines as the description of what do we mean when it comes to accessibility.

The second thing I would point you to is the ITU model policy accessibility report which has a number of the building blocks that a country or a region could put in place in terms of policy around web accessibility, from defining a policy to implementing that policy, and who could be the actors in a country that need to be involved in the developing the policy, such as disabled persons organisations, the most relevant government departments, department of communication or the department of ICT, Department of Education, and so a number of different departments.

And then, you know, what are the different monitorings and implementation things and capacity-building and you are very familiar with policy development, I'm sure, so you know all those things that need to happen, in order for something to be embedded around capacity-building, awareness-raising.

So I would say that certainly the standard provides us with an agreed specification, as to what

do we mean, and then the model policy that ITU provides some of those building blocks. But you may have something further to add.

>> AUDIENCE MEMBER: I know what IT on you provide but more general. I want to base it on your experience, can you focus on a specific issue, regarding accessibility.

>> DONAL my experience, being specific for a moment, when a government body comes to me and says we want to go and we want to buy a new website, what do we do, I will give them a piece of text to put into their procurement tender that says the website must conform to international standard, the W3C, WCAG, WCAG, if I could wish one thing could be done by every public body tomorrow it would be to include that line in their procurement, so that industry and web development community know in your region and other countries in the world, that this now is how we develop websites.

>> KIM ANDREASSON: Thank you, Shadi's name came up as did W3C. It is appropriate to hand it over to Shadi. We are running short on time. Briefly.

>> I'll make it quick and add that we do have -- (chuckles) -- we have a toward translation process, a mechanism to allow the approved translations by W3C. This is a community review process. There are really two advantages of this.

One is we end up with a standard in the specific language and it can be adopted in policies and so on. The other aspects, this was a by-product, we made the observation that as the community starts thinking about what does that word mean, how do we translate it, what was meant by this requirement, because it builds a lot of awareness and a lot of understanding for the guideline, and it avoids people wanting to change it and wanting to add.

I would really opt for avoiding spending efforts into redeveloping guidelines that already exist but focus more the effort on implementation.

Regarding quickly the indicators, I know also G3ict has looked at this and the European Commission has tried or does the measuring e-accessibility studies. In my perspective, unfortunately, I think they are often different and lead to very different

results. This is one of the areas that still needs development.

But I think measuring is better than not measuring, and starting. But I would look more broadly than just, are there images on the website or whatever, correctly coded. I would look at more wholistic indicators like awareness, involvement, are there policies in place, and so on, you know, to get a better picture of the situation of web accessibility, not only just the technicalities.

>> KIM ANDREASSON: Great, thank you. We have a question from the remote participants. Can you specify who the question is for?

>> Actually, he didn't specify. But he wanted to know if persons with disabilities are part of the design and testing of the sites.

>> KIM ANDREASSON: Could you repeat the question, please?

>> He would like to know if persons with disabilities are part of the design and testing of the site.

>> KIM ANDREASSON: Shadi, do you want to --

>> Shadi: So, we strongly recommend the involvement of people with disabilities. I think somebody earlier was trying to talk about the different levels. There are things that so-called syntax issue, a mistake in the coding. This can be checked by a tool. It can be fixed, maybe sometimes even automatically. This does not need high level of expertise.

Then there are things that need maybe expert, expert users to assess. But we always recommend also having testers testing with users.

It doesn't mean again retroactively. That is where the issues come in, when we retroactively try to test the content. People with disabilities will spot things that even an expert cannot find or cannot find as quickly. So they end up making the process actually more effective and more efficient. This is what we have observed.

>> KIM ANDREASSON: Great. Thank you, Shadi. I believe our panel is coming to an end. We are exactly at 6:15. I would like to thank all of those in the audience. It was a pleasure to have so many of you

here today. I hope you found it useful.

I want to thank the panelists, Shadi, Mikael, Martijn, Donal, Fabio, let's give them a round of applause and hope to see you.

(session ends at 1816)

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