
MARRAKECH – How it Works: Overview and workings of the World Wide Web Consortium (W3C)

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UNIDENTIFIED MALE: All right, so there's power and there's microphones here at the table. We're non-formal, so please come and sit at the table where there's power.

This is not a formal meeting, so if you want power or access to the microphone, please feel to sit at the tables.

All right. Because our room is challenging to find, we're going to give it a couple more minutes so that people get here. As I said before, non-formal, so if you want power or you want access to the microphone, please feel free to come up to the table. This is a very open session. Otherwise, we'll start in about three or four minutes.

Okay. We're officially in day one of the ICANN meeting. I don't know if any of you have been here for days and days and days already, like I have, but it sure doesn't feel like day one.

I want to welcome you guys. This is the first session this morning of the How it Works tutorials. We did a complete day yesterday. This is a repeat for those who might have been in the newcomers' sessions or other meetings. I know that there was

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some CCWG meetings and some other meetings going on yesterday, too. So I welcome you all here today.

The whole program we'll look at from an umbrella, and then I'll drill down to Daniel's session today. The whole program is pretty interesting, so if you've got some time today, I welcome you guys to stay with us throughout the day.

We have, starting out with this, an overview on the World Wide Web Consortium, which Daniel Dardailler – close enough? He's walking me now – will be running. Followed by, after lunch, we'll do a session on registration protocols – no, I'm sorry. I got that backwards. Followed by a session on Internet networking, routing, and stuff like that, with Alain Durand.

Following that is the registration protocols, which will be run by David Conrad, our CTO at ICANN. Lastly, we have a session on the root server operations and the root ops and the Root Server System Advisory Committee. That's a really interesting one, as well. If you guys have time throughout the day, please keep stopping by or come at the day with us. We would love to have you all here.

There's a couple seats left. We're totally non-formal. If you want power, if you want microphone, please come by. If you have a question, if you're not at the table, please raise your hand. I've got this here hand-held mic. I'll run it over to you.

With that, I'm going to pass it on to Daniel. Welcome and thank you.

DANIEL DARDAILLER: It's okay? Okay. Better on. Okay. Hello. Good morning, everybody. Salaam. Bonjour. My name is Daniel Dardailler. I work for the W3C. It's the Word Wide Web Consortium. It's the standard organization for the web. When you use the web, HTML or styling HTTP, etc., you use our technology. We're officially an application on the Internet, so that's why you're not hearing a lot about us within the ICANN, usually, community, even though we've been historically attached to ICANN. I'll mention some of that later on.

I'm going to give an overview of the structure and the work of W3C, and then I'll go into some technical activity after that. You can ask questions whenever you want, but I'll probably stop midway to ask for questions.

W3C is an independent organization. The director is the person who invented the web 25 years ago – actually 26/27 years ago in 1989/1990, Tim Berners-Lee. We're an organization that is producing standards for the web under the direction of the industry and the community.

We have members that come from mostly the big editors of software on the Internet – you have Google, Facebook, and IBM – but also a lot of academic institutions and government agencies. We have also industries that are not on the Internet, like the automotive industry and the health industry. Everybody is interested in the web, so we have a lot of participants from different sectors.

The staff of W3C is quite small, you would say, for an organization that is doing the standard for the platform such as the web. If you compare to other standard organizations, we're probably an order of magnitude smaller than something like [inaudible] or ISO or ITU. We're a small organization. It was created as an application area of the IETF, in fact, about 20 years ago.

The focus is of course only on the web, both on the standards and guidelines that make the web, but also in helping the implementation of these standards. We have implementation testing phases. We have a validator that runs on the web that people can use to validate their content and things like that.

Of course, since the web as a platform is just one layer of the entire information society, you have IETF and iTripoli dealing with lower technology stacks like Wi-Fi or TCP/IP. W3C is dealing with HTML, XML, all the applications.

On top of us, you have applications of the web, like Facebook or Google, that are really also providing a platform for programmers. So we have to liaise and be in contact with all these other organizations. That's a lot of our time, as well.

The structure of W3C is much like the IETF's. It's an Internet organization, so it's not incorporated. We don't have a legal existence. We're a project shared between different parties that are legal entities themselves. In our case, it's a mostly neutral academic institution that represents a geographical area.

We have MIT, the Massachusetts Institute of Technology, in Boston, where the consortium was created in '94. It has about 20 staff. In Europe, it's ERCIM, which is a French national organization but representing all the European computer scientists, basically – a research center. We have a center in Keio and also one in Beihang that we created more recently.

These organizations are what collect the finance of the W3C, whether it's member fees or it's grants or anything that pays the salary of people like me, staff. They are not involved so much in the technical coordination of the activity. That is done by a process, like the ICANN bylaws. We have a process that explains how to create the group, how to produce the standards, etc.

We have different constituencies, of course, within the W3C. It's much simpler than with ICANN. We have a Technical

Architectural Board, which deals with technical issues mostly related to the web architecture itself, making sure that all the pieces of the web – whether it's the HTML, XML, Semantic web, mobile web – fit together and they're the same architecture.

We have an Organizational Advisory Board, something that deals with strategic orientation of W3C and whether or not we should change our membership models or have different kinds of meetings, etc.

The work we do results in producing a W3C standard that we call recommendations. Those recommendations have been worked on within working groups. Then they have been sent to the public. We have very strong public transparency points. We want all our standards to be available for everybody before they are declared standards so that people can look at what's going on.

We also deal with post-recommendation work. That is, sometimes we send our specifications to ISO for what's called transposition. You have heard of probably the accessibility standard of W3C for making content on the web accessible to people with disabilities. Now, that has become an ISO standard as well because we've been asked by our community to transpose that into an ISO standard. I'll come back to that later to explain the reasoning behind that.

So that's a map representing the world and position of the W3C presence. You have the dots in red as the hosts – MIT, Europe, Japan, and China. The blue dots are the W3C offices. There are relay points that explain how to participate in W3C and what is W3C doing nowadays. It's an outreach point with technical and usually capability as well.

You have one in Morocco. You can see the dot here in Northeast Africa. That's in Rabat at the Mohammadia School of Engineering. You can talk to the person in charge, [Najib] [inaudible].

We have a student from the University of Rabat in the room, so I encourage him to go and see and talk to [Najib] if they want to learn more.

Okay. A word about W3C finances. We're a small organization. We have 60-70 staff. We're funded mostly by our members' fees, depending on the size of the member. If you're Google, you're going to pay about \$60,000-\$70,000 per year. If you're a small organization, non-for-profit, in Africa, you're going to pay \$500. So it's different depending on your geography and your turnaround.

In the end, everybody has one seat. If you're a small organization in Morocco, you have one seat, like IBM or Google. The reason for that is that what makes the difference is we're

not voting, in fact. It's not a voting mechanism. We're working by consensus. If we have a working group with participants from the industry and from academia and from everything, everybody has one vote. But we're not voting, so it doesn't mean anything. It means that people that provide technology can more defend the technology and participate in the whole cycle of [inaudible]. Usually their influence is seen at the level of participation in the working groups, not so much at the level of voting for W3C itself, although we have some elections to elect some of our Advisory or Technical Architectural Board, where there is voting involved.

You can see we have some government contracts as well on this graphic. Just to describe the graphic, the turnaround of W3C every year is about \$10 million, and we get most of it from the members, but also the government contracts when we do a web technology that is more advanced. You can think of the Semantic Web. For a while, the accessibility work of W3C was funded by [inaudible] for some aspect, but by the European Commission because they see a lot of benefits in having a stable reference for themselves procuring technology through the market. So if you're a government and you want to make websites accessible to blind users or any kind of accessibility problem, then you have to make a reference to a standard so that the people that you're buying technology from can apply these standards.

So for a while, there was no standard for accessibility, so they helped W3C come up with a very recognized standard. That has been also transposed into an international standard nowadays.

At some point, we get some help from also donations, like ISOC had a few years ago to go through some difficult times. W3C is non-for-profit, so every year we consume all the resources we have and we count on the year after to do the same thing with flexibility in membership, in rent that we get from the government that we know nothing in advance, of course. We're like everybody. We don't have any particular right to get government money, so we run for proposal for grants like everybody else, like any labs in the world.

The membership of W3C. In this pie chart you see that it's a lot of Occidental participation, a lot of U.S. But also if you add up the European participation, you get about the same. Then there's worldwide participation, but not to the level that you would expect. We opened a site and a strong presence in China recently to open more the participation from the Pacific Region as well.

If you are interested in doing some outreach for W3C, becoming an office in your region, the door is open. You have all the information on the site.

A word on the standardization life cycle. It's pretty classic. You get working drafts that are published on a regular basis that are

being worked on by engineers in working groups about that size. You would have about the same room for W3C meetings that we have today for this tutorial. People around the table would talk about their implementation of some video elements, and others would say, “Well, we’ve done it differently. We added this parameter to the element.” So it’s very technical. There’s never a policy, really, question, or a political question.

It’s in the interest of participants to have the standard go their own way, the way they implemented something already. So the role of the W3C staff is always to try to find a consensus. So we have chair. We have a support to get the facts on our side to explain what was the reason for making a decision so everything is traceable and transparent. That is very useful, when you get to the final vote before you express yourself against or in favor of something. You have all the tracking of all the issues and the resolutions, even when they come from the public. It’s not just a member privilege. Any issue that is brought up against a specification has to be resolved. So we have this cycle of different document states, working drafts, candidate recommendation, where we call for implementation, etc.

One strong aspect of the W3C is that we produce royalty-free standards, which is quite unique in the standardization world, in fact. Most of the standardization organizations produce what’s called RAND standards – Reasonable And Non-Discriminatory

terms. The web and the Internet are so much involved with the open source movement, we cannot afford having anything in form of a royalty to be paid for our standards because, otherwise, the open source community is not going to take up the standards technologies.

So we have this obligation on one side, and we also have our industry that has agreed to the principle that sharing a platform of technology, sharing a patent pool in a sense – because they all have patents. All the industry has patents on web technology, but they agree to share this patent pool so that people bringing more technology to the pool would be sure that there is not going to be any encumbrance on the technology. If someone doesn't play the game, then basically they are out of the web. That's the way it works in W3C.

If you want to standardize the technology but you have a patent on it, then it may be that it becomes a standard. Then all the other technologies that are today on the web – XML, stylesheet, you name it – you cannot use it for free anymore. That's the defensive system of the patent process. Very powerful.

If you now think about the model of W3C, everything we do we give it away for free. It's on the web. You can take the standard of HTML and print it and sell it. You cannot also have any royalty

on the technology. So why are the members paying us? Everything we do is free and we don't sell anything.

That's again because they understand that the growth of the platform itself is what is going to make them rich. It's not the fact that they own a piece of the technology of the web platform. It's that it has to grow. It has the potential of billions of users. When you have billions of users, even if you have 1% share this market, you're rich. So that's the idea.

What is the open web platform? Today, the web is an operating system, basically. It's something that gives programmers an environment to make applications. If you think of Facebook or the Google app for spreadsheets – Google Sheets or whatever it's called – it's an application. It's hard to make the difference between that and a native application. So that's the way the web is moving. It's moving toward making a platform for programmers that is as powerful as the native platform.

Plus, the advantage is that it's a universal platform. If you solve your application problem on the web and it works fine on the web, then it works for anybody on the planet. Anybody that has a browser can use your application. You don't have to install anything. You just click on the link and you have the application.

You have the guarantee that your application is going to evolve smoothly without having to update. I've been using Google

applications for years. They probably went through dozens of releases. I never saw that. Before that, when I had Microsoft Excel, I would have to update to a new version of the application, no matter how stable it was for a while. So that's the power of the web. No update. Seamless applications. And we're making sure that you can do the same thing on the web that you can do on a mobile platform.

That's the hard thing today because the mobile platform is creating new devices, new capacities, at the device level that we are not, of course, foreseeing on the web initially. If you think of the accelerometer, which is a function of the mobile phone that you can access as a programmer, you can ask your phone if you're writing an application for a mobile in which direction the phone is. You cannot do that in HTML4, right, because there was no accelerometer on any browser platform. So we have to add all these device things.

So the open web platform, as I mentioned, is mostly like a system with various libraries, various foundations, that provide you with graphics, with multimedia, user interaction, and network access, complicated by the fact that it's a network operating system. That is, you can get data from various sources in the network, so there is a high question of security and trust. Where does the data come from? You're going to take data that is going to run on your computer, right, and program in

JavaScript. So you have to have the security question really solved before you do that.

We organize our work [inaudible] for the HTML5 platform. We call that application foundation. We split our work in different domains in W3C, where people can more easily identify what's going on in one particular area. We have a core security and privacy security. We work a lot with IETF on that, on crypto and things that are both at the protocol and at the web API level.

Privacy is also a concern for the network layer but much more for the application level, so we've been working on privacy for years on issues like Do Not Track. When you go to a site, you want to tell the site that they don't have to track your mouse movement or your personal profile, in a sense. The website would have to do that because there is legislation that expresses this in some regions of the world. So we have issues with Do Not Track with privacy between a server and a client as well, all the time.

The application life cycle of a web application is very different than one of a native application, so we have to invent new tools and new technology for that. Of course, media and real-time communication is something everybody wants, so we have to work on that.

One thing that's important on the web nowadays is direct communication between browsers. Instead of having to go to a server, like you go to a Twitter server to communicate with another Twitter user, you could communicate directly with the user using what we call Web RTC – Real Time Communication with another host.

The mobile web was something that we started very early on on the mobile explosion, so we are now well-advanced in terms of tracking the platform so that it can be a program on the mobile as well.

As I mentioned, we still have to do some catch-up with new devices – there are new capabilities, there are new sensors – anything that is added to the platform.

We have, I mention here, a lot of horizontal activity of the W3C that are a concern for everyone. Accessibility, for instance, is systematically reviewed for all the technology of W3C. Same thing for internationalization, making sure that all the technologies support the full unique code system, plus the [inaudible] model of the web, plus things that are very specific to internationalization of the web. I'll mention that later on.

You can access most of the work of W3C – the status of each working group, the implementation level in different browsers, the existence of testing of online validator for all our technology

– in a big table that we call the Roadmap, which is a public resource, so you can access that.

I would give you also a pointer to the specific group working on that so that you can join the group if you're interested.

So working with W3C does not mean you have to be a member of W3C. If you're a technical expert in one area, you can ask the status of Invited Expert and you'll join the group to participate as the others.

This is a slide that sort of lists all the acronyms that are heard in the W3C community, I would say. They are completely different from the ICANN acronyms, as you can see, but they are technologies that you probably read about in magazines and everything – web services, XML, styling. Today we talked a lot about linked data and open data for government. I'll do government express [inaudible] publish their open data is a matter of standard as well.

There are of course very central things, like the URI, the Uniform Resource Identifier, or Uniform Resource Locator, which is the cornerstone of the web. An address on the web is really what makes the web so powerful. You can click on a link. You can activate a link. But you can also use a link to identify things that are much more powerful than with just a web of documents. You can give meaning to links with the Semantic Web.

The open web platform today is not just a web of publishers and documents to present information. It's also being used in industries, whether it's in the health industry, in the automotive industry, or transport. We have to account for that, so all these sectors of what we call verticals in the industry, they also want to add their own requirements to the HTML5 platform.

That's not concerned so much with the end user, but the way your car is going to display your information on a screen, your on-screen location in your automobile, is going to be in HTML5, the same as you access on the web, the same as you access on your mobile.

Why? Because it's just much easier for the carmaker to develop it that way. They can testbed everything on the same platform in a different environment, not driving the car. That's a good advantage for them.

In the end, you can expect that there will be much interoperability for the user. They'll be able to come up with a plug-in for your car to make something different.

So the web that we see today – I'll stop here before I go into some more detailed activity – is mostly a web of API. You have to understand that the web initially was a web of format. You had the HTML format with the angle bracket title. That's still there, of

course, but that's not the way the programmers see the web nowadays. They see that as function that they call into a library.

You create the title element with a function. You access the title element with another function. Everything is in API nowadays. So these APIs are just like libraries and they all are specific to a particular area. You have geo location API, an API that will give you either GPS location or something more abstract, like "I'm in Marrakech in this hotel" because I can both use the GPS and a map, or I can use the Wi-Fi address. There is a geographic binding between a Wi-Fi an IP network and [inaudible] and a point on a map. So the geolocation has to care for the precise location of a GPS, but as well as the usual location information that a programmer would want.

I mentioned most of these technologies already. They are all being added to the web platform, basically as we speak.

One word on the overall principle of standardization. You may have heard of something called OpenStand, which was launched a few years ago – three or four years ago. It was sort of the recognition by the three major Internet organizations doing standards: IETF, iTripoli, and W3c. If you can connect today on the Internet from wherever you are on the planet – in Australia, in Morocco, in the U.S. – it's because you have a few standards that have been worked on using the same principles: the

principle of cooperation, of openness, of transparency. If you consider Wi-Fi, DSL, TCP/IP, HTML, and HTTP, all these standards that everybody uses every day have been guided by those principles.

So we decided to put that in stone, basically, and say, “Okay. That’s the way we work, and we would like that more standards organizations work that way as well.” So we created a kind of brand, a logo that explains to people that that’s the way standards organizations make miracles like the Internet.

There are some important things here that are not used by all the standards organizations in the world. Voluntary adoption is something that usually government considers as a parameter. You can have a regulatory standard, something that you have to follow; for instance, the electrical plug in the wall. It’s forbidden to make another kind of plug. It’s just forbidden. You can make it but you’re not going to be able to sell it. There is legislation based on the standard for the electrical plug, and that’s okay. If you didn’t have that, you have to test your plug. It doesn’t work.

In the world of the Internet, as much it’s true for the root system of ICANN as for HTML or HTTP, everything is voluntary. There is no obligation to point your BIND to the root of the DNS. You can point it to another root. It’s up to you. If you want to invent your own HTML6 format, that’s fine. You can take our work and do it.

You can publish your page in HTML6. Probably not a lot of people are going to be able to read your HTML6 extension unless all the browsers on the planet have agreed as well to use it and to understand it.

So the base of the voluntary adoption is that there is at some point the multistakeholder and the size of the community make it that you have to follow the stream, basically. It's very hard to depart from the standard. You can innovate and then you can prove that your innovation is valuable for everybody. If you're willing to share your innovation, then it goes into the standards. So that's a different sort of a process than the usual business process or the old standard process as well.

Okay. I'll go to some specific areas in my second part of the talk, but I'd like to stop to answer any questions you have on the overall W3C model.

Before that, yeah, I forget to mention that yesterday: the relationship between W3C and ICANN. When ICANN was created in '98, we were one of what was called the Protocol Supporting Organizations (PSO) because we were, with the IETF, one of the standards organizations important for the web at the time already. Even though we don't change the way the DNS or TCP/IP work, we are a heavy user of this technology of course. A web address is centered on a DNS address. Then you have

additional information on top of the host. The host is very important. That's the bottleneck for the web, basically. It's the thing that we don't control.

Another thing is that there is one resource on the Internet that controls it. It's ICANN and the root. But everything else that we do doesn't have a bottleneck. You can create your own [inaudible] type. You can create your own HTML format. If it works better, then you open something new, and maybe you're going to have success in that. Everything else is centered on a critical resource.

When the PSO work stopped, I think, we were part of what was called the Technical Liaison Group, which was, in addition to IETF, there was ITU and [inaudible]. We were in a rotation. We had a seat on the Board of ICANN in rotation for a while. I was on the Board of Directors in 2006/2007 as the W3C representative.

Then the most recent bylaw change sort of did something different, so now W3C is part of the Technical Liaison Group and Technical Expert Group, but we don't have a seat on the Board anymore. We're just part of an advisory body of ICANN.

So some questions on the organizations, and then I'll do some more technical presentation.

UNIDENTIFIED MALE: Yeah. Before we open up the questions for the floor, I know we have a very patient question that's been sitting in the remote participation. [Kathy], if you could.

[KATHY]: I have a question from Ashwani [inaudible] from UNDP. The question is: could we create innovative ideas pertaining to W3C and submit as projects to the committee of W3C?

DANIEL DARDAILLER: Yes, yes. We've done something that I didn't mention because it's marginal for us. We created a new formal group at W3C called the Community Group. We did that three or four years ago. We have now more than a thousand community groups. So this is a completely open group. It's an online tool. You can go with a couple friends and create a community group to work on – I did one myself as an individual to create one for thinking about the format to represent road accidents on the web. If you want to know what road accidents are happening on the road, then you have to have some meta-data information that you want to put in some format. So I created the community group for that. People were interested. They can bring the ID to the W3C working group level and make it a standard in the end.

So we have this system in place that anybody can use. It's all open to the public.

UNIDENTIFIED MALE: Thank you. Any questions in the room here? Yes? Please.

UNIDENTIFIED FEMALE: Hello. I'm [inaudible] from Kenya. I wanted to ask you if you have any resources on open data standards, especially for governments.

DANIEL DARDAILLER: Yes, yes, yes. There is an entire activity at W3C called Linked Open Data, where they are looking at formats that governments can use to publish their data in a way that is both public and private. There is some curating of data that you want to do before making data public because there is some private information that the government held. So we have this working group that has pages in W3c that you can go to. You can just look for that open data at W3C or linked data at W3C.

It's usually based on what's called the Resource Description Framework System, which is the Semantic Web system. If I give you some more technical – the web originally, HTML or even XML, is a hierarchical format. So you have a format that

expresses which element/document is a child of which element. It's a tree.

Under Semantic Web, you express something in a different way. You're [inaudible] graph-oriented way. So you say something is related to something. It's a triplet. It's always a triplet. There is no something that is the parent of an element. Something is the parent of a list of something. That's the first triplet. The list of something is made of this element. That's another triplet.

So the resource description framework and the Semantic Web allows for making a much richer assertion on the public data that the government would publish. They can say whether it's related to a particular field of the data set that they have. They can give information on access. They can give information on where the data comes from. It's very important to know the origin of the data so everything can be signed, oversigned, etc.

So the Semantic Web is the basis for the open data, and you can find everything we do on the web.

There are some ratings as well for open data that we call the 5-Star System. When someone publishes open data on the web, whether it's a government or a corporation, you have level of quality, basically, 1-star meaning that it's on the web. It may be a big image that is completely inaccessible to most of the people, but you have a scan of the document on the web.

2-star means it's something that can be read by a machine more intelligently. You may have an Excel file, but you don't give much information about the rows and the columns formations. But you have an Excel file with data, so a human can pre-process/post-process this information and make something useful.

Then you have 3-star. You start giving Semantic to your data. It can be any format. It can be Excel. It can be HTML. It can be CSV. But you give Semantic. It's something that can be used in itself by reference to the Semantic.

4-start would be you use a real Semantic-oriented format. 5-star would be not only you use real Semantic web format, but all your data sets are linked together. So if you access something, you can follow a link to something else, etc. You have this level of quality that we publish, and government would adopt them. We don't do any enforcement, so we just give ways for people to express their information.

UNIDENTIFIED MALE: Yeah. Please.

UNIDENTIFIED FEMALE: Is that the same for big data, especially for initiatives around big data for planning and development?

DANIEL DARDAILLER: Well, big data, first I would say that it's a stupid name. In a few years from now, people will laugh at us for calling big data "big" today. But anyway, it's just a matter of algorithms to use the data. The Semantic Web is a part of the big data equation, if you want. If you have data that is more rich than raw data, then you can do a better algorithms. But if you don't, then you can still do some algorithms for big data.

It's an [orthogonal] concept. Big data means that you're doing a different kind of searching and deduction than you would usually do with usual database systems. It's more like you know that you have thousands of information about the pronunciation of something that means something, and you do statistics. You say, "If I get something that sounds like that, then I probably need 99% of the chain that it means this thing."

That's the way voice recognition works today: statistics. You just compare thing to other things and you say, "Well, it's likely to be that." You don't try to understand things. So it's a different at the algorithm level, not so much at the format level.

UNIDENTIFIED MALE: I have a question over here.

UNIDENTIFIED MALE: Yes.

UNIDENTIFIED FEMALE: Yeah.

MUHAMMAD SHABBIR: Thank you very much for a very elaborative presentation and comments. I have a couple of questions. First is, do you have any – actually, I am Muhammad Shabbir from Pakistan. Do you have partner organizations from Pakistan particularly, or South Asian regions? That's first.

Second is that you talked about accessibility standards for persons with disabilities. I actually know about the process, WCAG 2.0, of the W3C. It's really impressive and very good work.

But how do you engage persons with disabilities actually in the process? Do you partner with the organizations? Or how do you ensure their presence in the actual process?

Lastly, some governments, like the U.S. and the U.K. and the E.U. now, are enforcing their own accessibility standards, so how do these governmental standards and W3C standards come along in the processes?

DANIEL DARDAILLER: Okay. All the questions about accessibility are from the second part of my presentation. There is an accessibility section in my presentation. I'll answer all that next.

The first question on the presence in Pakistan and in this region, we have an office in India, in Delhi, that you can go to to get more information about W3C activity in general.

In terms of participation, it's – how to say – like that because we have probably more than 5,000 people working daily within our working groups. So it's hard for me to tell which ones are coming from Pakistan or which members we have from this region.

But in terms of the staff presence, we don't have staff in Pakistan that I know of. We have staff in India. So that's the first answer.

For accessibility, if there are no other questions, I'll move onto that part of my presentation.

UNIDENTIFIED MALE: Any other questions in the room? All right, let's get technical.

DANIEL DARDAILLER: Okay. So, yeah. Web Accessibility Initiative. It's one of the domains of W3C. We have four or five domains at W3C, one concerned with open data. I mentioned the Semantic Web, another one with [more of the] HTML language itself. We have a

domain concerned with the mobile and everything that I would say is universal access the web, whether it's from a car or from a radio. We have this technology and society domain as well, which is concerned with security, privacy, content selection and things like that.

This domain, the Web Accessibility Initiative, was created very early on in '97 at W3C. The purpose was to make sure that the technology that W3C delivered, all the standards, whether it's HTML, XML, [inaudible], would be accessible. So we had to define first what it meant, and then look at most of the problems that we're trying to solve. It's not just for visual disability. It's also for mobility, for hard-of-hearing, and for cognitive disabilities. So the scope the disabilities is any disability.

The problem [that we're trying to] solve is to sort of reformat the data that the users send or being able to format it for the users' preference. The idea was that, when you have content that is accessible, then it can be accessed by mostly the person's preference, the preferred media. If you only have text input, for instance, and text output, then the page in HTML could be serialized so that you could present that to the user.

So of course there are problems not just with the multimedia part of the content, but also with the navigation, with the structural part of the information, and also with the overall, I

would say, appearance of the site, whether or not when you're changing pages within a site you get lost or not. So there's always a fine line between usability and accessibility, but the concern of the Web Accessibility is for the disability part.

The idea was with accessibility is that it's okay to degrade the original content, but it's never okay to degrade the function. If you have a website or a page on a website whose function is to have you select a town in Morocco where you want to go, for instance, then the natural user interface that people [inaudible] provide is a map of Morocco. Ask the user to click on the town where they want to go. You show the town, you click on the town, and that's where your distance is going to appear or you're going to rent something.

So the function goes through a graphical interface in this case, but it's easy to imagine that you can provide a list of towns, just a textual list, a menu. You know that this menu can be serialized easily. People can navigate the menu one by one, or they can in alphabetical order. You can imagine an interface that works on just a list of towns that can be very valuable for the end user. So the function is what's important.

The function of a website usually is to have you navigate through the website to go to do something. This is a very

important function in the guideline that will produce the part of the navigation, the part on the media, etc.

So this work on accessibility is mostly divided in three parts. There is the accessibility of the content; what's called the Web Content Accessibility Guideline, which is really the mother of all guidelines for the Web Accessibility. It's what people are using when they adapt accessibility to their content. Usually they start from this guideline.

But what we've tried to do over the years is to make sure that there's only one guideline, so we transposed this guideline into an ISO standard. The reason for that is that it gives the content of the work, the technical standard, much more stability. As you consider, government that has to pass legislation that will guide them during procurement to procure accessible technology, they would want to have a national standard based on the WCAG. Sometime they will change the WCAG content because it's a standard that's human readable, in a sense. It's not like the HTML or the XHTML standard.

The WCAG standard is written in English or it's been translated in many languages, but it's written in human language. It explains what to do to a designer, to a programmer. It's an instruction for a program.

Given that, a lot of people have changed the guideline, not realizing that, by doing that, they create fragmentation, and the industry cannot provide a tool that is accessible along different standards in every part of the planet. IBM or Microsoft, they want to sell a browser to an organization that is a government agency. They want to sell the same in France as in Germany or in Pakistan because it's going to be a nightmare for them. It's already hard to have to globalize all the standards. I'll go back to that to make sure that the language and the date and all the cultural things are specific to the country. If you have to change the technical implementation, it's a nightmare.

So the industry was in favor of stabilizing the standards. The governments were in favor, so it became an ISO standard. Web services also became an ISO standard along the same lines.

Now we have those three guidelines. One of them is an ISO standard. The other guidelines concern each side of the production and the reading of this accessible content. So it's not enough to say, "This is how accessible content should look like." You have to explain how to produce accessible content using what we call an authoring tool, an editor of HTML like Dreamweaver or anything, or even a content management system that lets you create a page with graphics. They should follow guidelines of their own that will explain, for instance, in a CMS, in a Content Management System, that you're going to add

a logo to a page. Then you would extract automatically the textual representation of this logo. If it's a logo for W3C, which is how to represent using real letters because it has graphics everywhere, then you can say, "This is W3C." The function of this logo is to say W3C. So you say that in the markup.

The tool that you use to create this page would automatically get the description of the image that you use because someone has probably already described it.

So there are guidelines for the authoring side, and of course guidelines for the browser side, for the user agent side. When you read at HTML page, you have to understand how to decode a particular element, a particular attribute, to change it into a different modality. So there are both guidelines that are as important as well.

The way this work was done in the past is that we have different working groups, about seven or eight working groups. There are some that are dedicated to explaining to people what to do because it's not just about technology. It's about education and outreach. Explaining to people about the obligation that they have sometimes to make accessible websites.

We also have a research working group, which is specific to this activity because there is always progress on the, I would say, programming side. It used to be that it was very hard for

machines to understand human order, but now there is progress on that. So at some point we would say that the subtitle had to be provided, obligatory for making the data understood by hard of hearing deaf people.

But nowadays you can imagine a video stream that doesn't have a subtitle that is coming to your browser could be attached to some kind of a [inaudible] algorithm or a voice recognition algorithm that would extract the subtitle and insert the subtitle for you. So they are progressing the technology in various aspects of the field. In sign language there is progress as well. Soon you could be involved to produce sign language on the screen based on markup language. So we have to follow that as well.

Now, to answer the question that was asked about accessibility, the first question is there is a lot of work by government to adopt into legislation some variant of the Web Content Accessibility Guideline. Hopefully I would say that nowadays most of the people are referencing the real guideline, the W3C guideline, or the ISO guideline, which is exactly the same. It just has a different name.

That fact is something that people now changing the guideline itself think twice before doing. Even though they still have the right to change that, the ISO copyright is such that a national

member of ISO, like AFNOR, or a country member of ISO can still make modifications and adapt a standard when you transpose it to their country in their language. But for the web and for Internet technology, they usually never do that.

So we have this stable thing. Now, since it took about five or six years to go from the WCAG at W3C to the ISO, in the meantime, the European Commission had also mandated some work on accessibility standards. [inaudible] has produced a standard, EN-something, right, which also includes the W3C guideline. Included inside their standard, they have the W3C guideline copy, cut and paste.

That's not good in terms of standards, but you have to imagine it as a transition. But soon, when this EN makes it to make a higher level of standards, they're going to change this copy into a reference most probably because that makes sense.

So I wouldn't worry too much about fragmentation in the future. It's something of the past. We have been fighting with fragmentation for a while, but I think we're fine now.

In terms of participation, the way working groups are populated with users with disability is they give us their input. They come and they say, "We have used this tool, and this tool doesn't follow this guideline because either the guideline is wrong or the tool is wrong." So we have a very big community, a large interest

group, where the public can participate. They don't have to be a member.

All the working groups, by the way, are public, in fact, except for one – but I think it became public – which was concerned with the technology of W3C evolution.

So a lot of participation. A lot of testing. We don't run an accessibility bureau, in a sense. There is an industry on top of these guidelines nowadays, people that are making a business of checking pages and repairing pages for accessibility. They have labels that they create for the kind of evaluation that they've done. So there's really an ecosystem on top of this technology.

Okay. Another what we call horizontal activity which we see is internationalization. You've heard of the internationalized domain names and the problem of the Internet itself, which was created without thinking too much about non-English use of the Internet.

But nowadays, hopefully we have resolved most of the problem, and that is because of one technology that's called Unicode. Unicode is not done by IETF. It's not done by W3C. It's done by the Unicode Consortium. It's a technology that basically provides a level playing field for all the other technologies that express textual things. So it's everybody, basically.

Before Unicode – if you’re young, you don’t remember – if you were a programmer and you wanted to encode your character in some other language than your own, then you had to spend a lot of time trying to understand which encoding this language was used for. Government usually in Japan had three or four encoding for a different representation of Japanese. Same thing in most countries.

Unicode said, “Okay. No. One character. One code.” We have enough characters for the entire planet. Now we operate under Unicode, but for the web it’s not enough. You have to provide a character model. You have to provide a lot of cultural things that are dependent not just on the language, but on the culture.

So we produced standards specific to internationalization, and we explained a lot in terms of how to represent a page so that it can be translated into another language. It’s not just a matter of translating the word. You have to translate a lot of the presentation material.

If you look at, for instance, a problem with date, it’s easy to say that an input field in a page is a date, and that’s about the only thing that a programmer should have to worry about. As a programmer, I want to make an application. I envision that my application is going to be used in all cultures on the planet. My market is the planet, to start with. I’m not thinking French or

U.S. So I want to say, “Okay. At some point I’m going to need a date in my application. Input type date.” That’s it. It’s much easier for the HTML programmer.

But then, under the cover, you have to think about what it means. It means a lot of things, depending on the culture. You have to look at the locale. You have to look at the guidelines for the language, depending if you use a graphical or more like a visual, 2-D presentation to select the date. All of that has to be explained to people before they do browsers, before they do web pages.

Another area that’s important for W3C is privacy and security, of course. We do a lot of the security work with IETF, which is I would say our favorite partner SDO. Because W3C was started as an IETF application area, we share a lot of either practice or technology expertise with IETF, not to mention HTTP, HTTPS, URI. All the web address systems is done within IETF with heavy participation from W3C. Nowadays, we’ve been creating real-time communication mirror group in the IETF and W3C. So you have RTC web at IETF, which is looking at real-time communication between two hosts, and W3C is doing web RTC, which is providing HTML extension for doing that from the browser. So we have a lot of work together.

Now, for privacy, we do a lot of work on the fact that, when you connect to a server with your web credentials and your identity, you're going to give away some of this data. So it's important that, between negotiation, between the server and the client, beyond all the negotiation that's happening; in other words, that you don't see about format, about language, about your preference, we should have preference for privacy. Things like, "I don't want to be tracked," things like, "You can use my first name but you cannot use my address," and things like that. So you can express that with some of the standards that we produce here.

Let's see. If you want to know more about privacy and security and [inaudible], our domain leader, Wendy Seltzer, is in this meeting this week, so you can talk to her. You'll see "Wendy" on her badge. You can talk about how to participate in those and what is happening nowadays.

I'd like to say a word on sort of the policy matters of W3C. We're a technical consortium. We've never been really involved in politics. We always try to get away from that. But nevertheless, we've always been talking with governments and legislation, if only to explain to them what the technology can help for their problems.

The first example of that is PICS. When I joined W3C in '95-'96, it was the hot button then because the U.S. Congress or U.S. whatever wanted to pass legislation that would just say everything that is indecent should be forbidden on the Internet. The word used in the legislation was “indecent.” “Indecent” doesn't mean anything on the Internet, to start with. I'm not sure it means something within the United States, but we had to explain to the legislator that, instead of doing this kind of subjective definition for technology, we should use objective criteria.

We thought about using sort of the ancestor of the Semantic Web. We told them that we could create a format, which was called PICS. It's a small textual format that lets you describe various levels of content. There are four levels – there were four levels because there hasn't been kept this way.

There's a nudity level. In nudity level, you can express yourself objectively. You can say frontal nudity, backward nudity. You can say all that you see, more or less. That's very objective, right? You can be anatomical, in a sense.

You have a violence level. You have a widely agreed position for violence, whether there is blood, whether there is not blood. So you have a level that is objective as well. You have gambling as well, which is one area, etc.

With these objective levels that you can attach meta-data to a page, then the question of legislation is moot because you can decide on your end, whether at the level of a country if you want, but at the level of an organization or a family, to block various content based on the objective criteria and your own rating. You can say, “My kids in France are fine with frontal nudity because everybody is frontal nudity on the beach in France,” right? But in the U.S., you would say, “No, the kids in school, they should not see frontal nudity because it’s not the way we work.” So you can adapt for culture these kinds of objective criteria.

That’s the Semantic Web, in a fact. The Semantic Web lets you do that. You can describe things objectively or recognize vocabulary, which is called ontology. If this ontology is widely accepted, then you can make either filtering for good, or you can do also censorship. You have to realize that any technology that gives you more power, like a hammer, can be used to do the right thing or the wrong thing.

So the Semantic Web is a hammer. It lets you do very good things, much more intelligent searching and filtering for the good, but it can also let you operate a censorship bureau because everything is described. If something is labeled political opposed to whatever country and I’m in this country, it’s just a checkmark. So you have to account for that.

Anyway, that's the way the technology has always worked. It has a good side and a bad side. The technology itself is neutral.

So that was the first installment of our legislative sort of discussion. Then the web accessibility I mentioned. That's been all the time. That's been the case that governments have to make websites accessible because people with disabilities pay taxes and the taxes are used to run those websites. Or they pay taxes through the website, which is even more important for the government. If you cannot pay your taxes, you can say, "Well, your site is giving all this instruction by voice and I'm deaf. Sorry. I cannot pay the tax." So the governments were pushing for having accessibility as a recognized standard so they can enforce it through their technologies. That has a lot of implications as well.

It was a good dialogue because we were both on the same boat. We wanted more accessibility. Even though the government wanted that to protect themselves, they wanted to make sure that they did the right thing. They also wanted [inaudible] reason of course, but also they realized that anything that is accessible on the web is easier to use for most people.

That's the case for most of the accessibility features, in fact. If you look at the curb cut on the sidewalk in the street, the real accessibility for wheelchairs, well, if you look and you count,

you'll find that nine persons out of ten are not in a wheelchair. They just carry their luggage with wheels. They push a baby on wheels.

So accessibility is good for everyone. Usually it's a simple design that gives you the most functional power.

Since then, since the 2000s, I would say that Internet governance has taken up the role of driving us in to discussion with government. So open standards was a long discussion as well between patent/not patent, whether or not it was done by a company [inaudible] interest in it. The issue of open standards, license, open source, all that is still going on, but it's been a bit quieter nowadays. But a few years ago, it was very heavy discussion.

I think we now have this system where most of the technologies are free for the web and the Internet. We just want to make sure that it will stay that way, so we're trying to write the rules after the fact nowadays.

Privacy/security sector public information was also a lot of debate. For instance, we participated in the European Commission projects and debate to decide whether or not public sector information should be free or not. That's a typical question that a government agency would ask: "I'm okay to give all this information, like the map, the geographical information,

all the things that are public and that people have paid for already.” The government are paid by the citizens, so it’s not good to have the citizens pay again to access the data.

But there is an overhead, usually. It’s not as simple as turning a machine on and saying, “Now it’s public and before it was not public.” Usually those documents are on computers, but they’re on computers that are not connected. You have to curate the data. There is a cost for governments to publish open data. There’s no doubt about that.

So the debate was how to reimburse these costs. You can have a system by which the public data is only going to professionals of the market that pay a subscription. These professionals give it away to the citizens using their own business model, which can be free or not.

The prevailing model nowadays is that, if the more government is given for free, the bigger the market is going to be. The bigger the market is going to be, the more taxes the government is going to get through VAT or through the increase of business. If you can sell more things based on public data, then you create a market. Money’s circulating. Government is making a tax on that.

So they realized that, and now most of the model is to make it free and to have it actually used by as many people as possible

to innovate on top of that. That was another policy-making discussion you can think about.

Nowadays we have passed this step where the work that we do at W3C, or IETF, for that matter, or iTripoli, is not officially recognized by government. They recognize ISO. They recognize the national body, the regional body.

But in fact, they have to use our technology. There's no other choice. If you order a technology for the Internet, you're going to use IETF and W3C standards. So there is a trend now to recognize our work officially. There is changing legislation in Europe that passed a few years ago that just lists W3C and IETF as valued consortia that produce standards that are equivalent to the jury standard system.

We still have to go through processes to validate our specs one by one. It's not like we had a blank check for everything the W3C does. There is a system called the Multistakeholder Platform in Europe that lets us do that to present technology. But I would say that it's working. People are not blocked because of these kinds of matters.

Of course, the new technology that you see on the last line here – the Web of Things, web payment – are things that we started last year. Web payment, for instance: I joined W3C in '96 to work on what's called the Joint Payment Initiative. It lasted a couple

of years, and then it failed. It failed because VISA and MasterCard decided to lower their fee dramatically on the web, so the only reason for doing a specific payment system at that time, 20 years ago, was micropayment. But micropayment also didn't get an agreement in industry, so we basically stopped payment for years.

Last year, we reopened the issue of web payment because people – again, if a programmer wants to write a web page, if I want to write a web page, the same way that I said “Input is a date on my webpage, and I don't care about the way the date is implemented for the culture,” I want to say, “At this point, ask the person to pay this amount.” That's all I need to – I'm a programmer in HTML. I don't want to have to deal with the bank. I want to just say, “At this point on my page, here's the price that people have to pay.” I do the calculation of course. This is my website. But I don't want to have to deal with all the details of the payment.

Of course, this is a highly political agenda because electronic payment is governed today by thousands of standards. In the financial sector, we have to integrate with that. So this is a very important group.

Here I mention deep linking at the end. What time is it, [inaudible]?

UNIDENTIFIED MALE: You have 15 minutes.

DANIEL DARDAILLER: 15 minutes. Okay. Oh, we'll have some time for questions. So deep linking, just to mention one policy aspect that is still bothering us, in a sense. Years ago, we had a statement from our TAG, from our Technical Architectural Group, saying that people that want to prevent other people from linking directly below their portal site or their home page have to do that through access control. They cannot operate by what's called hidden by obscurity. They cannot assume that, because someone went through their portal to go to an article on their page without entering any password – I'm talking about open access – then this URL, the URL of the article itself, is a different URL for the system.

So we had to explain that the web has no concept of home page. There's no such thing as a portal, a URL-specific portal, a URL or a homepage. So all the links, whether it's a deep link in your website, or the homepage of your company, they are the same link for the web.

The tools, the browser, they consider they are the same name. There is no notion of that. So it's very hard then for someone to

understand how to prevent someone from linking to a remote part of their site. Usually they don't want that. Some providers want people to go to their home and follow a track that they decide. But unfortunately on the web people use hyperlinks. Hyperlinks mean that you can link to anything. That's an issue that we have to keep explaining to legislators, that it's impossible to further the platform to make the difference between those two links. So there's no question of having a law, legislation, on that. We cannot implement it. So that's the kind of discussion we have.

Okay. I'm about done, so I'll let some questions now. You have everything on this page in terms of summary. The summary is that we're a growing community, that we have more and more societal issues to deal with. If you think that you were not technical enough in the past, I think it's time that you look at the web problems today.

As I mentioned, W3C is one champion of the open standards because of our royalty-free policy that has been adopted by our industry. People take for granted the fact that the web is there. It's been there for 25 years. It's free and people use it everywhere. But we still ourselves see the thing differently. We see that there is a competition. Whenever you go to a mobile application today or a mobile website, they still ask you whether or not you want to download their native application for your

system or whether you want to go to the website. If you go to the website, the user expense is usually not the same. It's a little bit less, so the [inaudible] in everything. So that's the technology problem today that we hope is going to be fixed in the future.

The advantage for the provider of information is that they only have to maintain one website that is accessible through the car, through the mobile, through the desktop, through big screen/small screen, etc. So I think we have the odds on our side.

The extension of the native platform is going at some point to converge with the added feature that we put in HTML. Once you can have a device of that size that does everything – smell for you, give you direction, give you the altitude and everything – all the API that you have on these devices today to let you program the device, we'll put them on the web so that you can have them on the web as well, and it will make no difference, except for the fact that it will be a better support for the entire universe of the web.

The other thing is that the web applications today don't work offline, but we've been working with technology that would make it as well to work offline, just like as a native application.

Okay.

UNIDENTIFIED MALE: Okay. Any questions in the room? Okay, we do have one question in the chat room, and then I'll come back to the room.

UNIDENTIFIED FEMALE: Question is from [inaudible] again from UNDP. Would the modules of payments be interlinked to the privacy and security modules within the W3C?

DANIEL DARDAILLER: I missed a word. "With the module..." The first? I missed one word.

UNIDENTIFIED FEMALE: Would the modules of payments be interlinked to the privacy and security modules?

DANIEL DARDAILLER: Sure, sure. Of course. The W3C works with a working group that are themselves I would say organizing activity and in domains, and there are coordination groups. So of course the web payment activity and working group is very much linked to the privacy and security group, but not just that, but also to the internationalization group, to the accessibility group to make sure that all these technologies are coordinated to give the same

level of experience to the user. So there's no doubt about that, yeah.

UNIDENTIFIED MALE: Okay. Thank you. I believe also that we are joined by our NextGen group, which are students from local universities, from Rabat, I believe. I'd like to specifically ask if any of you have any questions on – Daniel, I'm going to put you on the spot. If you want to ask the question in French, please do. All I ask is that we're streaming in English, so if you would be willing to translate or summarize the question and answer.

Are there any questions at all from the students? None? Okay. You had that opportunity.

With that, I'd like to thank Daniel, please, for this wonderful presentation on understanding the W3C. Thank you.

We have passed out a short survey to better understand how we're doing for this program. We ask that you please just take a moment and fill it out. It's just a few questions on how this session went and how we could be doing better. We listen to this. We try to make these sessions interesting and relevant for the community that comes to watch these, so please take a moment to do that – oh, is there a question? Oh! All right!

UNIDENTIFIED MALE: Thank you very much. [speaking in French]

DANIEL DARDAILLER: The question is related to internationalization and whether or not the Tamazight language, which is the regional Berber language spoken in the mountain, which has its own alphabet – it predates the Arabic alphabet in the region – whether or not it’s supported in the web. Is that the question? Or there is specific work on that? I don’t know. Is it in Unicode? That would be my first question. If there is work for this particular language and encoding in Unicode, then it’s also on the web because we have correspondence and we explain how to use various alphabets.

So I can point you at our leader for internationalization, which would give you the update on both the Unicode and the website. He’s called Richard Ishida. You can find him. He’s in England and he’s a worldwide expert in Unicode and the web.

But at least I know the language. I’ve seen it. I don’t know. Maybe you probably know more than I.

UNIDENTIFIED MALE: Thank you for that. We’re going to breaking for lunch. The lunch hour is from 12-1:30. We’ll be back here in this room at 1:30 this afternoon, and we will have Alain Durand from ICANN. He’s one of our chief research engineers, and he’ll be going over Internet

networking. It's quite interesting. So I ask and encourage you all to please come back and join us after lunch.

Thank you very much.

[END OF TRANSCRIPTION]