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>> PILAR ORERO: Hello. Good morning. Welcome to the session on accessibility. This session has been organized by the IRG‑AVA and it is a pleasure for me to have the three panelists, the Chair, Andy Quested and two co‑Chairs and Masahito Kawamori and Pradipta Biswas in this presentation. Today it is quite interesting the way that it is organized, the presentation, because very much the ‑‑ because very much looks in to who is the user or addresses the needs of the user in accessibility. It addresses the context which is now a very pertinent context which is the COVID situation and how its accessibility coping with or not coping with the issue of COVID and communication. And finally, we are going to look at what is the technology doing for us now related with media accessibility.   
 The way that the session is going to be organized is that the three panelists will do their presentations, one after the other. And then we will get in some questions. I will be checking with the chat to see if any questions are popping up.   
 Andy Quested, the Chair of the IRG‑AVA will be running all the slides and I would like to thank Kaoru to organize this session and I would like to thank Tina who is the subtitler for producing the live subtitles right now. I am Pilar Orero. And I work at University in Barcelona.   
 With no further ado, I think ‑‑ this is the agenda. First the introduction by myself and then the common use of profile from Pradipta Biswas, from the Indian institute of technology. And then is the COVID‑19 and accessibility by Masahito Kawamori from Keio University in Japan. And then Andy Quested will be presenting the AI friend or foe for accessibility. Some concepts in the next slide, some base can concepts that we have in this presentation is universal design. It is native accessibility. That's the concept of everything being accessible from design as a DNA, not as an afterthought. So it is something that is very much, that we're work in the IRG‑AVA group and the idea of born accessible and standardization as a way to achieve a quality and measure this quality. So with no further ado I would like to Pradipta to start with his presentation. Thank you very much.

>> PRADIPTA BISWAS: Thank you Pilar. Is my voice audible?

>> PILAR ORERO: Yeah.

>> PRADIPTA BISWAS: Thank you. It is a pleasure and privilege to present at this panel. And thanks for those efforts. So I want to spend the remaining few slides on the concept on common user profile format intended to personalize user interface for people with different range of abilities. So I will talk about the definitions, utility of the common user profile format and its integration to third‑party applications the security aspect. When we are talking about user information at this Digital Age, it is very important to properly scrutinize privacy and security. I will just present a few use cases from our earlier projects. And finally we'll conclude. Next slide, please.   
 So what is a common user profile format? So it is a list of variables which can be used to personalize user interfaces. And what do we mean by personalize? It is already well‑known that we cannot make a user interface which is one size fits all. It can feed many sizes but not all and the range of abilities for people with different range of abilities. Different context of use, people using a Smartphone inside of a car, it is not the same situation as using my laptop sitting on my desk. And how we can make the user interface adapt to it. So this work is not very new. So from 2010 onwards there is an effort that you in the standardization Committee and forms cluster, virtual user modeling and cluster, and after that several efforts has been made in standardization agencies like ISO and ITU and Focus Group on audio media accessibility or Question 11/9 and question 20 SDG 6 and SDG 16 to name a few.

>> KAORU MIZUNO: Andy we don't see the presentation full screen. Can you go to display setting and swap presenter view on the top left? Thank you. Thanks, a lot. Pradipta, the floor is yours.

>> ANDY QUESTED: Apologies for that.

>> PRADIPTA BISWAS: To start with common user profile, I just put two definitions, already pretty well‑known among the design and user interface community. The concept of user model and user profile. In particular I took the definitions from the work of the EU forms cluster back in around 2010‑13. So the user model can be defined as a set of user characteristics required to describe the user or a product. And it should be defined in a machine readable form so that machine can have a concept about the user. And then substantiation of user slides ‑‑ next slide. Next slide, please.   
 Thank you. So here is a list of variables based on our present draft being worked on at ITU IRG‑AVA and the study group 9 and also shared with other Study Groups like 6 and 16 in particular. Here the aim of this common user profile format is to create a minimum set of variables so it is not overwhelming for the producers to look at or collect it on all possible variables. But at the same time to make it adequate enough so that users can get a better or personalized experience. So here for lack of time we are not going through individual items. But the list of variables covered the different color contrast of the screen, thinking about range of color vision, the audio volume, the minimum font size which is already exploding the standardization community for automation for showing critical and noncritical elements. And then various properties of subtitles. The cursor screen element and preferred IO modality and the languages. So many of these variables have already been defined in earlier ISO doiments like ISO common access profile document and ISO standards and subtitles and ISO standard and software individualization. So we try to create a minimum possible subset which can be maintained by maximum number of producers. And can also be used by an AI agent to adapt user interface, besides the personalization. Next slide, please.   
 So what is utility? So while the first utility simulate users' interaction in terms of visual perception and cursor hand movement. My own doctoral research explored similar venue and very recently there is a paper from the University of UK where researchers tested various algorithms on simulated patient's data without bothering the privacy or security of real patients. And, of course, the computer vision and graphics community has long exploring similar avenue through virtual network type of system where we can simulate user interaction. So it is no way replacing traditional user trial. But it's just increasing the range of the designers in terms of understanding difficulty faced by users with different range of abilities.   
 The second point is adapting or personalizing user interface or interaction. And finally, of course, the common metadata format so that if one producer, say producer one does a fantastic job. So other producers can also take help of this personalization effort and another ways presently due to the advancement of we test computing that many people are using multiple device like Smartphones. If the user signs up once, he or she should get a personal experience across all devices. So one of the aims of this common user profile format to adapt user interfaces across multiple devices as well. So next slide.   
 So next before going in to examples of let's look at the security aspects. So if we look ‑‑ take a closer look at variables we may find that we are not storing any physical or network media for storage. We are not specifying that or we are not asking about any disease or impairment related data about the user. And, of course, profile can be stored anonymously. And user profile can be stored on a security server or client machine and the common user profile format is not dictating how the data will be stored. And in the upcoming slides we will see vary examples of mapping America by which we can adapt or personalize applications. Next slide.   
 So the common user profile can be integrated with third‑party applications in various ways. For example, it can be stored on the server side and program can be executed at server side which will tell the appropriate interface parameters like one size color contrast or other details to the client application. Or it can be completely stored at client machine and can be implemented using standard scripting languages or can be implemented on the operating system itself or handle devices that can be used to adapt user interface. And we can modify these settings at the application level. That means we can dedicated application, and if it is adopted that maybe the first way of integration will happen that we can make the dedicated application comparable to it ab then we can develop browser compatible to it. We can have the whole way interaction personalized and finally we can integrate it to systems like Android platform or TV networks. And then the whole user device will be personalized on that. Next slide, please. So here are next four, five slides we will go through a few examples based on our previous project. So in this particular one, we demonstrate that on a low end mobile phone we can render the same user interface in three different color contrasts and font size using the common user profile format and developer app is completely, that which characteristic he wants to use to personalize his user interface.   
 And next slide, please. So here we can see the previous example was for low end mobile phones. So this is for Smartphones and here also application level integration has been demonstrated, that the disaster warning system, can render the different font and color contrast based on profile user format. And again here the application is talk ‑‑ here the whole Android phone is not adaptable but only this application is integrated with the user profile format. Next slide, please.   
 So this is a web‑based application in which Google mapped this application which is a continuation of the disaster warning system. Can tag a location for various users. Here we choose a set of style sheets based on our previous research and the common user profile format chooses appropriate style sheet based on user name and password and we can add the style sheet with the application to render it differently. So this is another easy and low level integration which can be undertaken very quickly by constructing a suitable style sheet. And log storing the user profile data with user credentials.   
 Next slide, please. And this is one example from earlier EU project, and in this project we tried to make a digital framework and since we were making the framework we could make the whole framework adaptable based on user's range of abilities. This is showing one application and home automation application. And since the whole operating system can be adaptable you can see that we are not only adapting the font size or color contrast but we can also change the size of the buttons on the screen and make them big or smaller and different rendering can be done based on user's preference and range of abilities. And same thing we can extend it for different input modalities, the system can automatically choose the modality of interaction with the system.   
 Next slide, please. So the final example is of the simulation which I touched upon before and this is again a snapshot from our guide project and here I developed a simulator whereby using that designers can understand visualize and measure effective impairment on design. For someone from a software designing or media production background he or she may not have the knowledge that what actually happened to a person with macular degeneration, it is not always easy to get such a participant to take part in the design during the design stage. But using the validated simulation the person can visualize that. In this screen we can show how a person with red/green colorblindness can use it, and here we can simulate the effect of diabetic retinopathy on top of that so that overall screen becomes blocked and one more, please.   
 And finally we can also simulate pointer movement track for a person having frame in hand. And from our research we find that such users find it difficult to stop movement of a pointing device. And by visualizing this interaction we aim that designer can come up with better user interface design or some select the best design alternative and the best design alternative, but helping designers to develop a better system than without using it.   
 Next slide, please. So with that, we'll conclude the presentation. So the aim is to reduce digital divide among people with different range of abilities by personalizing systems and services. And another aim is to share personalizing information and metadata and secure platform independent way. And finally helping media to conform to UNCRPD and many times it is not possible to develop customized version of media for each individual type of impairment. So the aim is that by using a common user profile format and appropriate mapping mechanism we can cover a wider range of abilities of user than we are presently doing without considering the different range of abilities. So the right‑hand side is a picture from my lab and I acknowledge my students. So with that I will conclude my presentation. And if anyone has any questions I will be happy to answer. Many thanks.

>> PILAR ORERO: Thank you. Thank you very much, Pradipta. If you don't mind we will leave the questions to the end. And we will just go ahead with the next presentation by Masahito Kawamori. Thank you.

>> MASAHITO KAWAMORI: Thank you. So shall I start? Okay. Thank you very much. So I'll ‑‑ it is my great honor to be here and to present COVID‑19 and accessibility and what COVID has meant for especially ICT accessibility. Next slide, please.   
 So as we all know COVID‑19 is the worst pandemic or the disaster since 1945 or the last World War. But it has also required us to adopt to the new normal. And the COVID‑19 pandemic has accelerated in fact, the digitalization of society with what you might call a quantum leap. For example, companies worldwide have accelerated the digitalization of their business operations by three to four years. Sometimes ten times even.   
 And many companies believe that this is not just temporary. This is a lasting nature. And it is going to be staying after this COVID‑19 pandemic. And this is not just true for companies and businesses. But it's also true for health care and welfare.   
 Just one year ago at the beginning of 2020, digital strategy initiatives around telehealth and e‑Health and digitalization in general, were just something nice to have for those hospitals and clinics. But the COVID‑19 pandemic has made digitalization and telehealth absolutely essential for health care organizations.   
 Next, please. This chart shows how the quantum leap in digitalization, digitization is happening. If you look at the graph, the dark ones show the digitization trend in COVID‑19 crisis. And the dark gray ones show previous efforts to digitize. For example, in Asia‑Pacific Region, adoption of digitization is accelerated by ten years because as you can see before since 2017 until December 2019 the percentage of the companies who have been investing in digitization is about 33. But now it's 54%. So that means almost 20% up from previous years. So this is like a jump in ten years' difference. And it's also true for Europe which has 7 years and North America, 6 years. And globally it's 7 years' leap from previous years.   
 So this shows how COVID‑19 accelerated in a quantum leap manner the digitization of society.   
 Next, please. And we have to note that COVID‑19 is the first pandemic in human history where technology and social media are being used on a massive scale to keep people safe and productive and connected while being physically apart with social distancing.   
 This is what ITU and WHO jointly stated last year. And information communication technology, ICT, has now become as I said an essential tool in providing vital services to wider population.   
 And this is especially true for Persons with Disabilities, and ITU has been working with Persons with Disabilities worldwide to make ICT accessible.   
 Next slide, please. But also we have to note that this rapid change in digitization, rapid adoption of digitization is also a double edged sword for Persons with Disabilities. And they're potentially the most vulnerable segment of the population and they could be left out of this new trend of rapid digitization, unless we have accessibility in place.   
 And as the UN Secretary‑General Mr. Anthony Guterres mentioned it is the vulnerable segment of the people that are most severely affected, in particular those with disabilities. The world's one billion people living with disabilities are among the hardest hit by COVID‑19. If we don't provide accessibility to ICT this state will continue to be there.   
 And Persons with Disabilities face a lack of accessible public health information, significant barriers to implement basic hygiene measures, especially in Developing Countries, if we do not provide sufficient accessibility.   
 Next slide, please. So in that sense ICT accessibility, especially in the days of this COVID‑19 pandemic is essential, especially to Persons with Disabilities. If almost everything goes digital and online, Persons with Disabilities should not be left behind. Digitalization should be inclusive. And this rapid pace of digitalization of society calls for rapid adoption of ICT accessibility.   
 ICT accessibility is an absolute necessity. Not something nice to have as I previously mentioned. Especially in the post COVID‑19 new normal age. Next slide, please.   
 This is quite true for area of care, health care, welfare area. Since COVID‑19 forces everybody to keep social distancing, that means many, if not most, services go distant or online and remote. So that many hereto for previously, face to face was a normal practices, face‑to‑face conversation, or touching or very close proximity is normal such as health care, welfare and so on.   
 Should also go online and distant and remotely practiced. And that means those professions such as health care and welfare should accelerate the adoption of ICT and also embrace ICT accessibility.   
 With society going digital, health care and welfare and professionals, too, should go digital so that no one will be left behind. Next slide, please.   
 So I would like to emphasize this point again, the need for digital health care and welfare ICT. I don't know if there is a word welfare ICT coined before. But I would like to emphasize that this is ‑‑ there is an urgent need for such an enterprise, welfare ICT. Health care and welfare need to can digitized and go online to provide necessary information and care to Persons with Disabilities and other vulnerable segments to the pop ‑‑ of the population.   
 Related areas such as sign language interpretation should also be available online and framework of digital and welfare ICT for related services should be established. And Guidelines for use of digital technology and ICTs in those areas should be defined and inprovment to digital literacy should be made. Many people in those areas may not have any access to ICT in the first place.   
 International bodies and cooperation among them like United Nations, ITU, WHO, we have to cooperate, we have to work together to promote this new age of digital health care and welfare ICT.   
 Next slide, please. It's kind of iconic or iconic that one of the first victims or the patients of COVID‑19 and she survived, she became a sign language interpreter at Wuhan hospital in China. She was working at Wuhan hospital and was infected by COVID‑19. And after recovering she decided to return and help others fight against COVID‑19. What she decided to do was become a sign language interpreter. So that she can help deaf people in those hospitals to cope with COVID‑19. And this on the left you can see that she's actually doing her sign language interpretation at bed side.   
 But this takes a lot of energy and security issues and things like that. So what we can provide is ICT accessibility and by providing ICT accessibility, we can provide better health care in COVID‑19 pandemic.   
 Next slide, please. When we talk about ICT accessibility, we have to take in to account the importance of interoperability and standards. Because noninoperable devices and services are especially difficult for Persons with Disabilities to think of ways how visually impaired people and blind people have to cope with nonstandard proprietary keyboards. Standards based universal design will help accessibility. For example, a single raised dot on a 5 key on a telephone terminal it is a standardized design and helps people. ICT should also be standardized. Emergency call number 112, 911, et cetera, will standard sized. Standardized ICT will enhance accessibility for Persons with Disabilities. Standards will make services for affordable because it can be open source and accessible. So ITU together with other organizations and also Governments we can work together to create standards for interoperable accessibility.   
 Next slide, please. So I'd like to mention some of the standards that we are using ‑‑ we are creating in ICT in ITU, especially important for COVID‑19 situation. The first one is a telephone relay service, including video relay service, which is Sinequan for persons with hearing disability to communicate with hearing people and society in general. And also web‑based remote sign language interpretation which will provide sign language interpretation remotely. And also we need captioning just as we have today, and also for blind people, and visually impaired people we need audio description of what's going on. And also for them to have independent mobility we need audio navigation system.   
 And also for general public, I mean for general information concerning COVID‑19 pandemic as well as health care information, we need broadcasting and content delivery for general public, especially on IP network. And then since we have many conferences and meetings online, we have to have accessible remote conferencing and not just that we have to total conversation, which will be access ‑‑ provide ‑‑ able to provide accessibility for any type of disabilities.   
 Next slide, please. So I just list some examples of those standards. So this is an example of video relay service. On the left is a sign language interpreter who mediates a call from a deaf person to a hearing person on the right.   
 And on the right‑hand side, we have a caption telephone, which allows a person who has hearing disability, hearing difficulty to communicate with his own voice, but be able to read caption on the phone. And this is called telecom relay service. Next slide, please.   
 Next one is called video remote sign language interpretation or VRI. And these are the actual cases that happened in Japan where deaf people have a ‑‑ had an accident and hospitalized. And she needed to have an interpretation remotely on the left‑hand side. And on the right‑hand side a deaf person has a medical checkup and she talks to a doctor with the help of a remote sign language interpreter.   
 And these things can help deaf people as well as sign language interpreters from getting infected. Next slide, please.   
 Another example of standardized accessible technology is this audio navigation system for visually impaired. And this will be a very important tool for independent living during the COVID‑19 pandemic. By using this audio navigation system, visually impaired people can have access to subways, department stores, basements and things like that, where GPS cannot penetrate. So this is also an important example and this ‑‑ these pictures are taken in London where prototypes were tested. And now this system is standardized in the United States as well so that they will be used for wider usage.   
 Next slide, please. So I just introduced some examples of standardized ICT technologies. But there are further things that need be to addressed. We need standard. But for that we need good ICT infrastructure. And that's for all, not just for some. And ITU has connect 2030 Agenda which is an agenda to connect all to a better world. And this actually has been accelerated by the COVID‑19, kind of ironically. And also as I said we have to promote this welfare ICT and digital health care, especially during this COVID‑19 as well as post‑COVID‑19 eras.   
 And ubiquitous accessibility, this is also accessibility from the Point of View of social model. So a person with disability can go anywhere and get accessible services, rather than just because of a medical doctor providing or medical welfare people providing service.   
 And we also need inclusion and diversity. And not being equal. Everyone's different. So everyone has different needs. We don't have to make everything equal. We have to provide inclusive solution and accessibility. And for that we need to work with Governments and international bodies to promote standards in inoperable ICT for accessibility. So these are the issues that I would like to mention.   
 And the last slide, next one, please, so in conclusion, COVID‑19 pandemic has accelerated the digitalization of society with a quantum leap, sometimes like making things faster, like ten years more. And this is a double‑edged sword for Persons with Disabilities as they may be potentially the ‑‑ they are the mostly ‑‑ the most vulnerable segment of the population and they could be left out of this new trend of rapid digitalization unless we have accessibility.   
 So that accessibility especially for ICT accessibility is an absolute necessity, not something nice to have in ‑‑ especially in the post COVID‑19 new normal and many face to face professions such as health care, welfare and so on should accelerate the adoption of ICT and ICT accessibility. And the key to success is standardization.   
 Fragmented market with minutely differentiated technologies will confuse Persons with Disabilities and hinder universal access. And that's all. Thank you very much.

>> PILAR ORERO: Thank you very much, Masahito. It was really really interesting and very much to the point as was with Pradipta, and also the welfare ‑‑ the concept of the welfare ICT. It's really, really interesting. Let's move ‑‑ Masahito you have an open question by Olaf. If you would like to reply now and now we go to the next presentation by Andy Quested. Thank you.

>> ANDY QUESTED: Thank you very much Pilar. And thank you Masahito. Can I just say that what I want to talk about today with my background in program production is about content creation and how we make all content, my goal is to see if we can actually start to make all content accessible through a process of personalization.   
 But I just want to discuss some of the technologies that are being used and some of the I would say concerns about these technologies. There is a business solution for the adoption of AI technology is to automate and to reduce the number of people involved and to reduce the amount of money that's required to do a specific task. And to make it far more accurate and repeatable.   
 But for many others the driver actually is completely different. It's to do more, to use the same as we already have, so use the same expertise and same number of people, to use the same ideas. But actually to generate media that's accessible for everyone and all media that's accessible for everyone with an equal quality of service and experience. So that just because you maybe have a hearing impairment or a sight impairment, you shouldn't enjoy as content less than anybody else watching the same content. And I think this is a primary driver behind some of technology that we will discuss. ISO and ITU and EBU are all working around the idea of a group or a grouping of sensory and physical perception, and ideas for what is accessible and for what is personal. I'm very much of the idea that we are all different. There is not one size fits all.   
 We all need to have our own environment and that changes as we get older as well. We can't actually say it's 16 we will have the same hearing as we have at 60 or the same dexterity at 80 that we might have at 50. We still mentally want to enjoy content in exactly the same way. So sensory taste and smell are not quite there yet in media. But on their way. Interaction obviously physical and cognitive understanding and if we look at the ITU and EBU, as sort of pillars of personalization, you are seeing, hearing, participating and understanding and that's what I'm going to be talking about all the way through this. Technology solutions, again I want to talk about what we are doing now. And how this is beginning to help what we are ‑‑ our ultimate aim is to make all media accessible. The currently the pilots going on and trials. We are all used to captioning which is getting better but there is still not enough of it. It is not ubiquitous and it is not worldwide and not in all languages. For example, Japanese was not available under many international standards for captioning. And therefore it was always a compromise. But these two standards or reports from the ITU along with others that Masahito and Pradipta talked about is guiding us through how we can content and ICT for accessible. Just a quick reminder of what's going on, both at AI and advanced immersive sensory media options are being trialed and these are mostly areas that some of us have seen before, eye gaze, haptics have all begun to be used. As yet those are mostly first generation. We are beginning to see second generation versions of these coming out.   
 And second generation usually means they are going in to industry, in to consumer products. And just because I need to talk about this, there are also prototyping and proof of concepts going on and people talk about Avatars and how real they look. It is how to drive that signor and the international language that's needed for signing to be used or applied in the same way that captioning is now on content.   
 So what's AI doing? AI at the moment is it AI or machine learning? Most live it is machine learning at the moment. It is highly dependent on human input. And many, many people say it is a solution looking for its problem. And I tend to agree with occasionally when you see AI projects. What are you trying to address and achieve with this particular implementation or application. But systems are beginning to be successfully deployed. And the key thing about them, even if it is machine learning and not Artificial Intelligence it is still ‑‑ they are still learning. They are still getting better. They are still feeding off themselves. And the more they get and the more accurate they have get the faster they get at becoming even more accurate.   
 And the key thing is they are beginning to see allow people to generate more accessible content. And not just better accessible content but more content around more different areas of programming.   
 A couple of examples of this from Japan, quite a lot of this is from Japan where there is a lot of research going on with the TV companies but also in Europe as well. News captioning, about 200 words per minute, how do we automate this on live content continuously 24/7? The ‑‑ to get it right, you need to have a low word error rate, 5% or less. That actually is about the same as a respeaker, human captioner speaking in to a machine, about 5%. They are getting better but we are still seeing errors appearing no matter how those captions are produced unless they are post produced and then I have seen post produced captioning that's wrong. But the idea is you use a combination of both physical and human and machine to speed up this process and get it to be more accurate.   
 And if we have a look at the background to this, it is not just a simple respeak idea. It is taking data and information in and voice and reality voice and captioner voice in to a deep learning system. It's then comparing it and looking at the sentence structure and then applying the output. And it's a much more iterative process and the beginning to get faster and faster and we are seeing this more and more in realtime.   
 Signing for AI, there has always been this issue of Avatars. But those of you game engines will know that there are some amazing things. And these are two examples. The top example you can see here is you see in a little box there, there is in realtime. So this guy is actually controlling his metahuman. These aren't Avatars. They are metahumans in realtime. There is even a plug in for natural hair now which boosts it from being a slightly flat to a better two‑dimensional. The one thing we do with captioners is our captioner is nowhere near us. Could be anywhere in the world. We can do the same with signing. At the moment we need to have signors in the studio. There is a limited amount of time and number of signors. Will allow us to boost the amount of signing we can put on the program and new technology is allowing us to send second stream to video, through Internet connected TVs or via the new Codecs at the same video stream itself. So we can start to see motion capture as we've seen in that top screen. We can see that translated to data streams. Huge volume of life signing. Life signing is very difficult to do on a 24/7 basis. And as it gets better we can see translation in to different language, different sign language in the same way as we are seeing human captioners being translated in to multiple languages.   
 Audio description, AI for audio description, again audio description is post produced to fit it in to the narrative. But again more work is going on. This is an NHK example where data from the scoreboard, the information about the shots are being shown, the teams that are being used and the commentary from the live presenter and a synthetic voice text‑to‑speech algorithm is then used in to processor. That processor isn't just looking at the text‑to‑speech and what it is doing. What it is really doing is analyzing the commentary. That commentary is analyzed in such a way that the processing can insert the audio description live.   
 This is getting better and better and we know that synthetic speech is actually highly appreciated by people who use it. And is becoming much much easier to understand. The next one is we talk about translation. And this is another example from NHK. It is off air. And it is available now. And it was extended earlier to eight languages, English and to French and English to Spanish is working quite well. Again this is a human captioner and then the translation is done by AI. Allowing the viewer to switch in realtime between languages.   
 The issue around Asian languages at the moment is not so good. But it is learning. It is getting better. There a good understanding in the European languages but the Asian languages English to Asian contain errors with you are improving. We will see over the next year or so, more iterations. It is an example of how it is used. I hope the Japanese is right. Masahito will tell me if I put it wrong. This is Japanese to English. It is not straightforward. It is used to score the translation and used to look at the sentence structure as well as the individual words which is really important so it can create the sentence as it was supposed to be as opposed to verbatim translating the words which can sometimes have some really funny and rather upsetting or unfortunate results. How do we get this to the audience, get it from a studio or a live event to the audience? For some time within the movie industry and high‑end television industry where multiple versions of programs are made, we have a situation where we really need to think about how we can store and make programs in a much more efficient way.   
 It is an example from a BBC program, that what I have done is instead of different versions that are being created, the program has been split in to components, the branding, body of the program, it has a how it was made, and which can vary from program to program. More branding at the end, and credits and sort of typical program. But this is split in to its video, its object audio which can then be output as both enhanced audio or specialized audio. The captioning in multiple languages, description, audio description for each particular component part. And haptic enhancement as we've seen before.   
 Although can be streamed to a guess what they could be streamed to something we've been talking about before, your personal profile. That personal profile can be used to drive either your television with a particular options you want or your mobile device with that particular version, or you may have a completely spoke device, it could be any device that will allow you to enjoy content the way you want to do it.   
 And the other thing I just want to mention before I close, with a bit of video, and I hope the audio does work, a bit of video just to show how people, young people, between 16 and 25, 26, with disabilities are not only embracing technology solutions, but are actually demanding them are prepared to prototype them. And also having some quite emotional effects with them. Last time of this I showed two girls who lost their hearing going to discos and night clubs with haptic shirts. This was taken before the lockdown happened, 2019 from a book festival where a young girl who had lost her sight or losing her sight from 16 onwards, she lost all her sight was demonstrating live onstage.

>> About six years ago at the age of 16 Maisy was diagnosed with a brain tumor. Over the next few months her vision was reduced. Maisy had agreed to try on the stage the latest version of these GiveVision goggles. They use magnifiers on augment reality.

>> So Maisy are they working?

>> Yes, I can see your microphone and I can see that you are smiling and I can see the buttons on your shirt.

>> One of the things that you said you really miss is reading. Okay. So we have a copy of Harry Potter and the philosopher's stone there. Would you ‑‑ I don't know whether this is going to work, can you read us the first couple of sentences if I hold the microphone up? Can you see it?

>> Yes. I'm sorry. Okay. Mr. And Mrs. Dursley of No. 4 Pivo drive were proud to say they were perfectly normal. Thank you very much.   
 (Applause.)

>> PILAR ORERO: Thank you ever so much Andy. That's fascinating and again it fits very well with the concept that was started with Pradipta and not one size fits all and then picked up by Masahito. There are no questions in the chat. Masahito, did you manage to reply to the question that was put to you as an open question?

>> MASAHITO KAWAMORI: I could not find it.

>> PILAR ORERO: It says is Masahito saying that the issue of media is becoming a given, with vast amount of media being in electric form the abundance of devices capable of rendering the electronic form in to format is accessible to any person with any disability the head way media accessibility has made just in the last ten years seems to answer that question. That was the question or the comment.

>> MASAHITO KAWAMORI: Oh. Olaf, he is saying something or ‑‑ yeah. So he's say ‑‑ it is actually not a question. It is a comment. He is saying what we are doing we should keep on doing more in an accelerated manner. And I do agree. And as Andy's presentation showed we have new technologies and getting better and better now. We need to combine those traditional approaches with the new approaches that are coming in. And address the immediate needs of the Persons with Disabilities, especially during the COVID‑19. Because there are things that we can do now, you know. So we have to provide those and that's one of the things that I wanted to emphasize in my presentation about welfare ICT.   
 Yeah. So but welcome. Everyone can join and we can provide solutions. Thank you.

>> PILAR ORERO: Thank you. Thank you all. Unfortunately it is 1 o'clock and we have to close down the session. The session will be published online. And everyone is very welcome to see it. And send us comments if you or contact us if you want to. Thank you ever so much.

>> ANDY QUESTED: Thank you.

>> PILAR ORERO: Bye.   
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