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>> MODERATOR: Good morning. So if you would like to follow the audio please put the headset on, and you will be able to hear the voice, the audio more clearly and directly.

Okay. So good morning, and welcome to this session, the first session of the WSIS program today on safe listening. This session is brought to you in collaboration with the WHO. And it is really reflecting the effort that brought us here today as a collaborative effort between the WHO and the ITU to work on this very important topic, especially for close to a billion people around the world mostly children listening to music and watching videos, many of them may not be using the devices properly by setting the right level of hearing and which may every time affect their hearing. And may -- and turn in to a potential hearing loss. We have a panel today that is distinguished in terms of expertise on this topic. These colleagues have been

working on this topic for many years.

First on my right Ms. Shelly Chadha, medical officer at WHO. Then next is Mr. Simao de Campos who is the counselor of Study Group 16. On my left is Mr. Masahito Kawamori who is the Rapporteur on the e-Health question in Study Group 16 of ITU-T working on this standard that's developed. And last but not least Ms. Roxana Widmer-Iliescu, who is the senior program officer of the digital inclusion division at the development sector of the ITU.

So the lineup of the table here is from the requirements in terms of health to the standard development to the implementation of the standard by Member States and countries and device manufacturers and operators around the world. My name is Bilel Jamoussi, the chief of the Study Group department in ITU-T. I'm responsible for the various Study Groups and Focus Groups and regional groups that work on standards development in the ITU. I am pleased to welcome my colleagues here and welcome you to participate in this session. I think we have about an hour and a half or so, maybe a little less if we want to leave time for the next session to be set up.

So what we will do today is give an opportunity for the colleagues to introduce their effort and as you can see on the screen we have captioning which will help in the communication, make sure we are using all channels of communication, audio and visual. We also have sign language interpretation. So I would like to invite anyone who would like to follow closely to come up to the front of the room. And if there are questions later on, if you ask a question, please identify yourself and your entity that you help. And if you can spell that for the captioner that would be great. That would also make Ms. Andrea Saks who is sitting in the front of the room happy because I am following the guidelines to make this inclusive in terms of communication.

With that just in terms of introduction and setup of the panel and the session today hearing loss is a real problem. Today with the use of devices to listen to music, to watch videos, kids, I have a 14-year-old. He comes back from school and the first thing he does is he gets his iPad or goes on TV and watches movies and listens to music on his way to school and Waled, and I have been personally worried about the level of listening because I can hear, overhear from his headset what he is listening to. And I was wondering if there wasn't a way to control the device to make sure that the volume does not go beyond a certain level but I couldn't find it.

But luckily with the work that my colleagues have been doing over the past few years we might start seeing some sort of hearing adjustment of the level that will make it safer for our

kids. And there is more than a billion people, mostly children at risk of hearing loss, because of the volume and duration of the hearing. So that was the domain expertise that came from WHO because today when we talk about digital X health or transport or finance we need to bring the domain expertise. ICT experts like ITU, together we can come up with guidelines worldwide. I am pleased in the sense of the collaboration that is going on between WHO and ITU on that front. And with that domain expertise in WHO bringing the domain expertise in ITU that has been working on digital content, compression of audio and video, various e-Health applications and services, multimedia in general, we have many experts in our Study Group that look at it from the ICT or digital perspective. So when you combine the two, the health expertise and digital expertise we can come up with solutions that would be really what the world needs. And that's where Roxana is going to tell us how we are taking this WHO ITU standard and working with Member States to make sure the standards are implemented and to give them the tools to implement the standards, whether by the health ministry or the ICT ministry or the collaboration between the two ministries that's critical to make safe listening happen in our case. With that setup of the session I would like to first invite Ms. Shelly from WHO for her statement.

>> SHELLY CHADHA: Thank you. So good morning, everyone. Thank you for joining us on the first day of the WSIS. It is the first day, isn't it? And right in the morning and it is a beautiful spring morning. And I was -- I realized that when I woke up today morning and can you imagine, I was woken up actually by bird song, by birds chirping loudly outside my window. It was quite amazing to lie in bed for a couple of minutes and listen to that. And it reminded me that, you know, one of the parts of our body that never rests, never sleeps and perhaps is the reason why we take it for granted are our ears. And because they are always on the job whether we are sleeping and they wake us up, when the alarm rings or in my case the birds are chirping, that we often don't realize what it is like to actually have hearing loss.

So I thought first let us start with just giving you a simulation. And could you click on that and play that video? Just a simulation of what hearing loss actually sounds like.

>> I know I'm young. Could be a little bit wiser but I have had my -- and fire. I note the call will suffice. Please don't underestimate, if you -- for once in your life. Just one step.

>> SHELLY CHADHA: So this was just to give you an idea that well, there are different degrees of hearing loss and based on the kind of hearing loss one has, you would lose certain sounds, the sound of speech, the sound of birds to start with. So this

kind of hearing loss, the prevalence of this has been rising and it will continue to rise unless we take some action. Last year WHO predicted that if the current situation is allowed to persist by the year 2050 one out of every ten people living would have what we term as disabling hearing loss which is hearing loss of moderate or more severe degree in the better hearing ear. And if we look at the number of people who have hearing loss of lesser degrees it would probably be much more but here we are talking about that kind of disabling hearing loss.

So many factors across the course of one's life, not just noise, but many factors contribute to hearing loss. It could be infections that we get as a child, genetics factors which cause our hearing to decline over time or even be impeded. It could be certain medicines that we take, but a very key factor in hearing loss causation is noise. And what is important is that many of these factors are actually preventible. And a key such preventible factor is noise.

Now we have been used to thinking about noise and relating noise induced hearing loss to the occupational sector where people work in noisy factories or noisy environments and therefore, you know, get hearing loss. But the fact is that today this noise is not just limited to occupational setting as well pointed out, our children are at risk of it because they are blasting their ears with these loud sounds all around the day and all around the world. Could you just press I recognize the content? Could you click on that and continue? How do we hear? Now sounds, sound is like a wave and these waves come from outside and they enter our ear, this external ear, this little hole that you can feel and through this hole they go in to the -- this is the external canal and they hit what is the eardrum.

Now once this sound hits the eardrum it causes the eardrum to move like this. And behind the eardrum are three very tiny, very delicate little bones. They are among the smallest bones, the tiny bones in the body. As a matter of fact this bone here called the stapes is the smallest bone in the human body. These bones vibrate with the sound. And this vibration is then transmitted in to the ear, in to a shell-like structure, snail-like structure which is known as the cochlear. Inside the cochlear there are millions of hair cells. You can see some of the cells here. They move with the sound. So when they move, it leads to the generation of electrical impulse and sound is converted in to electricity. These electrical impulses picked up by the nerve and this is transmitted to the brain and hearing takes place.

So a very short lesson in human anatomy and hearing. So this

is how we hear. And what is really -- well, of course, the entire process is important. But these little hair cells are crucial because it is these hair cells which convert with change, the sound energy, the mechanical energy in to electrical energy and cause well, the electrical -- the acoustic nerve to be stimulated.

What happens when we listen to sound, when we listen to loud sound? Now imagine that you are using your arm every day to write, to work on your computer, but tonight you decide to go and play tennis. And you are using your arm at a very high intensity and velocity. And what would happen to your arm, it would get tired? And that's what happened to this hair cell when it encounters very high intensity sound, when it has to move a lot. So you can imagine this little hair cell which was here has to keep beating like this. And this tiny hair cell it gets tired. It gets tired like this. And then you go home and just like you go home after the tennis game and you rest and gradually in maybe a day or maybe two days depending upon how hard you play it, and how out of shape you are, your arm recovers. So once you are out of the loud sound your hair cell also recovers. But imagine that you do this to your hair cell every day, this tiny little dainty cell which is a fraction of a millimeter. It is facing this every day when the last son is putting his headphones in his ears and listening to a volume that can hear sitting next to him.

This is what happens to hair cells every day and if it gets a chance to rest it may recover. When this happens day after day, week after week, month after month this little hair cell gets exhausted, tired and it finally dies. Cannot recover any more. And that's when this happens, you can see these are the neat little hair cells. We have very limited number of hair cells that we are born with. And once a hair cell is destroyed it can never be regenerated. And so the day a single hair cell dies we lose just a tiny bit of our hearing. And when they start dying out in hundreds and then thousands that's when hearing loss sets in.

So hearing loss which is caused due to loud sounds is essentially irreversible. The good news is that it is also completely preventable and to prevent hearing loss which is being caused by listening to loud music it is just safe listening practices.

The fact is that over 50% of young people who listen to music through their devices do so in a way which is putting their hearing at risk. And studies show that 40% of people who go to, well, concerts, music venues, bars, discos, et cetera, do so in a way which is putting their hearing at risk, either experiencing music at a volume or so frequently that it leads to

damage to their hair cells. Based on this WHO estimated that over a billion young people are at risk of hearing loss due to the way they are listening to music. In order to address this issue, in order to take action and make sure that we can prevent this hearing loss before it actually sets in, WHO in 2015 launched the Make Listening Safe initiative. Now the Make Listening Safe initiative has a vision. And here I would like to put a disclaimer, WHO and I think ITU, I can speak here on behalf of ITU as well, we are not against music. We are not against fun. We are not against enjoyment. We want people to have fun to enjoy their music and in order to do so at all times we need to make sure that we do not put our hearing at risk.

So the idea, the vision of this initiative is that people of all ages should be engaging -- should be able to enjoy listening to whatever it is that they want to listen to, to music, to watch movies, whatever they want to do. But without putting their hearing at risk.

So in order to achieve this, well, vision of the future, WHO works in two ways. On one hand what is important is to raise awareness, to inform people, to inform listeners, policymakers, professionals about the need for safe listening, about the fact that people are losing their hearing due to loud sounds and that this can be prevented. But at the same time we also need to be able to provide people with those suitable tools, with those suitable regulations or apps which can facilitate safe listening. It is not enough to just raise awareness but it is important also to provide the required tools that can facilitate the practice of safe listening. So in order to do that, WHO identified three areas of work in 2015 and these are the areas that we are working in.

Firstly, is to develop a global standard for safe listening devices. So one of the problem areas that we identified was the unsafe use of personal devices, of Smartphones, of MP3 players, of such like. So to develop a global standard to address this. The second area of our work looks at raising awareness through a public health campaign and finally to develop a regulatory framework for safe listening venues because that's the second area of concern that we have. So WHO identified these three areas of work. I'm going to talk just briefly about the standard because that's what we are here to discuss. So this standard, the rationale for having such a standard is that while we think that increasing access or -- and the improper use of technologies of Smartphones, of other personal audio devices and systems is part of the challenge of unsafe listening and hearing loss. It is also true that ICTs can become a part of the solution.

Today technologies, mobile technologies are being used

worldwide to promote health in many different ways, including changing our behaviors about how we work, how much exercise we take, how much water we drink, how much sleep we have. So we can also use this technology to drive change for safe listening behavior. And with that rationale we worked with ITU, we partnered with ITU since 2015 to develop the global standard for safe listening devices which applies to personal audio systems, including Smartphones, MP3 players, et cetera, and it was launched not too long back.

So essentially just to summarize, this standard has three recommendations. You can go through the entire document but just briefly in summary it has three recommendations, key recommendations. Firstly is to monitor and display. So what the standard says that every device which complies with it should be able to monitor what is the intensity at which a person is listening, what is the time for which that person is listening. And thereby estimate how much sound that individual is consuming and display this. So record this information and make it available to the user at the touch of a fingertip. Secondly is to offer volume limiting options. So where a user is using or has consumed 100% or nearly 100% of their sound allowance, this should offer the use of option of automatically reducing the volume to a safe level. Or -- and provide parental control option whereby parents, concerned parents can through a password protected interface set the maximum limit of sound that their child can consume.

And lastly, but very importantly, is to inform, inform the user regarding their sound use, not to give generic, not only to give generic information but inform the user this is how much you have listened today or over the past week. So give them also personalized messages based on that. I wear this watch since last year or so and well, it is so smart it tells me now every morning that do you want to start your workout. Even if I don't want to I feel sometimes compelled by the watch to do so.

So give the user personal messages based on your sound use, listening profiles, their preferences. You are reaching 80%, 100% of our sound allowance. Would you like to reduce the volume or shut off or give your ears a break and so on? So these are the key recommendations of this standard. In order to implement this standard we have also developed a practical guide which is a toolkit. And I will not talk much about this because Roxana will be introducing it. Besides this, WHO has a number of information products and materials which are available on our website in order to inform people about safe listening and the risks of unsafe listening. So including, I don't know, okay. This is like little social media materials that we put out from time to time which can inform young people about the risks of

unsafe listening and what sound allowance means and so on.

(Music).

>> SHELLY CHADHA: Can you move it forward, please? Okay. Thanks. So in the future we are also -- we just started working on the global standard or regulatory framework for all recommendations for safe listening venues because it is also -- it is important to address both the issues in parallel. So we are also now working on that, looking at what the requirement, what kind of venues we need to address, what are the various issues and venues that must be addressed. It is not just about controlling the volume. It is about giving people a good experience, a good listening experience, not curtail their enjoyment but allowing them to enjoy but in a way that does not put their hearing at risk. So we are looking now at the various options for this.

And today here all of those who have joined us here I invite all of you to become a safe listening advocate, to advocate for the implementation of this global standard. Maybe some of you are from the government or maybe you are from the industry. I invite you to adopt this standard, implement it in your country through your company or if you belong to the Civil Society, then to push the manufacturers, to push the countries to actually adopt it and implement it. And, of course, raise awareness for safe listening. So thank you very much for your attention, for listening to me. I invite you all to listen to the call of the future and to make listening safe. Thank you.

(Applause.)

>> MODERATOR: Thank you very much, Dr. Shelly Chadha, from the WHO. Just for noting that Dr. Shelly is an audiologist. So you are hearing the words of an expert on this topic. Right?

>> SHELLY CHADHA: I'm an otolaryngologist.

>> MODERATOR: She is the subject matter expert on this topic. And I hope that we can take this message to really broadcast it worldwide and not only to the health ministries but also to the ICT ministries. And as I saw the video, potentially to the education ministries because if we reach out to the children and educators every family will be aware of this topic. And through that knowledge there will be more and more adoption and need and request to implement the standard worldwide by the various device manufacturers that will make it a win win for everyone. Device manufacturer, the families, the kids and the Governments providing the adequate guidance. I also see some experts in the back of the room working on Smart Cities. And as we in the ITU have some KPIs, key performance indicators on Smart Cities perhaps in the next revision of the standard we could have one of the KPIs being the number of safe listening devices deployed in the city to really further encourage the

deployment and the use of the safe listening standard.

With that thank you very much for setting the frame of the need and the danger of not having safe listening devices and safe listening standards. I would like now to turn to Simao de Campos who is the counselor of Study Group 16 which is the ITU group working on standards development in the area of multimedia, including audio, video and especially e-Health standards for a number of years. So Simao will tell us the story of how we partnered with WHO to turn this health requirement in to an international standard.

>> SIMAO DE CAMPOS: Thank you all for being present here and giving us your precious attention for this very important matter. So I'm going to speak a little bit on more detail on the standardization part, the development, some of its features. Shelly already gave a good grasp of the standardizations part. And we thought it would be useful to dig a little deeper in to the standards itself. So why you got here, why you develop the standard? So as Shelly mentioned we have over 1 billion people of not only children but young adults as well at risk of hearing -- incurring hearing loss because they are overly exposed in a recreational way to loud sounds. And as Shelly well described this is a silent and progressive irreversible condition. And in 2015 we had a very interesting testimonial that if you have the opportunity I suggest that you hear it from a younger gentleman called Matt Bady that lost his hearing in just over -- during a day and had an incident. And then all of a sudden he had a very severe hearing loss at that moment. Of course, it was something that was building up over time and just happened. And had a very severe hearing loss.

So it is very interesting to hear also this to communicate because Matt was about 21, 22 years old when he recorded this interview for us. So he speaks directly to people of younger age. And it is many times hearing from the peers to get better the message. I would encourage everybody to take a look at that.

The other aspect is that you hear people from the medical profession and audiology making the parallel with the noise exposure. I personally don't like it because as the terminology and a lot of the assumptions we make come from the occupational setting. Music is not like noise in the sense that we like it. We want to hear it. In a way it is easier to communicate to people, don't get exposed to noise because you don't want to hear noise. But music, oh, come on, I want to hear it and I like it in this way. Nothing happens. So the process of hearing loss has to be introduced and for me gives a little bit, there is a parallel with other types of addictions so to speak. I don't want to use addiction to sound, but in a way there is a parallel because music gives us pleasure. So at the same time that

certain drugs also give -- so there is a process there that we want to hear music. And the more you hear with your iPads, with your personal devices you want to continue to hear it. There is a positive feedback mechanism. You want to keep doing it. So it is very important that we convey a message of how to do it safely. So -- and then another reason that gave us strength to move forward with this was WHA, World Health Assembly Resolution on the prevention of deafness and hearing loss. So this gave some of the mandate for us to keep moving in this direction. And how we got here, so as Shelly mentioned we had a consultation meeting in October 2015 that we kicked off the project. The first thing we did was a gap analysis to see what kind of specifications were out there. And not totally surprisingly but very discouraging we found that only Europe had some standardization going on. There was an existing high threshold standard.

Maybe some of you who have live in Europe have seen this, that there is a level, that there is a warning that sets up. It says you are hearing too loud. You have to click that button to say no. To continue to listen. But that's not very effective because it is just a level and people can easily override. There is no component of education or anything in that process. We thought this was quite essential. And in other parts of the world there is sometimes some guidance but not much. So we thought well, this is something we should do. So we have been working, we started working at that time in developing these umbrella specifications that we get to the best practices. Take on some new work that has been developed for Europe in terms of dosimetry. You measure for how loud and how long. Not how loud but more how long as well. And we were able to complete this work in July last year. And we went to the approval process for the new international standard that we approved in August and published on the ITU site in November.

WHO then took this version of this standard and changed the language in order to communicate better with their own consistency and made another version of this standard that is the same technically speaking but that conveys a message in different language. One is for device implementers, people that would like to implement the device. And then one that is ICT like I would say, more medical relevant for other audiences. That was launched in February this year, in a big event splash event in WHO with Dr. Pedros in attendance and Mr. Malcolm Johnson from ITU and promoting the idea of that work.

So I kind of already mentioned the -- this content here. So we have the duplication. In the ITU side it is called very user friendly name, recommendation ITU-T H.870. You all memorized that? Not really. But just keep in mind there is an

international standard that is a formal standard that is published by ITU and by WHO on safe listening devices. And I hope you can get the message that there is a specification on there that implementers can follow in order to make listening safer.

In terms of difference between the two publications it is a question of addressing different publics and getting the message across. So what is it that we have now in this standardization? First it is evidence-based. So we didn't make crazy assumptions and went through with what you thought could be the best. Everything that we wanted to put in the standard that I got in the standard has evidence basing, why those decisions were made. The major tenant is that the exposure to occupational noise, that framework also holds for music which is based on a measurement of 40 hours a week or eight hours a day exposure to sound for a lifetime of 40 years.

So those exposures where there is the best science available. Maybe in the future this will be revised. Then we adapt. This is the best information we have today and also all the existing standards follow the same track. We built upon the existing dose measurement standards that were published for the European context in the EN550332-3 as well as in the international context in this IEC standard. Our standard however provides a little bit more. We also provide an overview of the concept so that people can understand what you are talking about, the reasons why we are doing this and a little bit of the introduction that the path holding hands to allow people to understand the issues. We introduced one additional operational mode, the European standard has just one mode that we call it for adults which has a certain reference exposure. However we thought it might be prudent to have another mode for sensitive users and that includes their children. They are developing and we don't want to have them exposed to too much sound.

So we chose levels that were considered safer for them to develop. And also allows people that are more sensitive to sound to listen at lower levels and to be more conservative with their hearing. We have these two modes that tells in terms of dosage how much could be used.

There is also a volume limiting that means after a certain exposure of time that is set according to this mode. The users are warned. And then the level that they are listening to is lowered until they acknowledge that process. And -- but then just acknowledging okay, the idea is that the standard also gives guidance on information that device would offer to the users about how they could behave better to listen more safely. So here we have four bullets that describe some of these features. So first we keep a record of how the user is listening

so that you can provide personalized recommendations and cues.

Has also general information about how to listen safely, risk awareness and other information in that direction. A general usage report, so besides being warned or made aware when you hit a certain limit you want to know well I have been listening the last few days a dashboard for when you are walking, exercising, you want to know how many steps you did. Something like that to tell you how healthy or unhealthy has been your listening. And also provide some further guidance like ambient noise control and parental control.

So now we have also the WHO and ITU toolkit that Roxana will describe in more detail but basically allows, gives a guidance for different stakeholders. So including Governments, industry and Civil Society on how to promote and implement the standard, WHO. And we are trying to help them as much as we can in the advocacy and awareness part. This is -- this event here is part of that activity. And on the standardization front we have, we are working on guidance to help industry on how to check compliance of an implementation of a music player to this standard. And we are also seeing some of the future improvements to H.870. And we are looking in to build an international standard would be a mechanism for safe listening public spaces. So working further as Shelly had mentioned. Masahito is going to speak more about those items in detail. Thank you for your attention and thank you.

(Applause.)

>> MODERATOR: Thank you very much, Simao, for painting the picture on how we got from the WHO requirements and need for an international standard to the actual standard being published. And it was published November of last year and then with the -- in collaboration with the development sector of the ITU we have been working on a toolkit. And this is the toolkit that will go in to the various countries and help to implement this global WHO ITU standard. And we are happy to have Roxana with us today to share with us the toolkit and how it will help us make an impact worldwide. Roxana.

>> ROXANA WIDMER-ILIESCU: Thank you. After this very technical presentation of my colleague Simao I will try to make it very simple for you and just try to present this toolkit responding to you to three questions. Why? First of all, why we are all here today? Why you have put the effort to join us this morning? And why my colleague and why ITU and the World Health Organization gets together to discuss about this issue? Because our work, it's people-centered. Because we all believe that the United Nations is trying to improve people's lives. And we are talking here about over 1 billion youth risk of hearing loss due to unsafe listening to personal devices, audio systems and

practices.

May I have the clicker, please? Thank you. So how we arrive to try at least to find a solution to this challenge? We put together all the stakeholders and ask them to bring the piece of the puzzle that means their experience and their work in order to put together this knowledge and to develop a standard. And a toolkit which means the guidelines to implement this standard. Because while it is a very useful thing to have the standard without implementation all the work do not have any impact.

So actually the toolkit address some guidelines to Government, to industry partners, to Civil Societies and provides rationale for action, concrete steps for it, but also guidelines on which should be the key partners that can help in this implementation. And which would be the concrete tools that we have used to manage, achieve this goal of implementation.

Several Governments -- are you aware that the Governments are the biggest buyers in the world? In general 10 to 17% of their gross domestic product, 17% is more in Developed Countries, address public procurement. So through procurement policies Governments can develop a safe and healthy digital market in their countries. They can, for instance, ask to introduce these standards through their legislation, regulation and policy or have some public awareness raising campaign. But what they will really win if they do so? Increase their political visibility because they take care of their own citizen. And also because they will obtain a better value of the products that they will buy. Of course, these will in principle reduce cost of the health care and by default increase country economic growth. So a lot of wins if they will try to comply with these standards through their procurement requirements.

Industry, it is a huge challenge for industry to ask them to include the standard in their new equipment. However, what industry really wants they want to attract more clients and to increase their business profit. So how to do so in this environment for the moment, this standard is not yet compulsory in the legislation which is true. But they can voluntarily adopt it. Adobe says ten years ago that for them it is not worth to have two lines of fabrication. And in general big industry wants to sell their products throughout the world in Developed Countries, in Developing Countries. So for them definitely the voluntary adoption on this will make them lead in the field of safe listening system, which in time will be in any event require worldwide. They can lead this market but also improve the over quality of their products.

The win is exactly what they want. They will attract more clients and they will improve business benefit. The Civil Society, what can the Civil Society do? Well, the most

important, the advocacy work. The advocacy work and the awareness raising campaign to sensitize people regarding hearing loss prevention and safe listening. And the toolkit also, advise them on who can be the strategic allies, educational institution because they have an important role in shaping level education. But also the young people really looking at role models. So perhaps some sound music industry, role models or Ambassadors who may adapt this and say hey I like music, but I also like to keep my hearing in good health. They can also try to sensitize manufacturers of devices and, of course, motivate them to voluntarily implement these standards. So the Civil Society has a very, very important role because they can influence customer behavior. They can influence market penetration, ensure a better product for customers and also issue customer protection from possible hearing loss.

But also each of us in this room can do something. You can do something. You can speak with your children. You can speak with your friends or with whatever neighborhood you have and let them know that it is important. So each of us can play a very important role to ensure that tomorrow our kids will be in good health. That we let them (inaudible) which enable them to continue in good health hearing the music. Thank you for your attention and for making listening safe for our children.

(Applause.)

>> MODERATOR: Thank you very much, Roxana, for introducing the toolkit. And I hope all the colleagues in the room from the ICT and digital ministries, the health ministries, perhaps education ministries could reach out to you after the session and see how they can take advantage of this toolkit that will have a potential of saving the hearing loss of potentially one billion kids who are in the age of 12 to 35 as was introduced. Yes, please we have a short video from Roxana. Please go ahead and play the video.

(Video).

>> Over a billion teenagers and young adults are at risk of developing hearing loss. This is due to the practice of listening at high volumes for prolonged time. Such unsafe listening harms the hearing cells inside one's ears. Over time this results in tinnitus and hearing loss. Once hearing is lost it does not come back. However it can be prevented. For this purpose the World Health Organization and the International Telecommunication Union recommend a global standard for personal audio devices. This recommends that all devices such as Smartphones and MP3 players should include in-built safe listening features. The features include a software that tracks and shows the users how loud and how long they have listened through the device. Tells them when this is likely to put your

hearing at risk. Volume limiting options like automatic volume reduction, and parental control. By providing accurate information along with personalized cues, devices complying with the standard will empower users to make safe listening choices. Governments should implement this standard by developing suitable regulations and policies, preventing hearing loss will mitigate the rising costs associated with its care. Manufacturers of personal audio devices can demonstrate the concern of health of their clients.

Civil Society must play its part in advocating for the implementation of this standard by Government and industry as a means for hearing loss prevention and protection of consumers. Hearing loss is on the rise. Let's all work together to improve the hearing health of our future generations.

(Applause.)

>> MODERATOR: Very nice. That's a nice video that is kind of putting the whole picture in a few minutes and could be used by many stakeholders. Hopefully you already consider subtitling it with different languages to make it more reachable.

>> The first words you should say in speech are the last words you should say in a speech.

>> MODERATOR: All right. Thank you for that, for both the presentation and the video. I would like now to invite Mr. Masahito Kawamori who is the Rapporteur of the e-Health question in Study Group 16 to share with us the next steps. Thank you.

>> MASAHITO KAWAMORI: Thank you very much for introducing me. Okay. I would like to introduce our next steps. So what we are going to do. I think I will compliment Simao's presentation as well as Shelly's a little bit. And there are some slides that I prepared that introduces the background, that they are not so relevant now because it has already been covered.

So we are working on personal audio system. And this is the target of the standard. And these are the two publications that Simao mentioned. The scope we introduced, concept of equal energy principle was just presented. And we also introduced new unit and two modes of safety levels for adults and children. And guidance on health, communication and the basics. Shelly presented that the sound is basically just pressure in the air. So it is very important that we should know that we are -- what we are talking about when we say pressures. So as Simao suggested, explained in the environmental noise occupational context it has been a practice to use the unit called decibel for a long time. But it -- this concept is rather difficult to fathom because it is -- there are many different definitions of decibel. So decibel is based on the idea of logarithmic which is rather difficult to appreciate for many different people,

ordinary people actually. And this list lists the different levels of decibels in sound pressure level which is comparable to what we actually hear.

So, for example, in the presentation, in this presentation 94 dB is one pascal and this is the pressure exerted by one U.S. dollar bill resting on a flat surface. If you have 140 dB spl which is ten million times the threshold of sound of hearing. So when you hear -- when you hear the word, I mean the number 94 and 140, it doesn't seem to be so different but there is a big, big difference in the measurement. So it would be easier, okay, so this is also interesting. For example, the darker side is a traumatic area. And the light one is healthy or safe area. PMP is personal music player is actually threatening. If you listen to a personal music player for a long time at a level of 90 dB it is almost as hazardous to be listening to a chain saw for many hours as well. So this shows that dB, decibel measurement can be made more understandable so that people can see these dangers in hearing.

So the WHO has come up with a principle called equal energy principle, which states that the total effect of sound is proportionate to the total amount of sound energy received by the ear, respective of the distribution of that energy in time. So that means less energy for longer periods of time may mean the same as more energy for shorter period of time. They can have the same effect on the ear. So, for example, on the graph on the left-hand side shows different distribution over time with sound pressure. On the right-hand side you have just one chunk of sound pressure. But they are actually the same as long as -- as far as the ear is concerned.

So this is the equal energy principle. And using this equal energy principle we introduced a concept that Simao explained we call dosimetry. It calculates the sound pressure as the energy of dosi and it is integrated over the duration of the exposure. So it is time and duration. And then the unit we introduced is pascal squared R. It is not so familiar but I think it is important that we will introduce this concept so that people can understand actually the ear is receiving a lot of pressure and energy when you hear music at a certain level.

And this is the calculation and I don't want to go in to the details. But one thing is that if you listen to 80 dB sound pressure level for 40 hours that will be the limit that is considered safe. So based on this background dosage and dosimetry, WHO and ITU standard recommends two levels of risk or the limit. The adult one that Simao mentioned or a general one which is 80 hours for 80 dB in a week which is 1.6 Pascal squared R or strict one which is 40 hours for 75 dB which is 0.51 Pascal square hour, this is for children. So it shows that

children can sustain only about one-third of adult hearing level. Okay.

1.6 Pascal square hour is that we need. That's the limit. So if we have this limit, then we can monitor and then you can -- we can advise the user that the user is using up his sound allowance. So that's -- that was the point that Shelly was making about monitoring and also health communication. And that was what this standard has codified.

But now I would like to go on to the further related work. There is certain things that we have to specify in our standard. One of them is volume limiting that Simao mentioned. And there are some devices other than personal music players that are related to music, for example, gaming devices and also virtual reality and also we have to talk about headphones and sensitivity of headphones. And then we may want to define some several different profiles of sound devices. And then we would like to introduce some implementation guidelines. So that industry can actually implement.

And we are now working on conformance testing specification with WHO which is called conformance specification for H.870. And it is a checklist for implementation. So we can -- you can -- if you are an implementer then you can make this -- take this checklist and you can check against the checklist to see if you your implementation is compliant with H.870. And we are getting feedbacks from manufacturers, Smartphones, PMPs and headphones, earbuds. And I hope we can finish it very soon.

And also we are working on standard, on personal sound amplifier. Personal sound amplifier is a -- anyway, it is called personal sound amplifying products. And it is currently working, worked on with proposals from the European Federation of the Hard-of-hearing and the European Association of Hearing Aid Professionals.

And this draft recommendation is based on the same principle as the WHO ITU standard for H.870. So personal sound amplifier looks like this or this. So it actually looks very much like a hearing aid but it is not a medical device. And it is very readily available at a very, very inexpensive price, like \$10 up to \$400 U.S. So people can just go out and buy, but the problem is some people don't know the difference between medical device hearing aid and this personal sound amplifier device. So they just buy it for as a cheaper version of hearing aid. And that is rather dangerous because medical device is specifically controlled by FDA and standards, but there is no standard for personal sound amplifier device or products. And currently there are more apps on Smartphones that would give the same functionality as a personal sound amplifier. So that is more dangerous and it is getting similar to the situation with

personal audio systems.

Although the market is smaller. So that's why we started working on this standard with the European Federation of the Hard-of-hearing. And then there is a new work on sound exposure regressional venues as Shelly introduced. WHO has just initiated the work for global standards for sound in entertainment venues. Identified what venue we are talking about and what kind of sound limitation, hearing protection and monitoring and warning systems. And these are the things that have already been discussed and WHO will more explore on this type of environment and to get more information. But as far as ITU is concerned we are not too sure yet if it is ICT at all or ITU will be involved in standardizing yet. But we will keep track and monitor and we are trying to help. Okay.

So that's all that I have. Thank you very much.

(Applause.)

>> MODERATOR: Thank you very much Masahito Kawamori for introducing more of technical foundation behind the standard and also an outlook of the future. It is now time for your participation in this session to perhaps ask questions or if you have any comments to the panel.

So I would like to open the floor if you would like to make a comment or ask a question, please raise your hand, introduce yourself and we will be happy to try to help. Okay. I don't see any questions from the room. I know that the captioning of this session will be made available after the session. I'm not sure if we will have a recording of the session. But for sure the captioning will be made available. The panel is available for any questions that you might have offline. I hope that the session was helpful in showing how health requirement started by the domain experts in the health field joined shortly after by domain experts in the ICT or digital field from ITU turned in to an international standard a few years later. That's published in November 2018 to make listening safer for potentially 1 billion youth at the risk of hearing loss which is as you have seen throughout the presentations both from a medical perspective and from a technical perspective how it could happen. And how the standard could help in building new devices that are safe. And the toolkit for the implementation in the various Member States by the various authorities, whether it is the health ministry, ICT ministry, education ministry to help promote the existence and availability of standard that could be downloaded by mouse click. It is free.

Also the video, the toolkit, all of the documentation is freely available from both the WHO and the ITU websites. Personally, going back to my son's story, I have been always looking for this volume control button feature which I hope I

can find on the mark soon. I will be looking for a headset device to look for the parental control button on the device. I would like to thank you very much for your attention and participation and thank my colleagues here, panelists for sharing their expertise in this topic. Thank you very much. I'd also like to thank the captioners and the sign language interpreter. Thank you.

(Applause.)

(Session concluded at 10:44 a.m. CET)

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