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ITU
WHO Make Listening Safe Initiative Meeting Q2-21 session
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>> Is there anyone here? From TSB? Hello. Oh, yes. Okay. Now can you hear me, captioner?

>> CAPTIONER: Yes, I can.

>> We will start the meeting and taking a roll call so people can know who is here. Just quick self-introduction and name and for the captioner as well. I'm Masahito Camery and Rapporteur for questionnaire 2.

Mark, Shelly.

>> Good afternoon. Shelly Chadha from the World Health Organization.

>> Hello. So I'm (?) And from NICT Japan, and I'm a co-chair Working Party for Study Group 21. Thank you.

>> Good morning. Good afternoon and good evening I'm from Oki Japan and Chair Working Party 2, opportunity 31. Thank you.

>> Good afternoon. I'm Chairmain of Study Group 21 and very nice to join this session. Thank you.

>> Simao Campos and with Study Group 16. Thank you.

>> Good afternoon. Raj Desai with Apple.

>> (?) From Canada.

>> Hello. I'm Jian Li a, ng from CICT China and good afternoon meeting you here.

>> Good afternoon. I'm (?) From China.

>> Hello. I'm (?) With German sound engineers association, VDT.

>> I'm Adam hill, university of Darby in the UK.

>> Michael. Yeah.

>> Michael Santucci.

>> Colleen from University of Dallas in the United States.

>> Remote participants I see Mr. Ravidi Massey. Can you introduce yourself.

>> Hello. I'm from Massey university in Netherlands. It is past midnight here and pardon my sleepiness.

>> Thank you. Brian, if you are there can you -- okay. Yeah. On the way to the airport.

>> From the airport, yeah. Brian Schmidt and video game consultant from Seattle, Washington in the US.

>> Kristina? I see Peter.

>> I'm Peter Mulas from World Health Organization.

>> Thank you. And Misuku? Karl from Sony?

>> Good afternoon, everybody. Karl Brooks from Sony based in the UK.

>> Mr. Amazaki from Sony.

>> Can you hear me?

>> Thank you this is Mr. Yamazaki from Japan.

>> Thank you. Ms. Fujimoto from Sony.

>> Hello. I'm Ms. Fujimoto from Sony and Japan.

>> Thank you. I think we covered everyone and will start the discussion. This session is dedicated to the discussion of dosimetry and accuracy of dosimetry.

I would like to -- the -- the document is what I'm currently showing. This is a draft document working on it and it text from Jeremy's contribution last time and had a chance to talk about registration and handshaking yesterday.

I take -- I would like to take this opportunity to introduce the make listening safe initiative as well as world hearing forum aspect of dosimetry and would like to invite Dr. Michael Santucci that has a good device that would be helpful for our discussion. Michael, please.

>> Thank you. I work in the music industry. We make custom mini ear monitors and started doing that in 1990s and so a company named Edimotic research had a probe microsystem inverting average ear canal resonance and all safety measures and standards are taken outside of the ear and ear canal effects it and averagely compares it to outside and would stick it in the ear and musician would play and sometimes they would get plugged with wax or sometimes wanting to do it and singer has a bad day and didn't want a sound check today. It was always a real problem to get it done.

I decided to make something that is not really measuring at the eardrum but at the output of the device.

It is a little device here you program in and it is based on sensitivity and impedence. We look at some of the -- some of the specks to determine the output.

It converts -- it measures dry voltage of anything you are plugged into. It could be a phone or bell pack onstage or head amplifier or whatever. Then it converts that to DBA. It brings a real-time level as well as an LIQ level. Because I work in the music industry, we are not calling it a class 1 or 2 by the way dosimeter. It is a kind of dosimeter and first time I worked with the band and in 20 minutes they were already at 100% dose and stopped them you are already at 100%. They started

high five-ing each other and I said it is bad. Instead of doing that we convert DB or dose to allowable minutes, which they understand and can look down and say, if I'm this loud I only have an hour before I risk injury or if I'm this loud I have ten minutes or can go for four hours.

It is a kind of speedometer and you can look down on it. You program in the device. We already put -- we have over 200 devices on here that we can add anytime and they can always be upgraded.

I can pass it around.

It also has a mic that will do the same thing.

For many musicians, I had a drummer who wanted to know how much he turned down with ear monitors.

We measured outside of head at 170DB that is a metal band or DBA. In the ear was 94.

He could see he dropped it significantly and that is the purpose of this is to give them guidelines.

I don't know what else to say about it but can pass it around.

>> RAPPORTEUR: Questions?

>> When will you implement it in H.870, Michael.

>> It will be there. You want me to put 80 in. Thing is, in music it is never 80 so.

>> Thank you.

>> RAPPORTEUR: Any other questions or comments? Jeremy? No? Okay. Anyone from remote? Okay. So I think it is an interesting approach; right? Part of background information something to take into standard that would be better.

>> If I was more prepared I could go home and provide you a document what this does and have my -- remember, I'm an audiologist not engineer and I can have my engineer that

designed it tell you the engineering side of it better than I can.

>> RAPPORTEUR: That would be helpful. Thank you. This is one practical way of doing this.

So I hope we can take some -- some information and some lessons from this device as well as -- because it is with MLS and make listening safe initiative.

Also as Mark mentioned, it is -- it will be a good implementation case for H.870 as well.

If you don't have questions, I would like to move on to further discussion of the document. Thank you, Michael. Thank you very much for the device.

Who wants to see it? Shelly.

Pardon?

>> Could you please stop the sharing so I can use Zoom?

>> On stages and music there is no wireless headphones.

They are all wired and there is a place to plug in your earphone and place to plug in your belt pack and it tells you. You can look at it while on stage and lots of times the engineers run off the spare belt pack and [off mic].

>> RAPPORTEUR: Thank you, Mike. Thank you, Michael. Okay. So let's move on to the discussion of the dosimetry. Jeremie provided a slidedeck.

>> Thank you. I will take 10 minutes to not read through the whole document and rather follow a couple of slides. Obviously, you know we do have and was mentioned earlier a document that is a dot standard by ITU on limitations of the level to the ear for various playback devices like music players.

So this is available. You see there are new technologies around. In that standard, again, you will see there are some limitations we listed back in the days as when it comes to

uncertainties and invariabilities that can be (?). I think the device presented a minute ago by Michael I may limit myself to say it is doing a great job measuring electrical output of FM transmitter and what not. There might be some uncertainty sources that may affect reading that you will get.

So we can look at the list that is prepared within the original H.870 standard.

Obviously, we all have different ear canals and ear canal resonance that is different and fitting of the device that may change over time and changes from dual to dual and we have obviously variations of equipment itself that can be just in days or weeks or years.

Manufacturing (?) And so on.

At the end of the day, we may have, actually, some pressure interval that is slightly different than what we think. This is very complicated. What is uncertainty and that is how much error I can be making when I'm doing a reading with a dose meter and dose uncertainties are so hard to assess that we said in the standard we will keep it for later and you can see that is the last line here I'm cycling for you and said we will provide further details for future studies.

I think this is now time to look into uncertainties more clearly.

It is really dragging on my end.

Here, subject remains for future that is now as I said.

We need to take into account the uncertainty.

So maybe you wonder why is that important to have uncertainty?

Well, I think uncertainty really matters for a couple of reasons.

So the first reason is that we don't want to give, you know, a false positive sign to our users and would hate our

system tells you, you are safe and there is no issue and at end of the day that person is overexposed and would be one issue.

A second point is that they are really cases that you want to be super accurate.

You understand that in life when you want to -- I don't know. Measure the temperature of, you know, something, you may have different, you know, thermal reader that may be used. If launching a satellite you might have a more precise thermal reader or temperature reader than taking temperature in room. Ambient exposure is a little bit of an idea. We have been developing and collaborating with lots of people that try to protect workforce and really workers that are exposed to noise and some workers are really highly qualified personal. I have to say sometimes those are flight -- sorry. Pilots of fighters, jet fighters.

Those pilots need to be really safe in their mission and we need to know if they can be going deployed or not again. So we have to really assess how much they are been exposed already and same for workers working in remote areas and oil pits in (?) And you need to know can this guy go back to work and was he protected or not?

So this is why we need maybe to have different quality of measurements depending a little bit of the application.

On the other side we need to have as well systems that are enough to educate. If I can take 2 minutes to explain what we mean by uncertainty, I will go with this illustration. You know, when you are doing measurement there is what you have in the bulls eye, so in the middle of the mark and you want your measurement is actually high accuracy and precision meaning it hits target every time you have that measurement you have ground truth or super close to ground truth. What happens in real life

is you might have systems that are super good at predicting values consistently.

But unfortunately, those values may be a little off. This is what we call low accuracy but high precision. Are you super precise and reporting values that you read consistently but they are a little bit off.

Then you have the third case where you have the opposite case, I would say, where you have high accuracy and you are really close to the center and low precision and there is a range. Finally, there is the first case that you have low accuracy and low precisions and think it is important that we know which system belonged to what type. If we deal with safety, we know we need to know the confidence level of your safety assessment or safety standard and if you say you are safe you are below 80.

What is confidence level you have in this assessment. Really, the purpose of the text that you may have read is really to -- may read is to ensure we have precise measurements for user safety that is for preference and ICT statements and looking and (?) Preferences across devices and as Masieto explained something that is complementing ITU-TH.870 standard and conducting in American standard institution for dosimeters.

To give a little context, I presented this early January in this very room nearby in ITU a couple people were online and Brian you were online I remember and Mark was there too.

And maybe others I didn't necessarily remember and since I presented think got feedback and in the last few days and first feedback I got from Raj Desai. Jeremie be clear on the safety standard preferences that we will later on and understand this is preference with regard to safety. Mark, who just left the room, actually, yesterday, I think clearly explained that may be an approach what we call source-separated dosimetry might be

overkill for this group and don't need to take exposure for everywhere but care exposure from your multimedia player. Finally, yesterday I explained benefits of having in-ear microphone IEM stands for in ear microphone and in device something that reads level and circulated from a few people this morning including Thomas that thought this could be a significant improvement for lots of the work but still needs to improved and is the state of the nation, I would say.

And scope of the standard is really to apply no you to all listening devices that are devices playing back multimedia stream and don't care for ambient noise or wear induced disturbance someone just coughing super loud in ear canal destroying dose we don't care for that in the moment in that standard and standard will do defines requirements for devices with ear canal microphones to record levels and devices that don't have microphones in ear canal and technology we have seen so far in this Working Group.

Again, key definition and ear canal microphone, this is something that is placed inside the ear canal close to the eardrum but sometimes has to be distant and you have to be correct and to include what we call included ear canal resonance and close-fitting device is really idea that you are still close to the Pina and conca close to the ear and not open-source free field and dosimetry that is the idea that we assess exposure level that is combination of level and duration.

So I first proposed we had two categories, one for system with ear canal microphones and for system that don't have ear canal microphones and category A, I would revisit and would like to revisit the chair that document I provided and think from what I heard we would like to get rid of those very subtle distinctions that are source separated dosimetry and inclusion of what we call wear induced disturbance that is a little beyond

the scope of the Working Group here and we should remove that for clarity.

And we should make sure we align for the -- sorry. Just trying to get the slides.

Sorry. We will start with the category and for category B which is no microphone in case and should be really in line with current ITU-TH standards and electrical signal as proxy for SP will. And head phone variability and fit differences and head-related transfer functions everything I listed before that needs to be budgeted with uncertainty and category devices in ear microphones and suggest we piggyback with what we are developing with Americans on S1.46 standard and measuring noise level and include everything from noise from media and noise from ambient world and noise from own voice or coughing or footsteps, et cetera and express values not just (?) And convert back to free field equivalent level and collect Tim panic membrane levels. They are higher and Michael explained ear canal resonates giving amplification and we have to define risk areas based on levels for hearing loss prevention.

What are uncertainty components? We can regroup them in four types of categories and need to identify and quantify them. Think of that. I will be just taking here my little airpods for the example. Let's say this is a dosimeter I am placing in my ear. There is intra-device variability. That device versus another device from another manufacturer with different specifics and acoustics and with this device it might change over time or is aging and frequency will change, and that is between device or units if not calibrated all at end of the line they might have variabilities that need to be factored, and I'm sure apple actually does a very good job of doing that. Maybe all devices won't do that and need to factor that in.

There is intra-subject variability. Change is different in the ear hence the response and we have different response between subjects and don't feed device same way and so on and all those components have to be evaluated and idea is to follow what we call the guide or GUM expectation for uncertainty measurements that tells you how to assess variability of a physical process.

And how you assess that for a (?) Process is using (?) Fixtures and dose simulators and (?) And you report the various variabilities you do have, you know, from fit to fit on frequency domain responses that could be (?) Bands or overall DBA values and recommend that we stay consistent with the upcoming NC standard when it comes to those frequency bands and overall values.

If I gave you example already and intradevice variability and preference overtime can be effected and system is aging and effected by temperature and super warm outside and cooler inside buildings and may change frequency response between users and intra-subject that is fit/refit variability and between subjects we are all different and have very different responses in our ear canals.

My intention here is I suggest that we actually don't reinvent the wheel and there have been studies all over the place for a lot of the uncertainty components as I call them. The idea is that to do a little bit of a metaanalysis of what is existing.

And you -- so I'm taking an example intra device variability.

How device change over time and for example, if you look at the last line on that table, you may wonder if I'm fitting this airpod in morning at 8:00 a.m. and keeping it 4 hours how does it perform at 12 or noon after 4 hours of wearing?

This is really about retention of product in the ear and so on.

Those are things that, for example, have been studied.

This is a local study a former student that just moved to that.

Typically, you can see here that if you study that, time 0 is 8:00 a.m.. You can see that devices will move across that average value. They can, you know, slightly dislodge and relodge or replace themselves over time and so on and type of variability you may have and encounter in your measurements. That is my proposition here is to not reinvent the wheel but take existing data and form them into something that makes it useful guidance for, again, what we call a type B system.

Here is, for example, one what we call fit/refit variability.

You see how -- you know, over time you get better at fitting your product.

That is the time of thing that is existing in the field. At the end of the day, how we communicate the result is really how uncertainty should be reported. Meaning results should be reported with what we call confidence factor or coverage factor and confidence interval. Sorry.

Confidence level and coverage factor. I'm there. For example, if you take your best estimate and add one time the standard deviation of all of the variabilities and all components and uncertainty components, you get what we call 84% confidence meaning 84% confidence level you will get value you recommended.

So if you do take twice those uncertainty components, add them to your best estimate, you get 98th percentile confidence value.

You can phrase this in a very simple term. You are -- you can read two examples here. First one is that with 84% confidence, your weekly exposure level was below 78, and we give value 78 and give confidence level.

Maybe value you read was 72 and plus 6DB uncertainty is 78 and by flipside say are you safe or not and here we will express confidence. For safety that is important you know what the confidence level is. Here we say well it is 90% confidence and weekly exposure was safe and according to the standard that is in AT -- it is ATDB equivalent level for 40 hours.

So at the very end, what would be actually asked from manufacturers for the standard is to document how the merger and measurement was to assess the uncertainty component and detail assessments variability of the fit and DB from aging of my product so on and so forth to be added together and provide uncertainty statement in the frequency band I think I took 10 minutes of your attention and thank you for that. Open for questions.

>> RAPPORTEUR: Thank you. Comments or questions? Thank you, Jeremie. Yes, Shelly?

>> SHELLY CHADHA: Couple of things. Firstly, I was here yesterday. I must say that I must have been distracted or went out a bit. Or zoned out a bit.

Why -- why don't we want to know what are the sources as I understood from what you said about Mark's comment that it is an overkill to know what is the source of that sound?

My question is why?

>> Well, funny you mentioned that.

I think we looked at each other during that time when I was presenting this. Since you left the room, I said probably might be overkill and maybe we shouldn't go into the details. Shelly

is no longer here. That was one of the big reasons but gave credit to Mark for that.

>> SHELLY CHADHA: Can I? Yes. Because from sources we discussed, I mean, I don't know how far we are from this in terms of time to be honest. But whenever this is ready, I think as a -- as somebody looking at this field from a hearing protection purpose and for research and lastly even as a user, I would want to know what were those sources?

What is that I should manage better?

So let's say that I need to -- yeah. Exactly. What should I manage better? Ultimately, if we have the possibility of having this information, additional information, it would be very valuable for the individual to know what that was. So that is one.

>> Shelly, that is a very strong point you make and super important and ultimately what we want, to know where exactly you have been exposed and what caused the most contribution to your dose.

Honestly, I will cite Cuba and conversations we had with him. I think currently the question we should ask ourselves is really what are pros and cons and what do you gain and does the user gain from that versus cost it has in terms of hardware this is super computer intensive and super resource intensive and mention case we have in American Working Group. Those are jet fighters and repeat workers and highly paid super critical mission critical workers where you have to know exactly what the dose is and I'm not sure we are really in for the consumer product yet and maybe this is fine we leave a little time and let processing power go up for those out and maybe not push too much. That's --

>> SHELLY CHADHA: Very good reasons about you just -- yeah. Good to have perspective, of course. It would be good to have that.

I understand also the cost perspective and, you know, case of return on investment as well. So yeah.

And could I make a couple more comments?

>> Sure.

>> SHELLY CHADHA: If you can move forward and in terms of -- maybe go to your conclusions slide.

So can you clarify and apologies if I Miss -- if I'm not clear. But what you said was that the -- whoever is testing or reporting compliance and saying should inform methodology and then we can better assess.

Isn't that we should propose to them a uniform methodology so that that kind of, you know, and -- I don't know if you have looked at conformance testing document that we have.

I am -- I suppose you have since you are thinking about this.

So if that methodology is not enough, not elaborated or not adequate, then deaf -- maybe there would be a case for reopening that document ensuring that we update it. I think that it should be the other way around and that the methodology is constant and everybody has to follow methodology rather than us comparing or whether we are doing it. I don't know. To try to compare across methodologies. So that --

>> That is another good point. You know, I will be a little bit pushing limit here's and when I say for example a very good device and first to have imbedded those make listening safe recommendations on great platforms and when I see, okay. You have been safe Jeremie from your exposure. My take is who can I trust exactly and what is accuracy of your measurement and what is the uncertainty of the measurements? You know, we heard

this morning so many people saying if you use Sony device and headset we have -- okay. Is that as good as this one or as good? How do I compare now? Might be a price difference and maybe need high accuracy and using this for very specific reasons and we need to be able to let users know as well the type of accuracy and quality you are buying and example I can give you is, again, when buying a cheep thermometer versus expensive one and wait -- sorry. Scale or whatever.

You get that idea we don't use semi-equipment based on accuracy we want.

To answer your question, Shelly, the ask here is that manufacturers come up with actually an expression of uncertainty and say we know that person minus 60DB or minus that -- they factor that uncertainty within the measurement and now if I may just cite a conversation with Raj and Jeremie we already do that in ways but secretly and we know a little bit the uncertainty of our device and know because of ATDB and so on it is factored in (?) And so on.

What I need is to have a little more clarity that those things are spelled out and comparable otherwise we will be in systems and not having transparency on that.

>> RAPPORTEUR: Yes, please.

>> SHELLY CHADHA: It is a very good point and understand you want that information especially because you have a scientific mindset and also you are a researcher.

Maybe the users and many of the consumers that are very smart want also to know this maybe this would be something not to confuse people or take away from intent of standard and can be something that can be sort of linked to it and see more details or something in there you say this is with this much confidence and 84% or 90% is great. Say your confidence is, you know, at 60% and is -- okay. Probably. I don't need to bother

about this. So the intent here of the standard besides giving (?) Is also behavior change and being mindful of that. I think this information would be good as a link or whether someone wants additional information and how was this estimated and what are confidence levels and how can you say that, et cetera? You get that and maybe that say way.

Before you take the floor back -- what was I going to say? I lost my train of thought. That would be one -- this thing from me. Because also standard deviation would not be so cued into that and make people make note of that and hopefully the other part will come to me.

>> The aspect, I would say that is almost (?) As well in sense of our compliance and I can see the risk you have and products that are a little shitty products that try their best and don't have necessarily technology and we tried to implement MLS recommendation and we are MLS approved and follow exactly what WHO says and follow exactly says who? How can I verify that? That is risk you might in no time have lots of products on market that will still impact and effect hearing and so on and will be dose have WHO recognition and have to be careful endorsing this and they will say your name for sure and see the point and protection of the public.

>> SHELLY CHADHA: I remember what I was going to say and something why conformance testing is so important. Of course we don't endorse or anything but anybody can claim they comply with the regulations.

We have no way of assessing it.

We did a quick search and PJ, you did it and maybe want to speak more about it but to look at it as reaction from users to different -- to implementation of this standard and particularly we found without naming any company there was one company we found a lot of adverse remarks and mostly we didn't find,

actually. We were trying to compare with European standard that was earlier level limiting one and seeing how we will -- user -- we didn't find so much. It was remarks maybe a couple about warnings by and large and one which -- not 1 but more than 1 where company's devisions they kept saying sometimes I'm listening to it at 2 or something volume level and said you exceeded your volume level and things like that coming up again and again showing that there is probably lots of errors in way they were estimating or calculating dose. That is really worrying.

It also gives a bad name in a way to the standard if it is claiming and point that strengthens reason why we have this discussion.

>> Sorry. Responding your point is super well taken. If you have large uncertainty because you don't control merch and don't care or do proper job and if you follow standard and report uncertainty you have to add to measurements and always overestimating dose and flag and you overdose and overdose and user says there is something not working with you and will be a good retraction and look to manufacturer to fix things getting close to true calibration and get controlled and think that is a good motivational sell here but true and can be annoying on the end users too. You have.

>> I think Raj and Noah you want to say something?

Yeah. Raj, okay. Raj.

>> Raj: Thank you. Thank you, Jeremie, for the presentation. I don't disagree with the technical aspects of all of the uncertainty and areas for improvement. I'm struggling with I don't want to say a need for standard and like what you called out and like what you are saying and like -- I am thinking in terms of this is a good informative document opposed to our standard.

For anyone developing CFLs, consider the following. Consider these are areas of uncertainty.

I like the way that you broke it up and how -- where uncertainty comes from.

This is the impact you have.

This is how you can improve upon it and have confidence in it.

Where I'm struggling is what the end game is. I hear the end game is that there is a need to quantify and calibrate within CFLs that they should all have a certain level of accuracy.

And I'm struggling with that part of it.

I'm trying to figure out who is your reader?

Reader, I can only assume they are a manufacturer of a CFL.

Okay?

So it comes back down to, well, if I want a certain level of performance from it, why do I want that certain level of performance?

I know you specified in the document that certain level of performance and want to better understand why? Is it a performance for measurement or performance for safety? Because I don't know how -- what the impact of this document is going to have on products.

I can talk so much on product safety and what has been implemented in H.870 and don't want to deviate from the first question I have which is can you clearly articulate why we need a standard opposed to an informative document.

So manufacturers can improve on it.

That is what I would like to better understand.

>> Well, way I wrote that standard was to provide that type of guidance and actually take the, you know, reader and hence manufacturer by the hands and, you know, go through all

qualifications they would have to do to assess uncertainty associated with measurement device and in that sense, you know, I don't know if this format is appropriate or there should be, you know, in another format or informative Annex somewhere and so on.

But while it matters at this end this is a standard and you have to be compliant with that standard providing certain statement and like manufacturers are reporting somewhere and confidence level associated with measurements and help me find the proper balance between instructions to, you know, engineers that will run the show and the compliance and conformance to uncertainty statement.

>> So I think now we come to -- back to my question which, you know, is performance or safety.

I don't have a problem quantifying different devices from performance saying, it is real simple. This eliminates 99% of the germs or 90 or 50% of the germs.

I get the level and understand it. You want to make it a standard that is strictly performance and I can support that. If we make it a safety standard, we have to consider a lot more things.

At the end of the day, if I am a consumer buying this CFL, I want the best protection of safety of this out there.

>> SHELLY CHADHA: Could you give the full form of CFL.

>> CFL, close fitting listening device.

A mover shouldn't give me different levels of safety. Why is it how can you offer as you talked about two different levels of safety? As a consumer, I want same level of protection as my colleague over there if I'm in the same environment. Okay? We talk a little about ds which is a example I gave. If I will do laundry or not that mowing the lawn I might want one level of mask and if I cut in wood shop with heavy dust, use another.

There is different use cases for different protection level. User of these devices if talking from the general public out there the level of protection should be the same and don't understand why we have a grading system. It makes no sense.

The standard -- the document talks about professional use that is not safety. It talks about measurement. That is not safety.

If we talk about safety only thing that has to be done is pointer to H.870 which is the only thing that is done.

I want to remind everyone in the room that accuracy is important and with false positives and negatives, do keep in mind original requirement was 40 hours at 85DB. Remember, when we switched to dosage it went from 40 hours to 80DB and factor of 3X protection, mind you.

Okay?

Thinking about the need for safety improvement, we have already factored that in. Because we know there is glossiness and poor fit and know we lowered it.

I am not saying we don't want to make it better but it becomes performance at that point.

We have already put minimum level of safety in H.870.

I'm advocating if we don't want to make this an informative document and wanted to make a standard, make it strictly a performance standard.

Thank you.

>> Thank you. Jeremie, you are in --

>> Very well-taken points.

The -- my background and where I'm coming from is really from the health and safety and protecting workers and from exposure from that and limit may vary depending on jurisdiction and country and company that might have own policies and in Canada we have even different exchange rates.

Sometimes 5DB or 3DB and because of that we couldn't override aspects in what we are writing that is occupational health and safety and can't decide, oh, well. Nowadays could be 80 everywhere. Not the case or 87 and Quebec is 85 or 90 and so on.

So we have to be a little bit cognizant of that and performance standard and drop or refer to safety from H.870 that is good with me and as it comes to various usage, I think nowadays you know you have to look at your corporate position as well. That is fine and have 5DB abatement and feel safe with type of uncertainty you have.

You know, who knows and other manufacturers won't make same claims with very different equipment and very different, you know, engineering behind.

>> Do keep in mind that is minimum requirement regulated with H870IE and requirement with electrical and fire safety and radiation and mechanical.

What manufacturer wants to do to reduce liability is raise the bar and raising bar is against itself and if other manufacturers want to emulate it because that is just sometimes how it works, that is fine.

Minimum bar is 8 for consumer protection mind you 80DB40 hours.

Okay?

Lots of what you are talking about is EHNS, occupational. That is not product safety. Right?

Standards are out there saying you need a device; right? Make sure we are talking the same and now H.870 is really more of a product safety standard that is what IEC is.

So I would also encourage you to maybe rewrite the introduction and forward and really clarify who -- what use case is and who this is targeted to and where it can be beneficial.

But if you are going to make this performance standard and refer to H.870, I'm very happy with that. Thank you.

>> Johan, want to say something?

>> Okay. Thank you. I think asking (?) Since we have spent considerable time escape my question may be (?) But after you know listening to the discussion among the three and seeing one from academia and Sally from WHO and Raj from Sony, there is some interesting things to me. For example, Raj mentioned right place for bar not too high or low and give simulation to industry and now offer a right level for protection to consumer especially young consumers and how do we decide how high bar should be you know by considering the position from different sector and from industry and regulatory and from WHO and from academia?

Another thing is other ones and advanced features like Shelly asked and share same question.

Some advanced research forefront like why we need to distinguish those separated dosimetry and whether it is overkill. I think probably some research conduct industry when we have to answer it and some (?) Decide that is more useful and give more advantage in this commercialization and larger deficit and if we take into account of this individual to individual division interperson difference and some person may be sensitive to certain components and [no audio].

So we decide we need some feature or not.

Also, since Jeremie mentioned when there is a lot of uncertainties, we tend to, you know, be more conservative and to add all uncertainty to dosage that will lead to overestimation dosage.

We can involve more, you know, advanced statistic skills by involving or asking if there are tools that we can (?) And is easier using more advanced skills by involving statistic and

don't have answer and quite interesting and think it is very good and very interexchange between industry and academia and also WHO and ITU. That is good. Thank you. I skip very naïve and fundamental question and will have an offline discussion with you, Jeremie. Thank you.

>> Good. One comment from Brian who says do we also need to make a distinction between confidence of accuracy of dose measurement and confidence of your weekly -- confidence that your weekly exposure is safe and for example 48 hours and DB itself has significant uncertainty and seem uncertainty of safety that is more likely gated by certainly 40 hours and 80DB when we get reasonably accurate in dosage measurement.

Anyway, that is the question and maybe Jeremy you want to answer?

>> I'm trying to understand what Brian -- sorry. Brian is writing as we speak.

>> He said Raj made my point more eloquently than I and Raj recaptured the question and you will re-answer it.

>> Maybe 15 minutes away.

>> Okay. Anyway, I think your presentation is like a contribution sort of and it had -- has many aspects, actually. And as far as ITU, you know, standardization process is concerned and as Raj mentioned, the measurement itself and safety levels are already defined there. There is no question about it.

We have H.870 and have to be in line with it and is the basic tenant. For the uncertainty reporting as well as conformance and things like that, that would be for another document.

It will be more like implementation issues and Shelly suggested there is another conformance testing specification that we published.

That would be another document to look at.

And so there -- and then you have some proposals to change definitions or, you know, some wordings and things like that. So I think that would be, you know, good to be included or incorporated in our document currently that we have.

So -- so, you know, we -- we have to sort these out and to update the document so that people can make other, you know, comments, further comments so that we can make the standard better.

And yeah. So I think this will be a document that will complement, as you said, complement H.870 in terms of uncertainty. I mean, uncertainty as well as dosimetry aspect rather than trying to get to another safety level.

If I understand what Raj was saying.

>> Bear with me how many documents H.870 is safety levels and we talk about implementation and performance that will update the performance document.

>> I would rather think of it as this recommendation draft recommendation will be another standard.

>> Okay.

>> For, you know, using Raj's statement that is performance.

>> Uh-huh.

>> Standard.

>> Okay.

>> How accurate your dosimetry is and if you have that and have conformance, you know, statements in your presentation and that -- I think those statements actually concern your new standard for accuracy. Rather than the accuracy for -- or the implementation of the conformance testing for H.870.

>> Fair enough.

>> See what I mean? H.870 has a very broad implementation specification and conformance testing.

You have something more focused accuracy dosimetry specific and recommendation.

For that you have certain implementation performance or whatever and conformance specification.

There are two documents.

One is the -- it is the requirement on the -- requirements on the dosimetry accuracy.

Then conformance that is in -- if the dosimetry is accurate enough or in conformance with this new recommendation. It doesn't say anything about the safety level.

Safety level is already defined by H.870.

>> Fine. Then what about this current draft and what you wanted to have in the question -- in 2?

>> Yeah. We -- this is basic text and we -- I think some -- actually I did editing as well and for example I put them in some of the information in appendix rather than in the main part of the text because they are more informative and just for information sake and we can do similar things with the -- if tables are, you know, necessarily in the main body or normative part of the recommendation.

Or are they going to be in the appendix just for information?

And what are the actual really important requirements for dosimetry and for accuracy of dosimetry?

And, of course, you mentioned that we referred to ANSI as 1.46 that is the main part of it.

You know, as ITU and also with respect to H.870, we have to do something on top of that; right?

Yeah.

That would be the base text.

I mean, next -- next space of -- yeah.

That is what I think.

Yeah. Jeremie?

>> Okay. I'm very fine with this. There is one thing I didn't cover in this current presentation which is where Annex if you remember of our document where we had this idea of handshaking and passing information and so on and based on the session this morning, we need to really work on that part because, you know, handshaking would be hopefully taken care of through new SBC and BT6.

>> Yeah. BT6.

So if you take a look at this current document, this is the current document.

As I said, it is based on -- you know, Jeremy's contribution as well as Annex on registration as well as handshaking and need to.

>> SHELLY CHADHA: Could you go to the top to see the title?

>> This is title with accurate dosimetry for safe listening transducers and this is a general topic and title that includes Jeremy's proposal. I mean, most -- actually, most texts came from Jeremie's contribution. It says NCSX1. Scope, as we discussed today, we have to change probably work on the -- we have to work on scope a little bit more to clarify things. Okay. That is okay too. Everything is draft. You can propose references are more or less like snow men and straw men, sorry. Definitions, we need still a lot more definitions.

We -- we have at least two: Ear canal and microphone and close-fitting listening device and have to discuss these two. Then the background as Jeremie said, in H.870, we have uncertainties for future study and have to address these. Future is now.

Device classification, Jeremie proposed to modify it. Modify the category B.

So we modify it at this meeting.

Update it if that is okay.

>> Device category in sense that we don't want to have any source. We don't want necessarily to implement that source separation dosimetry and is Category 8 it touched.

>> RAPPORTEUR: This one?

>> From any source and own contribution to noise or the rest of the paragraph should be modified.

>> RAPPORTEUR: Okay. This, I will put an editor's note.

>> Maybe to Shelly's point we can indicate maybe in the foreground a part of the document that there will be need 1 day to have all sources taking into account and for moment we prefer to focus on one that is defined by H.870.

>> RAPPORTEUR: Like this? I don't know if --

Okay. And this one too.

So measurement methodologies, we -- we have. So we have category A devices.

Again, this, you know, it could be requirements or could be in the conformance testing and we have to figure out which one goes into which and which goes to the other.

Tat Category B is the same thing.

But it says ITUTH870 methodologies.

That is the requirement, of course.

Uncertainty components and assessment, I think this is very important for an area -- I mean, clause.

Now, you -- you are talking about all of the above mentioned source that will be modified.

Okay. Jeremie.

>> They are all resources and correct version and placement and fit to fit and not source of noise but source of variabilities.

>> RAPPORTEUR: Source of uncertainties?

>> Yeah.

Variation is to be treated as uncertainty components.

Okay.

I think this part is obviously requirements.

Right?

Assessment of uncertain components and assessment techniques and you are listing what needs to be done with echo sticks and these are the requirements and frequency domain assessment analysis.

This is also another requirement.

Then you have overview of uncertain components estimate.

So I think this is more background information. So it could be either in Annex or in appendix.

Depending on the nature of the tables and if they referred to some normative references, then I think we have to put them in the Annex.

If they are just for informational purposes and just as background information we put them in appendix and we can -- In ITU and maybe you are aware that appendix is for information.

And Annex is for normative things. And then clause 10 is TBC.

Still, this could be assessment that is experimental assessment that could be requirements and could be performance and could be testing.

So depends on what you want to write. You know, this could be, you know, in another document or stay here.

So it is -- it is still to be described. To be written. We can wait for contributions.

>> That is right. Has to wait a little bit the outcomes of NC Working Group and should have some pre-final report for this.

>> RAPPORTEUR: Okay.

>> My question to you would be why isn't that in the requirements to keep conformance document really focusing only on uncertainty statement communication.

>> RAPPORTEUR: No, no, no, no. It is -- I am not saying that. You could make it into a requirement statement or conformance statements. So they -- it depends on the way or how you treat them and want to make them requirements from ANSI standard that have to be normative. This is what the dosimetry has to do, blah, blah, blah. Right?

But you also can have statements like testing procedures that should follow, blah, blah, blah.

That is conformance testing and is not requirements.

>> Okay. Okay. I will need your guidance on that.

>> RAPPORTEUR: Yeah.

>> I'm glad we are working together on this.

>> RAPPORTEUR: Conformance of uncertainty, this is the question I had, communication done by devices or someone outside of devices? It is like health information in H.870 in which they say, you know, you are approaching the end of your allowance and sound allowance or is it something like communication between devices?

To the user or is it something that for testing should be providing?

>> If this is really uncertainty statement it comes to compliance report that you have for your device. It is just like you have some meters are class 1, 2, and 3. Same thing. You have here a device that gives you uncertainty of 3, 6, or 10-decibel for your measurement.

>> RAPPORTEUR: This part can go to -- especially this part.

Measurement results shall be presented as a testing result. Okay. For further details, following exposure statement format is recommended hello Mr. John. This is more.

>> Hearing what I heard in the last 3 days we don't want to address -- standard is not addressing end users and have association with manufacturers but not communicated to users that is over --

>> RAPPORTEUR: Thank you, Raj. Okay. Thank you. Thank you. Yeah. Maybe this is go to either appendix as just information or in conformance testing.

>> SHELLY CHADHA: Can I ask?

>> RAPPORTEUR: Yeah.

>> SHELLY CHADHA: Not just about this part of the discussion. I already mentioned. Just talking about it as a performance standard, which makes a lot of sense. Can we think also we had at some point when we were discussing or developing (?) And thought of having can we have class A or B? You know, levels of compliance or something.

But not compliance in this case performance not levels of compliance but performance.

Could this be used for that kind of classification of the performance of device in terms of H.870?

>> RAPPORTEUR: It is up to our decision.

>> We have different classes indeed if you want super precise measurement of your dose this is a US jet fighter or pilot you sent away and make it a class 1.

If just for educational purposes because in a classroom and it is good missions and students would know and music students would know exposure that could be a class 4 and having

conversations here I realize having classes is always a little difficult. You can be on fence and so on.

If you give value, you know, uncertainty value that answers the question smaller value you have together better you can compare systems very simply and I would tend to answer this actually if that is agreeable to you if that is.

>> RAPPORTEUR: Okay.

>> Simple metric and error you can do to have it as small as you can.

>> RAPPORTEUR: Yes. In our -- scope of H.870 clearly states that the professional equipment is out of scope.

That means super accurate devices are not -- dosimetry is not necessarily needed by H.870.

You know, they could use it, of course. It is up to the manufacturer's decision. If Apple wants something very super, super accurate and dosimetry in iPhone, that is okay and for them.

So as you said, it would be better to say just as, you know, if uncertainty level is very, very small, then that is better. Yeah.

Then, again, compliance and reporting, this will be in compliance specification and will be probably better.

But it doesn't mean that you cannot write it here. You know?

As I said, it could be in appendance and we can develop the document.

If we think this is mature enough we can create another document.

It goes the same thing. It can go to appendix or another document.

Annex A safe-listening device registry, this is another topic.

I would like to invite anyone any questions about the current text of the main body of the text. As Raj said, he wants to discuss the title of the -- this is very general. Of course we can work on the exact -- yeah. Title as well as scope.

This is just the first draft based on Jeremie's contribution.

We will work on it and make it more complete.

The basic understanding is the principle or principle is that we will refer to NC standard.

That is the -- that is the tenant.

Unless someone has a strong opposition or opinion against it.

>> I'm not hearing any strong opposition in the room yet.

>> RAPPORTEUR: Something totally different and out of scratch and would be nice to have something to fall back on.

Yeah. Okay. Good.

It is good because we can harmonize North American standards and international standard that is the same with NC and Cenelec.

>> SHELLY CHADHA: And not completely recreating the wheel and spending months talking about what has already been done.

>> RAPPORTEUR: Yeah. I see.

>> SHELLY CHADHA: Of course, that is acceptable to the group. As Jeremie said, we don't hear much resistance at the moment.

>> RAPPORTEUR: Okay. All right. I think I -- and please send me the slides so that I can upload it.

>> Okay. I will. Just myself Mr. Chair, just a comment here on the process and feedback. For example, if some people are not there and want to comment later on the document, that is

through e-mail chain or how is it typically working? I don't know.

>> RAPPORTEUR: We work in various ways. One is e-mail. We have what we call reflector and where they can make some kind of formal or informal comments. So it is more like interactive discussion. We also have rapporteur group meetings like this one to which we can make formal contributions and you can formally request or propose to revise the draft.

Right? Shelly?

>> SHELLY CHADHA: Just to check with Jeremie if he gets information and e-mails about the rapporteur group meetings is how I assume you submitted this and you must be getting the information.

>> I will double check that.

>> Yeah. If not it is important to register and we can discuss.

>> Yeah. I think you are representing ISO; right? To this meeting or as far as ITU is concerned. Isn't it the case?

Is university Quebec a member of ITU?

>> No.

>> No. It is not. You are kind of --

>> On behalf of WHO as a WHO expert.

>> RAPPORTEUR: Yeah.

>> So I'm not a man.

>> RAPPORTEUR: Good, good, good. You can represent on behalf of WHO and on behalf of WHO you can propose and raise the position on this matter.

>> Works for me. Thank you.

>> RAPPORTEUR: Yup. We will come back later to the coming schedules but that is what basically there is two ways, formal contributions or sort of informal discussion reflector on

e-mails and just like we had comments from Thomas and other people.

Okay. Great.

Okay. I think if it is okay, captioner, we would like to take a few minutes break if that is okay.

>> CAPTIONER: Sure.

>> RAPPORTEUR: Anyone opposing? No? Is it okay to take a -- how long? 15 minutes?

>> CAPTIONER: Sure.

>> RAPPORTEUR: Okay. Let's take a 15-minute break. We will come back in -- yeah. 15; so 4:15 or 4:20 maybe. Okay. [Break].

>> RAPPORTEUR: Let's start. Reconvene? Yeah. Thank you very much. Since Shelly needs to leave, maybe we can -- at 5:00 a.m., I want to discuss briefly about the liaison statement from this meeting to ITU to IRGVA that is the group for audio visual accessibility.

We decided to work with accessibility and user sensory health.

So to work with them this interrapporteur intersector group is composed to it from ITU-R and ITU-T.

So we can influence both broadcasting as well as telecommunication.

I was thinking of drafting a liaison statement from this rapporteur group meeting to IGVRA if that is okay. The source would be from me and you and from me and Shelly, if that is okay.

>> SHELLY CHADHA: Yes. Absolutely. Sorry. I'm confused with all of the abbreviations what it stands for.

>> RAPPORTEUR: Sorry I chose such gigantic. In general, it stands for -- this is ITU-T but there is radio department,

ITU-R and they have accessibility-related activities and they -- we formed intersector rapporteur group.

Question 1, I'm one of the co-chairs of that group. We can discuss this accessibility and health issues.

And since we are working with broadcasting and my co-chair is from EBU European broadcasting Union and would be good to work with EBU.

So that -- I think that would be a good way to decimated and also to promote listening for video games and also eventually metaverse.

I will draft a text and paragraph and a short one and if it is okay I will send it from us. Okay. Thank you. That is the liaison statement.

And now what we want to do is to discuss this Annex on register. This morning we had brief statements from consultants on this registry and is our understanding that instead of creating this registry it would be good to have sort of metadata that will transmit some information about the handshaking characteristics of devices.

So I think -- and one -- one thing we understood was this T -- TEDS, this is already outdated and so maybe it is not so relevant.

Jeremie?

>> For clarity it is not old or necessarily outdated but working from stupid or I would say dumb corrected devices and if you have microphones that are just, you know, microphones and you want to have their sensitivity, sometimes the microphones will include a little chip that will communicate with your acquisition system and tell what sensitivity of the microphone is. That is it and it is on a two-wire and is simple and straightforward and is much less sophisticated that what we have nowadays access when we deal with earpieces that could be

wirelessly connected to smartphone or headphones connected through USBC and so on.

That was the full explanation of what I believe I understand.

>> RAPPORTEUR: What we discussed is rather than creating a new repository, we will work with -- coordinate with BT-SIG as well as CENELEC on hand-shaking features to coordinate and harmonize so that some metadata.

Okay. And there is 2 cases actually we identified at the first time. Case 1 is handshake communication and case 2 is non-hand-shake user identification.

This is, again, TEDS is not relevant here. No. Okay. For the hand-shake case, we will work with BT-SIG and CENELEC and non-hand-shake we will call for proposals and make Michael Santucci's case might belong to this. I don't know. Anyway, that is the discussion we had this morning. Any comments? Shelly.

>> SHELLY CHADHA: What do you mean by Mike Santucci's case might belong to it.

>> RAPPORTEUR: The device from his presentation he did doesn't do hand-shaking.

>> SHELLY CHADHA: That is an example you are giving.

>> RAPPORTEUR: Mr. Yamamoto, can you turn off the microphone behind? Thank you.

Okay. Any question or comments about this handshaking?

Mr. Yamazaki?

[No audio].

>> RAPPORTEUR: This is the comment we received from Mr. Yamazuc from Sony. Says hand-shake comment is important the following are possible examples of realization methods a method to transmit the dose accumulation calculated inside of the headphone as data. Headphone output characteristic register and

method to transmit the dose accumulation calculated inside of the headphone as data Bluetooth or other means of trance mission from the headphone to the PMP is a possible method. I don't know if Mr. Yamazuki is available. Can you explain your note, Mr.Yamazuki?

Maybe he can't talk or something. Anyway, okay. Chat. He said -- Raj -- no. He said his microphone is not so good. I didn't hear any audio. Oh.

He has an audio problem. Pardon. I couldn't hear. Jeremie?

>> Well, this is an interesting suggestion and what we heard this morning is really that we wanted to pass from the headphones to the smartphone and sensitivity of the sever and I think this is really what we meant by handshaking and conversation was having this sensitivity of transistor to be available for smartphone to complete dose and suggested here dose completed by themself and dose could be presented to user through smartphone and not case we discussed this morning but is a different take and probably complementary the two works but.

>> RAPPORTEUR: Shelly?

>> SHELLY CHADHA: I think this would be relevant also for devices that have -- for headphones that have on their own music playing capability in the sense those that are Wi-Fi enabled and so on wouldn't be relevant.

>> Absolutely. We can keep that what was discussed this morning and sensitivity to keep that dose be available and heard from Cuba, for example, BTC was working on passing what they call -- sorry. I have this in my notes and they call it acoustic sensitivity reporting.

It is not the dose but sensitivity of the device.

Thank you.

>> RAPPORTEUR: Thank you. I will put notes here.

He has audio problem. Jeremie? Yeah? It is okay?

Shelly? No. Okay. Any other comments?

With Jeremie's contribution and Raj and Thomas's comments we have updated and Mr. Yamazuki's comments, we have updated the current document draft and will post it as an output document from this meeting and we will be open for discussion. You can make another contribution or comment towards this output document from this meeting if you have comments.

We are hopeful we will have another meeting before October in August or September that will be an E meeting not face-to-face meeting and face-to-face SG21 meeting will be held in October.

We are -- we have not decided at the exact date of safe listening discussion yet.

I -- we are proposing the second week. The early second week because -- I am sorry. Third week of October, actually. 23rd or something and reason being is Scott Isabel can only make the second week and hope he can come in person and also discuss and he is from Amazon and a BT-SIG person.

I hope he can come visit us.

>> SHELLY CHADHA: Can we put a tentative date already and lock the calendars or not soon after. I don't know. Sooner the better.

>> RAPPORTEUR: Date is 20th of October. 2-0. That is -- that is what I proposed, actually, for the 2 days.

>> SHELLY CHADHA: In person?

>> RAPPORTEUR: Yeah. October 20, 1 day. Maybe we will have another session on the 21st, 2 days. But I'm not too sure. Maybe we'll have like 4 days, the last of the first week and then the second week and so on.

We may have like more than two sessions and maybe more than more dates, but definitely on 20th so that we can have -- you know, Mr. Scott Isabel.

And we are also planning to have some kind of workshop on the 17th of October.

I hope. We are in the process of planning the dates.

If -- I thought -- Shelly, you are not okay on Wednesdays; right?

No? You are okay with Wednesdays now?

>> SHELLY CHADHA: I have standings meetings with members of my team, but, you know, this is -- one date I can always adjust and cancel those. Not a problem.

>> RAPPORTEUR: Okay. Thank you, Noah.

Yes. Okay. That is the tentative date that I hope we can have at least one session or 1 day session on the 20th on safe listening to have, you know, experts there to discuss.

There is a comment.

What do I -- okay. Mr. Yamazuki. What I want to convey is two purposes for handshake and one is a method for OHCR where characteristics are sent from listening device to PMP and other is a method that dose calculated by listening device sent to PMP both have advantages and at this point wouldn't it be preferable to mention both purchase?

That is the point we -- we did. So calculation can be done on the -- the listening device or the playing device.

It is -- that both -- both are possible.

And for the dates as I said, potentially tentatively the 20th of October for safe listening.

Any comments?

For the document, Raj said title to be discussed. Scope, okay. Any comments? We didn't have input but identified issues with the current document draft. We can update and you

can make proposals to actually how to change how to update. By -- I hope I -- somewhere in -- sometime in August or September. Then in October, we will have another discussion. And yeah. If necessary, we can have another meeting, of course.

And I -- I would like to propose another thing to take advantage of the fact that we are here. So there is so many experts in -- archeology experts and audio engineers and audio experts are here. I would like to have some kind of a -- well, more or less kind of academic discussion on what we are doing, like safe listening replaced dosimetry or audiology and video or video and silent effects and anything that is related to what we are doing and have some kind of online conference or workshop. That would be probably interesting for some engineers and academics.

Any objection? No? Okay. I will propose that tomorrow, actually.

So dates, we don't know yet. Maybe -- I don't know when will be a good time, actually after October or before October?

>> SHELLY CHADHA: Good time in terms of availability or in terms of whether it should be before the October meeting or after?

Because we already said we would have a meeting in October; right?

>> Yes. So we could have in November or something so we can officially propose that and will have an opportunity to decide. Tomorrow, actually, we will have a working party to plenary tomorrow. They make -- they may make a decision on what, you know, meetings we will have before the next Study Group meeting.

So if we want to do it before October, we can do it online. Or after October. In that case, we can plan more -- more ahead; right?

Ahead of time.

So either way is okay.

>> SHELLY CHADHA: I have no problem with this.

>> RAPPORTEUR: All right.

>> SHELLY CHADHA: In August I will be on leave and then -- for 1 week only and then remote teleworking but will be available for online meetings. In-person meeting, I will be available mostly and don't have much travel given WHO's cost efficiency but a little travel here and there. Yeah.

>> RAPPORTEUR: I think it will be definitely online and hopefully can have 20 or 50 participants or something like that and they can make presentations like ten-minute presentation and we can discuss.

Because as we understood today, like Cuba mentioned Duarte's work and they might be irrelevant to us and there are so many experts in the group but they -- you know, we can discuss kind of informally between Michael's device or -- but we don't have that, you know, kind of chance or opportunity to actually discuss these -- you know, previous work and research and things like that that might be beneficial. You know?

Because they may be relevant to standards as well.

Okay. That is my -- my proposal and we will plan either October, right after October or before end of somewhere in there.

Might be a good idea to have talks about the schedule and we can have people from meta, Google, Amazon, Microsoft. Okay. I will propose tomorrow for such a meeting, online meeting. Good. I think that is about it. And any other business that you would like to discuss? We discussed the dates and liaison and the draft and updated the draft. And we will call for more contributions for this dosimetry.

Any questions or comments from the remote participants?

I see none. If it is okay, maybe we can finish by 5 so that -- yeah. Shelly can leave and everyone -- yeah. Any other business? Anything you want to say? Maybe Shelly wants to say something?

>> SHELLY CHADHA: No. Just to say that this is -- I think this is a really important piece of work. Thank you to all of those who are contributing and especially you, Jeremie. Thank you for doing that.

I really think this is important on its own.

Also, you know, to do -- move towards that future that we will have of course accurate dosimetry but also across devices and think it is a step in that direction. I am really excited to see this moving forward.

>> RAPPORTEUR: Great. Thank you. Thank you very much. I would like to adjourn the meeting and thank you very much for your active participation and I look forward to seeing you online again in either in October or in September or somewhere in there. Okay. And also the remote participants, thank you very much for staying there and staying up so late and thank you! And also the captioner, thank you very much for captioning for so long. Thank you very much.

>> CAPTIONER: You're welcome.

>> Thank you for the excellent chairing.

>> RAPPORTEUR: Thank you very much. With that -- Brian, yeah, say a few words.

>> I was just waving.

>> RAPPORTEUR: Okay. Thank you. Safe trip back. Thank you. So with that, I would like to adjourn the meeting. Thank you very much. Meeting adjourned. Thank you.

(Session ended at 16:56 p.m. CET)