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ITU REGIONAL SEMINAR FOR EUROPE AND CIS ON SPECTRUM MANAGEMENT
AND BROADCASTING
SESSION 7
SESSION 8
CONCLUSIONS

JULY 2, 2020

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>> At this point we have to start the session without David.

Welcome, everyone, to this afternoon sessions, we have session 7, Digital Broadcasting: New Services and Beyond and session 8 on International Frequency Coordination: Processes, Results and Tasks Regional and Sub Regional Platforms for Coordination of Spectrum Issue. At this point, we will still try to connect David, he's the consultant of Technology and Innovation for the European Broadcasting Union.

For the moment, I would like to invite the first speaker for session 7 on Digital Broadcasting, Ruoting Chang, Counselor of ITU-R Study Group 6 from the ITU. If you can request for the floor, the floor is yours.

>> RUOTING CHANG: Can I start?

>> Please.

>> RUOTING CHANG: Okay. Okay. It is a pity we're missing the moderator. Yeah. It is my pleasure to make the presentation on the studies from the ITU-R Study Group 6 and the

digital broadcast. Next slide, please. Yes. Broadcasting is an important part of society. Nowadays, digital broadcasting, it is the most consumed across the world. The broadcasting we'll talk about will cover all broadcasting for the protection of public, it is delivered to others..

Second 6 supports the move from analogue to digital broadcasting in the world. The Study Group 6 is a little bit unique in ITU-R in addition to the spectrum issues, Study Group 6 covers all aspects of the broadcasting industry. You can say there are a number of elements covered by the topic.

Study Group 6 has also played a big role in cutting edge broadcasting technologies through the globalized standardized standards.

Next slide.

So with the broadcasting delivery, we have the terrestrial TV, we have for the digital sound system, also another area. There are four systems that have been approved from ITU-R as the first iteration of the terrestrial television broadcasting.

Next slide. ITU-R has approved this as the second iteration of digital TV. This has improved capacity for the UHD technician calibration program. If you look at this as an example, this also is a part of this system which is important to integrate the program and terrestrial broadcasting delivery. We also have facilitated the deployment and looking at carbonation regarding the terrestrial television broadcast.

Next slide, please..

For the digital side of broadcasting, ITU-R has approved the two systems, mainly DRM and the IBO3. The 30, 300 megahertz band, they have six systems of the digital sound broadcasting.

Next slide, please.

We also have the standards on multimedia broadcasting for mobile reception using than held receives in VHF and UHF and this is the recommendation of ITU-R 2016, and the systems we'll endorse and we're focused also on the broadcasting community, they have been evolving and developing the standards, how to take advantage of 5G particularly to deliver the broadcasting program.

Study Group 5 at ITU-R, they have released a report and this report, it gives all audiovisual capabilities and applications support by terrestrial IMT systems. This report has the elements of the potential of IMT for the broadcasting industry.

Next slide.

There are a number of ongoing studies on new topics when it comes to terrestrial broadcasting delivery. Advanced network planning and transmission methods for new application to enhance the users experience. We will accommodate the UHDTV and others,

advanced AdvSS, also VR/AR. We also are looking to assess the interference to the terrestrial television broadcasting from other media services. We have a unique version compared to the traditional communication system with no mechanism to look at the interruption of the targets. We will develop the methodology based on the Monte Carlo method to make this methodology suitable for broadcasting. From 2019 to 2023, we will work and Study Group 6, it is a very busy work especially for the preparation of the agenda of 1.5. We will review the needs and the use of the spectrum in the right gigahertz band, particularly for broadcasting and mobile services.

We also will look at the accountability studies, and this agenda, it is one of the hot spots in region 1 because it is a part of the GGO6 agreement. The sum of these studies, it is to look at regulatory action. Of course, for mobile and the broadcast industry, we need stable, a predictable international regulatory element. We will focus on this issue as we look at the countries and regions, we can have a strategy and find a way to meet all of the needs during WRC-23, and also we'll highlight, we also are looking at the -- we have issued a circulator to collect information regarding the need and the usage of the bands. The proposition there, it is available online, it is online available, the deadline for the response to this question, it is the middle of August. I would like to remind you to be aware of the deadline for this question.

Next slide.

I'm finishing.

In terms of broadcasting service Assembly access, we have developed the digital interface to accommodate this and the AIV and ITU-R also has alternative methods and quite a number of standards that laid the foundation in this regard.

Next slide.

We offer the standards which accompanies the Internet and the traditional transmission to take the experience of the calibration and integrate to the broadcasting program system with various systems. After we have the global platform for broadcasting, which contains the satellite, terrestrial, the Internet platform to meet the needs and a more holistic approach to the broadcasting company to deliver.

Another topic is accessibility. We have covered the resolution, the Study Groups, they have attached great importance on this topic with the need to meet all impairments are met. There is a number of outputs which provide the technical solutions on this regard.

Next slide.

We can show the yellow highlight, the ITU-R home for the basic specification on the parameters available for the

standards and the high-definition and the high-definition TV and the UHDTV and other observations we have started, mainly AIAV with various resolutions, and you have the standards meeting the program protection and enable the market and has great impact globally.

Next slide.

We also developed an advanced sound system, and we have released the first recommendation, it is a big step with the audio community. It is a big step, may start the new age of media age and has a significant impact to communicate with the media outlet throughout the world.

Next slide.

We also developed standardized support regarding the quality evaluation methods. It is a well-known seminal recommendation, this standard, it had been there for nearly 50 years and the specific specification for the quality. Now we're also talking about harmonizing artificial intelligence where we have developed questions which covers will look at how this will change, it is the first outcome of this effort and we'll have the release, this report will provide technical solution and use in the AI for broadcasting program protection. It is a significant standard.

Next slide.

>> We have to ask to you wrap up.

>> RUOTING CHANG: I'm finished, yeah.

This recommendation report has been developed for the global broadcasting community. We'll continue to do our work and we will put all of this and provide it to our membership.

That's all.

Thank you very much.

>> Thank you for an excellent overwork that you're taking in the ITU-R, especially a sector that has a lot of innovation.

With this, I would straightaway give the floor to Roberto Hirayama, Rapporteur for ITU-D for Q2/1. The floor is yours.

>> ROBERTO HIRAYAMA: Good afternoon to all. I'm Roberto Hirayama. I'm Rapporteur of ITU-D Q2/1 dealing with strategies, policies and regulations for the transition to digital broadcasting and new services. I wanted to thank the organizers of this event for giving me the opportunity of tackling this important topic, new services in broadcasting, also to include the perspective of the Developing Countries in this discussion.

I'm going to talk about two perspectives, an overall overview and how we see at the ITU-D the developments, the recent developments, and after that, I will touch upon some of the work of Question 2/1 to give you some view of what we're producing.

If you can go to the next slide, please.

So the perspective that we see in developing and Developed Countries, it is that there has been some transformation in how we receive broadcasting and how the services are being deployed and how we see new applications and how the user interacts with others. We see a lot of different types of ways of accessing audio visual content and users no longer have only the traditional media services. We have other ways of accessing audiovisual and experimenting with different types of content and different types of platforms.

This all reflects on how broadcasters on one side and the viewers on the other side, how they have been dealing with these new opportunities.

Next slide, please.

We see this new application and new services that's been deployed in several regions as a new trend. We see it is not only for the broadcasting platform, we have seen that, we have interactions between various platforms, especially broadcasting and broadband and not only for developed countries. This is happening, this shift, of how consumers are experimenting with content, how regional content is happening as well for Developing Countries.

Question 2/1 is analyzing how strategies and regulations need to evolve and how the new services impact and how we plan, how we implement broadcasting services and applications overall.

One important aspect of the development sector, it is that we're very well-funded with how the new technologies can help achieve the SDGs. With the interaction between broadcasting and broadband, we have seen a lot of opportunities for broadcasters to help bridging the digital divide and bridging the divide for new applications and new types of services to reach the Development Goals. This is an important aspect of that.

Next slide, please.

We see also that there are all of the players in this new environment for the television industry. The carriers, including broadcasters, enterprises, other vendors.

Next slide, please. All the new actors, they're competing for the user, the viewer, and the first contact with the users in a sense that the experience that one customer has with his mobile phone supplier, it is very critical for how the content this he accesses, it has to deal with that.

All the other players, they're also trying to get the attention of the user in the same way and interacting and having their attention so that they can provide services. Another thing that's important to highlight, it is that with COVID, it had some implications in the sector, and we see some studies coming out with some reductions in the revenue, for example, and a potential turning point for streaming services, this is

something that's debatable and we see a lot of debate and discussions towards that direction. This is something to be aware and to look after.

Next slide, please.

So having in mind, we have other actors in the industry, also new services and applications being provided in several platforms, something to consider, it is that the traditional service providers, for example, broadcasters, they need to take advantage of their networks to leverage their service and experience with users to all the platforms creating a network and media distribution, not only in the technical point of view and also in providing content to users. This seamless experience, the transitioning from one network to another, it is something that we see as very beneficial to the user and also creates more opportunities to broadcasters and other platforms as well.

Next slide, please.

The new scenario, they have some implication on how all the actors, service providers need to consider investment in a sense that some consolidation and coinvestment, infrastructure sharing, it needs to be considered in the way of achieving a global eco strategy in the sense that the broadcast -- not only broadcasters but other service providers as well, they need to consider more global view of how they deliver content to user, to the user, and also how the different platforms interact. This all reflects in how investments need to be performed. In this sense, it is a new scenario and we see this as an opportunity for broadcasters in the sense that they will have more platforms and more ways to deliver their content.

Next slide, please.

This is the overall context that I wanted to make. It is specifically for Question 2/1, we have been dealing with this challenge and opportunities for broadcasting, and how Question 2/1 can help in achieving that. We see Question 2/1 high school a platform for sharing experiences and best practices among all stakeholders, especially those from the Developing Countries and we see a lot of work and a lot of contribution from the countries and we shared all of those experiences and we feel that it is beneficial to all.

I'm going to touch upon one specific case of the Question 2/1 in the deliverable for this year, which is available on the Internet.

If you can go to the next slide, please.

With this context in mind, the question discussed some costs and investment implications of all stakeholders in two perspectives. First, the transition, the traditional services, the transition from other services for dental tall broadcasting,

and all stakeholders, broadcasters, viewer, government, content providers overall.

Next slide, please.

Also some additional challenges reflecting the new services and applications that we see in the new context and new trends we feel are beneficial to be studied and see how they impact on the strategies, for example, for governments and planning implementation and planning the evolution and also for broadcasters to implement new services accordingly.

This was compiled in a document which is the deliverable for 2020 for Question 2/1 which considered the two aspects, the digital transition more specifically and new services and applications. We have the material from different sides. We compiled this information and had some lessons learned from this experiences.

If you go to that link on the bottom of the page, you can have -- you can see how we compiled this experiences.

That's the end of my presentation.

I think, again -- I thank again for the opportunity. I'll be available for questions later on.

Thank you.

>> Thank you very much, Roberto, thank you for the work you're doing in Question 2/1.

I will now turn to Peter MacAvock, senior manager of delivery and services at the European Broadcasting Union. Peter, if you can -- I see that you have requested the floor..

Just one moment..

I see that Peter is connected, but it is not streaming.

>> Can you hear me? I see Peter is connected. Probably there is a problem from his side.

>> In the meantime we'll try to solve the problem with Peter. I will ask Aleksandar Mastilovic if he's ready, raise a hand. Fantastic, Aleksandar Mastilovic is the Director of telecommunications at the communications regulatory agency. The floor is yours.

>> ALEKSANDAR MASTILOVIC: Hello. I apologize for my environment. Actually I'm participating currently in my local area here. I hope you can hear me well.

Can you confirm that?

>> Please go ahead. Thank you.

>> ALEKSANDAR MASTILOVIC: Thank you very much.

I was listening very carefully to the previous presentation from my colleagues and I can say that I'm glad that I can continue, he made a great introduction which is something I want to on the floor right now, talking about challenges we face in the local regulator for telecommunications. I want to underline as an introduction, we have the media and content, so we have

let's say we have the broader picture of public broadcasting and are facing a lot of it challenges these days because of the technological evolution we have faced a few challenges and some of them, they're very connected to the evolution of technology responsible for broadcasting.

Please, next slide.

Next slide, please. Okay. Thank you.

I just want to remind the participants here, something that I find, it was an important challenge right now, it is the presence of OTT services, over the top services, and let's say multimedia, broadcasting over the Internet. From the perspective of a regulator in Europe as well as in Bosnia, we are not recognizing the Internet streaming as a broadcasting services and the European community of national regulators, actually in 2016 classified that these services, the two groups, as a first step in regulation for broadcasting on the Internet, so we have the two groups and we have identified some OTT services that qualifies as a service whose a competitor to the conventional broadcasting services. OTT with the potential to be a competitor but we can say that now it is not, and some other OTT services which we do not observe as competitor for let's say conventional broadcasting services.

A great example, just two famous service, one, Netflix, another, YouTube, and especially, it was obvious during the period of pandemic in a global way that most have decided to drop the conventional subscription for broadcasting service, including the terrestrial transmitting or using the cable distribution and just using the Internet access to subscribe to services. From the position of national regulator, we realized that the broadcasting becomes just one service, on the Internet, it is a trend actually to have all services or IPV platforms. In the future we cannot -- in the future, we cannot observe a broadcasting sat light separate from the Internet access, and in that direction we'll try to build actually some kind of regulation to protect the conventional broadcasters.

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I just want to remind everybody, even if you're talking about the small companies, these companies, they actually has a huge influence on the behavior and the habits of customers. We're talking about big influence or big revenues and some of the companies, they're registered out of the region where we have our local jurisdiction. For example, we cannot regulate the content metrics because the companies in the United States, from their perspective, we're aware of the presence of the service, for example, but we cannot regulate the contents. It could be something that we can observe as a challenge for the future, for regulation at the global level because we recognize

some of the services as global services with the intervention of ITU will be very helpful.

Next slide, please.

Also, I just present here, one slide to it compare OTT services and usual services, conventional broadcasting in the cable, I just separated the two for now, as you can see, the Telecom universe, it is different than the OTT universe, especially a technological way, because the -- this is new right now and leaning towards IP service, but in the same time, you have a lot of OTT services which are already used in the IP layer. My personal observation is that OTT service, in a technological sense they are more ready to jump in the market and take a bigger part of the cake.

Next slide, please.

I want to share my observation from the position of national regulator, we have a little bit insecure position right now, we're not sure we should prepare the regulation because as most of you probably know, that 5G, it is designed also to be the platform, the technological way for the mobile network for the first time to deliver the broadcast services to share the multimedia content. I want to remind you, in the official standards you can find the quality of service category C Q 16 that defines the management of services to be built with the capacity to serve HV or even 4C and in that sense, it means that our TV at home, it is an IG plan, so from that perspective, we are not sure that the convention has the potential to survive. We are looking at other standardizations and Working Groups around the world to try to predict the ground but we're not sure in which direction we should put our efforts to build affirmative regulation framework to allow our market to develop. Maybe it will be useful to discuss what will happen with assistance, and the second generation, and the coming 5G technology, there is a need for the distribution of the content and broadcasting in that sense, from the perspective of the regular customers, you have a common way to connect to the service and watch whatever you want. The broadcasting service, it is important to understand, that it is three directional, service, we have to look at it from that perspective and we also should define which kind of data may be collected from subscriber's side from collecting some statistics about the subscribers and protect the privacy of the subscribers because if you use the IP-based system to deliver the content in that sense, you should be aware that the system becomes let's say it could be used for marketing purposes, et cetera.

In that sense, I believe that national regulators, the community around the world, they should be well aware and ready to react in the proper way without looking at the evolution of

the market.

Next slide, please.

There's a lot of other questions. I don't want to touch from my perspective right now. I would like to hear some answers in the future in this or other ITU events, it is a future direction of the regulations. I see for at least ten years that broadcasting will be moved on IP platforms. Internet may be IP-based. That's a matter of delivering the content, whether it is 5G or any other way, but we should be -- we should recognize that the broadcasting and Internet as a broadcasting service, they are trying to use the same framework even if we're on the Internet. Without even the freedom of Internet and Internet neutrality, IPv6 or IPV, that's something that I'm personally -- we're at the point that we're going to. Also I'm -- it is interesting to share experiences with other regulators and practices and also ITU, if you have any kind of research in this direction just to help us to define our future plans and activities and building some ways to protect our market and customers.

I think that's everything that I have prepared for today. I just wanted to share my concerns and experience that I'm facing every day from the perspective of broadcasting services. I'm a little bit -- I want touch on the technology, we're sharing the regulation for both. But it would be helpful -- it could be helpful for future direction of our activities, and, of course, I'm very willing to contribute in the future work.

Thank you for that.

>> Thank you very much for a great presentation. Very interesting to see the perspective of the regulator, especially when it comes to the OTT and I see in the chat there is an indication to you to participate even more in the works of the question 2/1.

Without any further hesitation, I will give the floor to Mr. Peter MacAvock, he's now connecting.

Peter, can you hear us?

>> PETER MacAVOCK: Yes. Thank you.

>> Thank you very much. The floor is yours now. Thank you.

>> PETER MacAVOCK: I think the systems are almost okay working on multiple systems!.

This is a presentation regarding the challenges of introducing new systems. I represent the European Broadcasting Union, an association of public services and stretching from the east way back to the Russian Federation.

I'm going to talk to two very specific elements.

Next slide, please.

>> Unfortunately, the translator cannot hear the speaker,

the sound is interrupted.

>> PETER MacAVOCK: In the work -- (poor audio quality). Present Chairman of the) poor audio quality (..

>> This is the interpreter speaking. Unfortunately, the quality of the audio is not sufficient for interpretation.

>> Sorry. We have some glitches in the connection I think. Your audio is interrupted. I might ask you to switch off the video perhaps so we can have a clear audio.

>> Peter, now we cannot hear you anymore.

I don't know if maybe you have a headset that you can try and use.

A few minutes and we'll try to reconnect better. Here he is.

>> PETER MacAVOCK: Can you hear me now?

>> We can now see and hear you. We lost you when you disconnected the video.

>> PETER MacAVOCK: The system has changed the audio systems when you modify video.

Let me briefly try and move on quickly. The distribution model that we inherited, (poor audio quality). Radio TV to an audience location. (Poor audio quality).

>> Unfortunately, the audio is still getting interrupted..

>> We have a much more diverse audience -- keep clicking -- located around different types of devices, in addition to broadcast..

Broadcasting services delivered over a lot of platforms. So next slide, please..

The first thing to note, the consumption power, it is linked to devices and users are constantly -- so we don't have -- we didn't have this linkage between access and the service. It is great.

But we have noted in COVID-19 across all the European broadcasting territories, it is that the COVID-19 experience has led to a surge in broadcast and the associated hybrid. This popularity, it was potentially causing failures in broadband systems and it is across the hybrid networks. The broadcasting, it was resilient. Another thing to note N the discussion, we have heard from the last speaker, that there is a driver in the network speeds and reliability. I think an important point mobile networks have and can have the speed, and some indeed have the coverage, but you can't have the resilience -- you can't have the speed and coverage at the same time. None have the resilience of broadcasting. Our view, and the view of media organizations the world over, it is through intelligence cooperative broadcast, broadband networks that we can receive the highly resilient high through put networks with the optimum that will cover any device belonging to any individual with

reliable service upon which he can afford the news, his information, his entertainment..

Another point, it is that in today's app-based consumption environment, it is pattern for the support of those, we'll talk a little bit about that in a second.

Another point, it is that the world over, all of the investing money, the capital expenditure to call in these system, almost none of it, it goes into broadcasting systems. But, all the money that's being made, in broadcasting systems, still, despite the lack of investment, and OPT and broadband systems, they are a huge cost on media companies apart from being very large intoed.

It brings me to the next point. the conclusion of the first is that distribution, it only can be handled through intelligent cooperative networks and what you expect from a value resistant, good coverage network.

Next slide, please..

When I took over, it was laid down a challenge offered in 2017 by the CTO of the redPull media house where we were visiting. He said on the -- red bull -- on the left of the picture, you have the classic broadcast distribution. One cable delivering, that's -- if I have this cable, I need to do nothing else.

On the other hand, on the other side of the picture, we have the very important OTT and mobile picture, and it will serve my younger customers on the various devices. This is like spaghetti. The challenge was, can you please, in this project, can you -- in this DVB project -- can you go back -- he said, can you sort out this spaghetti in this project or somewhere where we minimize the cost of trying to adapt systems through each one of the distribution networks., we came up with this streamlined architecture to support the service discovery and selection (audio quality poor) and interoperable framework and it was first demonstrated with these technologies at IBC2019 and it was then one of the most interesting things they have seen, not because it was truly innovative in what it did, but it allowed different vendors to connect in an OTT ecosystem which is normally, absolutely impossible..

We have taken a classic scenario, digital broadcasting on a digital broadcast network, and we're trying to migrate and expand that into and it is adapted to any network, any type of network, broadcast or broadband, trying to prepare for this hybrid cooperative network future with the utmost speed across different networks serving different types of devices. We have the broadcasting and the broadband and it is what we're trying to facilitate at the moment. It is working quite well.

This exercise, it is the event of the HbbTV, it is a key

component of any media company to address hybrid service on V sets, et cetera, set top boxes, and that's okay, and it allows people to have web applications and mobile applications to use them on TV sets and set-top-boxes facilitating the promotion of OTT and broadband services. In an effort to do this, we considered a standardization organization, we have moved away from being standardized and promoting easy to implement interoperable solutions.

What we have done, we have developed -- next slide -- thank you.

We have developed for the service, we have developed a free reference opportunity to be installed on an Android device to allow you a small number of services for now, it allows you to access this in a seamless manner. And for television sets and for Android mobile devices and we're looking at digital rights management, the support of multiple users, different aspects in this direction. We show you how to download the application and roll it on your own devices.

That's my intervention. I see there is no time for questions.

I pass back then to the moderator.

>> Thank you very much, Peter. That was very interesting to have the perspective of the EBU on this important topic. I hope everyone was able to follow. I apologize because the connection was not great. The interpretation service was not available at all times.

Please accept our apologies for that.

With this, well, I would like to thank you very much, all the speakers for this session 7. It was very interesting to see the standardization work and policy work done at ITU and we did different sectors in ITU-R and ITU-D, and also it was very interesting to see the perspective of the regulator as well as broadcasters. I think we invite every one of you to go, check the presentations which you can find on the website.

Again, I apologize for not having David Wood, it would have been much better moderator than I could do. Also he had some slides which you can find again on the website.

With this, I would like to close this session and toss to the last session of this ITU seminar for Europe and CIS and spectrum management and broadcasting, this session will be moderated by my colleague Farid Nakhli from the regional Office of CIS.

The floor is yours. IMT.

>> FARID NAKHLI: Great. Thank you. Congratulations on the very good moderation by the way.

On behalf of Julian, myself, all of our ITU colleague, I would like to thank all of the participants, we're now in the

second day and we have 139 connected participants which is a great number.

I'll be moderating this session in Russian. At this point, I'll switch to Russian..

I'll start moderating session number 8, International Frequency Coordination: Processes, Results and Tasks Regional and Sub Regional Platforms for Coordination of Spectrum Issue. Each speaker will have 10 to 11 minutes for presentations. At the end, I will try to answer your questions. Send your questions to our chat and specify who do you intend to ask speakers, presenters, and now I would like to turn the floor to Mr. Albert Nalbandian, Chairman of the WRC-23 group to prepare for the next Conference.

Albert, the floor is yours.

>> I see myself. IMT.

>> ALBERT NALBANDIAN: Can I start.

Thank you, this particular session, it has a lot of subjects to discuss, a lot.

The issues of frequency assignments, this is the Keystone in terms of moderating the spectrum, the most important element, it is that the growth and demand for spectrum, we have to improve the methods, the control, the usage of spectrum, and one of the most important element here, this is the real usage of the spectrum but we have talked about access, et cetera, we don't frequently talk about the spectrum, how it was used and the element of spectrum that were distributed to certain operators or providers, how do you use that part of spectrum, that's why it was quite reasonable to include this particular subject matter into the agenda of today's seminar.

I prepared several slides on this theme, on this issue.

If you don't mind, I would like -- yeah. This is the deficiency of this particular system. Mainly, our presenter, speaker cannot control the slides.

Can you share the slides.

Please, next slide.

I'll speak in English. I'm not going to repeat what you can see on the slides, but I would like to stress basically two points: No national borders in terms of the spread of the radio waves and second, it is the joint use, common use of the spectrum. Access is being granted through radio regulatory, it is through the distribution methods, this is the role of the Conference so the assignment of the frequency, this is the responsibility of the administration. The administrations are dealing with these issues and the final objective, it is to include in the international register, and for that, we have all legal basis that are reflected in the documents of the ITU and, of course, it would be with a notifying administration, the

sequences following on the basis of the use of spectrum, we develop the system of radiocommunications and you will have to legalize frequency assignments, administration collects relative data and provides technical analysis, et cetera, and after that, depending on the situation, it is included or not included into the register.

Here we can see the remuneration of the functions of the RB based on the convention and other legal documents of the Union. I have already mentioned that before.

In the basic documents, in the fundamental documents of the ITU there are special sections which are dealing with notifications, frequency assignments, terrestrial, space services, there are two major documents, the radio regulations volume II containing plans, so you probably know, you know, whatever we have in registration, it is a confirmation of plan assignments, or the register, which is included in the register, on the basis of fundamental provisions of the ITU. It is a long sequence, a long procedure, sequential procedure for the notifications for frequency assignments, which are being registered by individual countries and as a result quite a complicated, I cannot describe it in 5 minutes, of what you have to do but as a result the sequencing of the procedure, of the radio Bureau, and the final stage -- basically I'll answer two questions. Whether it is positive or negative, the answer, the conclusion. If all of the provisions of radio regulation is taken into account, in this particular moment, this particular stage, the rules of a procedure, they're of huge importance, being developed by the RB. If it is in terms with the rules of procedure and radio regulation, this is a positive result, the specific frequency assignments is being introduced into the register is.

If not, it is returned to a notifying administration with a prescription of what should be done to correct it.

The register, the confirmation of the assignment with volume 2, plans, we have quite a few of them, we have plans to use short range extensions, geostationary, et cetera, et cetera. Then this system, it is protected by international standards, international protection. This is the final objective to be included in the recommend center, and then you get international protection to avoid any possible interferences and this system becomes official, an official one.

So you can read the sequence of steps, but I need the last slide of my presentation. The final slide of my presentation..

Please go to the slide. The most important element of this process, these are elements of coordination.

We all know, at least in this space, this space, every country is neighboring with other countries, and in order to get

positive solution to be included into the register, you need broader cooperation.

Cross-border coordination. It looks like this is the last slide. Sir, this is the last slide of my presentation. In all the countries that have neighbors, borders with the neighbors, we have to have a regional level of coordination, in the RSC, we have a commission on the spectrum management through Working Groups, one of the Working Groups, it is dealing with the issues and developing the documents that you can see on this screen, a general agreement on technical fundamentals and recommended on the coordination of the planned frequency assignments in the bandwidth which touches on radio commission services and terrestrial services 470, 862 megahertz and our recommendation and coordination of the frequency assignments in band frequencies, 29.7. Our administrations recommended these, our countries, we have neighbors and we have to coordinate with them before technical or frequency assignments are included in the register.

Once again, I would like to stress, technical frequency assignments, this is the most important result in terms of assessing how the spectrum is being used and if you have any question, send them to chat.

Thank you very much. I would like to ask you to switch off.

Next speaker, 2002, expert on international frequency coordination, cross-border coordination, frequency coordination, this person deals with all of these issues daily. It is interesting to look at how it work, how it is being done in Hungary.

>> TAMAS UNGER: I'm Tamas Unger, from the Hungary administration. First of all, I thank you for the opportunity to speak a little bit about the current Hungarian issue of frequency coordination with regard to the MFCN bands.

Next slide, please.

As first up, let me give you a brief overview of the basic principles.

Next, please.

Hungary is a member of the agreement coordinated stations of land mobile service and fixed service. The basic principle is to apply the same algorithm for interference calculation with the same coordination database of stations and by using the same data to get the same results. The method is well defined and involves all administrations to use with frequency units and bands and borders with the agreement. This is for smaller networks, a lot of bay stations that are constantly changing parameters. There is a constant need for agreements between the countries and the operators.

Next, please.

You see the main aims and influences for the bands. Just to say some words briefly, the administrative procedures can be used and at the same time, the operator, they will have higher freedom in the frequency Al locations by Hungary as a country at the edge of the European Union should handle the cross-border coordination situations with neighboring countries having totally different rules for frequency Al locations applied.

Next, please.

As I can say, the special agreements, the usage in the border areas, they're having a similar structure as well as the main principles are the same. You see a general review of the typical structure and the content of the agreements. I would like to emphasize the importance of the strength values which are defined on the borderline and secondary line on the neighboring country, taking into account the applied PCI network.

Next, please.

After this short introduction, let me go into the details of the current situation of our frequency bands in Hungary and the border frequencies. For every band, you see small tables which indicate the signed agreement arrangement with the neighboring countries, if there any. The technology and the date, the place of signing, they're indicated as well.

First, first one, it is the 700 megahertz band, in this band, Hungary signed arrangements with 6 of the 7 neighboring countries, this frequency band is a good example for how to protect different services at the same time by using different area. The transition period, it slowly comes to an end by switching of the transmitters at the doors and therefore we have the intention to expand this agreement with as much as possible.

Next, please.

The option of this band, it was successful and therefore the three service providers, they'll be able to use that at the end of the transition period.

Next slide, please.

Just to give you an example, an expressive example, on this slide, you can see the calculation of interference caused by DVIT and the transmitters and the frequency bands. This kind of calculation, it can help a lot of people with the options and the potential of seeing the operators for the possible temporary coexistence of broadcasting station and other networks.

Next slide, please.

In the 800 frequency band, Hungary has arrangement with six of the seven neighboring countries between MFC and systems, the coexistence of the stations in the UKR and other networks in Hungary is handled by a different -- next slide please.

As you see, the situation in 900 megahertz band is a little bit complicated taking into account the coexistence of the different mobile technologies. The basic rule is that the GSM has priority over other technologies and the conditions of the technological neutrality can be ensured by the operator arrangements. Since the ECC recommended for the radio, our task, it is to include the NR into the existing agreements if needed.

In Hungary, this band is used for GSM, UMTS and LTE technologies for operators.

Next.

The next frequency band, the 1.5 megahertz supplemental, the agreement with 6 countries covers four parts of the spectrum by the relevant recommendations extended for new radio also and it is available for the World Bank since February. Therefore, the agreement can be extended for new radio and for the World Bank according to actual survey, there is no priority to use that band.

Next.

As you can see, on the next slide, the 1.8 gigahertz band, it has similarities with the 900 megahertz band.

We can go to the next slide.

Yeah. The technology in Hungary, you see the different operators there in those blocks.

Next, please..

On this slide, we can see the situation 2.1 gigahertz band, the agreement signed in 2020 this to be enforced with only Ukraine, therefore we have the intention to involve UKR to the multilateral agreement that will be also for the LTE technology if possible.

Next slide, please.

Just a quick example in the agreements signed in 2018 the distribution of the PCI for the UMTS and LTE, this is a way to handle them at the same time and in the same -- as you can see from the two tables.

Next slide, please.

So three operators are using that band. As you see in that slide.

Next one, please.

The situation of the 2.6 gigahertz band can be seen on the next slide.

This shows the new agreement is signed by 4 countries, Romania has the opportunity to sign and that's in progress. This is a good example for complicated regulations, but there are a lot of different types of system in the same band, SD-LTE, other, and therefore a lot of different interference of situations should be handled by different strength values as you

see on this slide and on the next slide you will see another table to demonstrate the complexity of the problem.

>> Go to the next slide.

The Rights of using Hungary can be seen on this one. The green block, it is free, the operators, they were not interested in it. They have the rate to use the band until 202034.

Next.

>> In the 3.5 megahertz, Hungary signed agreement with five neighboring countries, Romania has intention to join. It has been extended with new radio in this February and the development of a new recommendation to solve the issue of TDD synchronization at the borders is in progress.

Next one, please.

The TDD on spectrum auction this year between four operators as seen, the amount of available spectrum is different from operator by operator.

Thank you. Next one.

Last but not least, the 26 gigahertz is available for point-to-point and point to multipoint systems in Hungary. Agreements have been signed with every neighboring country between 2000 and 2006, the license will expire soon and they cannot be extended. This Rights of use.

Next one.

Just to sum up, you can see a brief summary table including all of the frequency bands mentioned before, Hungary has a strong intention to conclude all of the possible iterations and for all of the bands by the introduction and the implementation of new radio option to be followed and if needed, the agreement should be modified to guarantee the interference of operation for the new technologies.

Thank you very much for the attention. If you have any questions, you can write it to the chat.

Thank you very much.

>> FARID NAKHLI: Thank you for sharing that very much.

I would like to give the floor to the next speaker, Mr. Eric Fournier, national agency for frequencies of France, Eric Fournier, and coordination of spectrum, how the situation is in Europe and elsewhere.

The floor is yours.

>> ERIC FOURNIER: Thank you very much. Good afternoon to everyone. Thank you for this opportunity to present the activity of the subgroup of the RSPG. IMT as the RSPG, it is the radio spectrum policy group which advised the commission on strategic spectrum issue, for example, 5G, this is the in 2016, developed an opinion recommending that the one band should be considered as a primary band for 5G and. It is important for the 5G success. Next, please..

The activity, the group, it is something like ten year, but it is only recently on the ground since the European Union adopted the European code on the communication. As you can see on the slide, the output, it creates an obligation for all EU in case of cross-border coordination difficulty, that's a general obligation supplying to harmonized bands and non-harmonized band. It relates to then we have the coordination of mobile state and the coordination with countries outside of E.U..

You can see just below that, there is no -- even the possibility for the European Commission to adopt some decisions implementing the solution which has been advised by the opinion. If you have such a decision, it is becoming binding, a Member State, to apply the solution. In contrary I can't to the previous regulatory text, it is limited to the availability of the E.U. harmonized bands such as shown here. Just to insist on the importance of this regulation, and the very specific situation in E.U. where we have some, in the past -- okay, as directed for putting in place, it is still in the implementation, the availability. The new, and that will rebuild some broadcasting below, and setting up this, we were asked for coordination, serving the group, it was -- it was the complicated situation, and then many other groups, particularly the digital dividend, the implementation forum, other groups, they have the coordination taking place to make this a robust band for mobile so because of time, we can set some roadmap or agreement in advance, well in advance of the authorization for mobile frequency band in order to avoid difficulties that took place in the one band wherein fact mobile state were quite late compared to the obligations which was the decision of the console and the European Parliament.

All that was done in an E.U. decision regarding the band, that decision was formed. And we have a big issue, it was this interference around Italy and the broadcasting band and others, and then we have the ITU, they are looking at this issue, or looking at this issue several times with the assistance of us, of course, and with this that took place, mostly in ITU, in the groups, much work has been done in the last few years, partially for television with regulations to the 700 megahertz and that situation, it is satisfying but still some difficulty with questions on top of other things and the transition for mediation outside of the 700 megahertz band. And for the VHA band, we have now in Italy a commitment in the law to develop and to use a plan which will fully respect the enabling rights and Italy will be finalizing with all of the post border negotiation and then they'll be developing a plan and then the institutions, they'll be in the VHM band. The situation, it is -- we have difficulties even to get in the European band.

The last activities, quite recent, the coordination with the 5G and I have a separate slide on that.

Next slide, please.

Back to the 700 megahertz band, when the E.U. decision and the council, and the parliament decision, they have obligations to all Member States to have cross-border agreement with all E.U. countries or all E.U. neighboring countries, before 2017 and in fact, that was done by All States, which successfully, the agreement with the neighbor in due time. There are obligations for publishing a national landmark, it was the last national roadmap, it was published only recently, and that's because it is based on some difficulty of the transition with Italy that's explaining the delay. For the authorization, the decision itself, we requested it to be carried out before 2020 with the possibility of delay in case of cross-border difficulties in the countries outside of the E.U. We had all E.U. countries, which will authorize this 700 megahertz band before December of this year, and three countries only have some delays which are justified by some countries outside of the E.U.

We have address all this deadline, monitoring everything, trying to look at the cross border difficulty, and we have also some issues with countries outside of the E.U. and then assisting -- let's see, next slide, please.

So the E.U., the E.U. borders, one of the main issue, it is with the eastern part of the E.U. where the 700 megahertz is implemented with additional time compared to the E.U. and it is the most difficult element for us, the timing and certainty.

Since it makes difficult sometimes to plan some transition solution inside of the E.U. for taking into account that interference from the 700 megahertz broadcasting, it may cause some significant interference to the mobile networks and that's been shown in one of the slides.

That's a plea for all countries in the eastern side of E.U. to make all information available on the timing, and to discuss with E.U. side this issue of transition.

For the other part of the E.U. borders, some practical solutions have been found with all neighboring countries, morals inside of the E.U. and with other countries, in the North Africa. Next slide, please.

So this last slide, it is about the cross-border coordination in 3.4 gigahertz, in that frequency band, the main issue, it is the interference from bay station to bay station that can be a distance that's developed up to a kilometer and to avoid this bay station to bay station interference, you need to have a synchronization between networks in different countries. Synchronization means avoiding that bay station may transmit at the same time as bay station in the neighboring country would

receive to avoid the interference from bay station to bay station.

To achieve this full synchronization, you may to have it in the same infrastructure, if not, you can't have full synchronization.

There are some solutions which have been -- which have been developed by the industry to be able to accommodate a case of the countries and to look at that infrastructure. That's for example, setting the transmission, when you have that at the same time as another in the neighboring emission, it is corresponding with the loss of capacity in the case which is under discussion in the E.U., it is 17%. There would be some different infrastructure in the E.U. and it may apply in other parts of the world of course.

Another point that's important to note, it is that the industry will implement only certain combination of infrastructure. If one country that's using a structure that's quite exotic, then they face the difficulty that at the border, as the E.U., the coordination, it will be much more difficult because synchronization will not be possible so with some interference, up to 100-kilometer from the border.

We are addressing this issue. We're starting to address this issue in our group at the SPRG by issuing -- by the RSPG by issuing a questionnaire with neighboring countries with the E.U., and I invite you, of course, to respond to that.

The idea is to increase the awareness about this problem for all countries inside of the E.U., neighboring the E.U., to identify the source and it may have an impact on the possibility of synchronization and to notify in advance any difficulties in particular in the implementation is made impossible for certain reasons. There is some discussion or questions on the problem was all of the services, that can be the case in particular outside of E.U. with earth stations, which are also primary in the frequency band in this period and even more than mobile, mobile is primary on another according to regulation. That is to identify any difficulty with the network that's close to the border, quite difficult to protect in case there are cities or some large expected deployment of 5G at the border, that could identify the issue sufficiently in advance at the border and it is a piece that's involved with all of the stakeholders being involved in the discussion.

Next slide, please.

So thank you. In conclusion, it is an issue among E.U. Member States and also with countries outside of the E.U. We have the 700 megahertz band, we have the 8 gigahertz, that's clear, that's the bands that everybody is thinking about. Of course, our principle for this, it is in the title of the group,

it means that we're trying to identify solutions which are satisfying for both parties and the way that we're doing among E.U. Member States and how to be involved with countries outside of the E.U.

Thanks a lot.

I will answer to any question.

Thank you.

>> FARID NAKHLI: Thank you very much for this useful insights.

Let me ask our colleagues to connect the next speaker please. I'll start introducing. The next speaker, Ms. Natalija Varagic, she's a coordinator of the republic agency for electronic communications in Serbia. She has a great deal of experience in managing groups coordinating radio frequencies on the national level and she will tell you about how these things are addressed in Serbia.

The floor is yours.

>> NATALIJA VARAGIC: Good afternoon, dear colleagues.

First of all, thank you to the ITU-D for kindly inviting the regulatory agency for electronic communications from the Republic of Serbia to this event. I'm pleased to share with you our activities in the field of international frequency coordination.

Next slide, please.

My presentation will be separated in a few parts.

Next slide, please.

I will start with the competencies of the regulatory agency in the field of international frequency coordination. According to the provision of law on electronic communication, RATEL manages radio frequencies usage and coordinates frequency for terrestrial and satellite radio services in accordance with international agreements. Also establishing cooperation between international organizations and relevant national administrations and participates in numerous Conferences and meetings in the field of electronic communications.

Next slide, please.

I will start with the broadcasting service. The Republic of Serbia signed three regional Conference final acts. Geneva 75 for medium waves, 84 for FM radio stations and 06 for digital broadcasting so T-DAB and DVB-T. Frequency processes, they're in accordance with the provisions mentioned in the final acts.

Next slide, please.

Coordination procedures, it is geared around two way, exchanging data among affected administration by sending adequate notice forms or publishing data in the part A of the special sections of the corresponding agreements.

I would like to emphasize here, RATEL delegates

participated in many bilateral, multilateral meetings including neighboring countries. Of course, all meetings resulted in signed protocols, those protocols include coordinated frequencies or stations.

Next slide.

We have planned other activities. So I would like to mention that RATEL actively participated in the work of forum SEDDIF which was mentioned here, and they also have planned to meet with the goal to establish a multilateral frequency coordination group regarding the VHF band III planned for March 2020, but it was postponed due to COVID-19 pandemic.

Next slide.

So just to illustrate what I'm talking about, in the last year for broadcasting service RATEL performed almost 500 coordination requests with neighboring and other countries. You can see by the agreements what it is.

Next slide.

For land mobile service, and the fixed service in accordance with the Serbia, Hungary frequency coordination meeting which was held in Budapest, 2010, coordination between Serbia and Hungary is carried out in the spirit of HCM agreement. Serbia still didn't sign HCM agreement, but coordination between Serbia and Hungary is underway. Just to mention, last year we coordinated 49 frequency assignments in the border area in the land mobile service and almost 400 radio links for fixed service.

Next slide, please.

Next slide.

RATEL solves 1 to 2 requests per year for international interconnection via microwave links with neighboring countries. It is good to know that. Next slide, please.

For fixed satellite service, Serbia shared an allotment with many others in this plan. So with the aim to provide service on Serbian territory, national territory, our administration submitted the request for a national allotment in the appendix 30B plan on March 12 this year. It will be considered.

In the fixed satellite service in accordance with Article 9 of radio regs, RATEL coordinates specific earth stations.

Next slide, please.

For broadcasting satellite service, Serbia has a freak Yens assignment in the appendix in the 3038 plan, and to replace this assignment in the current plan assignments, we submitted a request under special procedures contained in resolution COM5/3 from the last Conference on May 2020.

Next slide, please.

After publishing the new plan assignment by the Bureau, our

next step for our administration is coordination with affected administrations.

Next slide, please.

I would like to also mention that in order to protect national plan assignment allotment, we check every two weeks for publication and send response to that.

Next slide, please.

For mobile satellite service coordination is given -- is carried out in accordance with Article 9.11 of radio regulation, ITU-R Resolution 716 and Footnote 5.389A of radio regulation.

Just to mention, RATEL also coordinates a specific radar with neighboring countries.

Next slide, please.

I would like to mention that in the last 15 years RATEL representatives have signed around 50 different technical agreements and protocols with the aim to coordinate radio stations for different radio services in different frequency ranges.

These agreements involved Serbian neighboring and other affected countries from region 1. If you want to see more details about this agreement, you can visit Ratel website, and you will find all data about it.

Next slide, please.

Of course, we have some plans. RATEL is in the process of preparing for signing the technical procedure on frequency coordination for GSM-R with Hungary, Croatia, Romania. We plan participation in future meetings of the multicountry T-DAB group in order to coordinate T-DAB frequency assignment and of course some multilateral or bilateral coordination meetings.

Next slide.

So thank you very much for your attention. If you have any questions, please feel free to ask.

>> FARID NAKHLI: Thank you very much. That was a very nice presentation.

Thank you very much to all speakers for keeping the time. We now have time for questions and perhaps I will read first the questions that we received through the chat and some answers are already there.

I'll allow myself to read it out. First, our second speaker, Tamas Unger, what's your experience with cross-border coordination with non-E.U. countries, the answer, it is the biggest problem is cross-border coordination, it is the unharmonized spectrum management usage and of the co-existence of different systems, government and commercial, and to find the proper triggers between them.

We also have a number of reminders that all presentations can be downloaded on our website and the link has been provided.

Those of you who would like to use the presentations, you can use this link in the chat.

Do you have any more questions? Any further questions.

Yes, we can see a hand raised.

Could you please connect?

>> Thank you. Good afternoon to everybody. I'm from the BDT. Just wanted to add on to the topics, that now we have especially for the cross-border frequency coordination, we have now a project for Africa continent, the European Union, implementing the broadband wireless in Africa and part of it is development of the Africa coordination which is based on the agreements. I just wanted to inform you that there are more activities around the world. I hope that ATM will be the ITU standards.

Thank you very much.

>> FARID NAKHLI: Thank you very much.

I don't see any further hands raised.

Before I turn the floor over to Julia, I would like to add a few comments from myself as someone from the Telecommunications Development Bureau.

>> We can hear you. Please go ahead.

>> FARID NAKHLI: First of all, I want to thank all of the presenters since yesterday. I think they were very interesting and educating and some of them food for thought.

My question, it is about IP -- not IP, but online TV. I work for a regulator in Gambia, a developing country, and due to issues of regulating the Internet of freedom of speech, whatever you want to call it, there is a lot of online TVs and the operators paying license, they're complaining that the online TV, the online version, they have the online network and then they don't have the -- they're now competing with the terrestrial content service providers. Due to the TTT, you have only one signal distributed, and then the rest, they're all content providers. They're licensed to be content providers, but those that are terrestrial, they pay for the license, those online, they'll start with online with a small -- in a small room, and then later on, they'll sort of set up a small studio on the ground and they're going to the same places that the licensed TV service providers are going to get content for the new, to get the advertisements, and there is a dilemma we're in at the moment. I want some advice as to the way to move forward. I know at one time there were discussions and we could not give them the same license fee as our terrestrial TV's. We need to at least -- we should have some kind of fees or some kind of regulation for them also.

Thank you.

>> FARID NAKHLI: Thank you very much.

The question is to any particular speaker?

>> Well, I forgot the name, it was Tamas.

>> (Multiple speakers.

>> Anyone can comment. I just want some kind of advice
or --

>> FARID NAKHLI: Thank you very much. I copied the
captioning of your question. I submitted in the chat.

I would invite the speakers from the session 7 to take a
look at this question and we will leave the chat open. Please
respond also in the chat.

Thank you for your intervention. Now I think I want to
thank very much Farid, if you don't have any --

>> FARID NAKHLI: One thing from my side, to have say, we
would like all of the participants to send the proposal after
the seminar on what could be the role of the ITU development
sector, how we can assist. We heard many tasks that ITU needs
to help countries with.

With that, thank you to the speakers. I'll close this
session.

I hand it back to you and your staff.

>> Thank you very much for excellent moderation, the
program coordinator from the regional office for CIS.

Now I would like to open for the conclusion. I would like
to also invite to take the floor Dr. Peter Vari and I will give
it to you, Jaroslaw Ponder, to conclude.

Thank you very much, everyone.

>> JAROSLAW PONDER: Thank you very much.

So we're waiting for the representative of the regulatory
authority to connect.

Let me on behalf of the ITU thank to everyone. This was
exciting today. The discussion, we went through the very
diverse items of the highest importance for both regions, for
Europe and the CIS and we have noticed a lot of synergies
between and actions taken in both regions, the actions of both
regions, we noticed some differences.

We started the journey with WRC and the preparation for
WRC-23 with positive outcomes of 19 which are now under the
implementation and good prospects for new topics to be handled
at the level of the WRC-23.

We took a look at the Strategic Planning and the policies
for wireless innovation in Europe and CIS and taking a look at
the remaining challenges and those related also to 5G, which is
on top of the headlines of the newspapers. Behind that 5G, it
is not only the spectrum broadcasting, but also satellite
business and many, many more, including the cross vertical
industries, which needs to come up with a proper business model
and the justification for it and a huge investment which is

ongoing investment in the licenses, but also investments in our equipment to be put and to make the 5G operational.

Of course, there were some predictions, how far we would go and how much of the globe would be covered with the 5G infrastructure so we hope that those numbers, they'll go up with the time and also with the time that many would go done, the investment -- down -- the investment would not be so cruel to the operators.

Of course, we also have the issue of the electromagnetic fields in the 5G implementation, it is a challenge in Europe and we understand that there is a clear requirement for human capacity building exercise across Europe, CIS region and also at the global level and we'll follow-up on those conclusions in the coming months to strengthen our outreach and to help in different countries in overcoming some challenges related to the implementation of the 5G as we have understood from the session.

The concrete piece of work, to be done in this area, there is to be.

We have handled the issue of the measurements, the digital broadcasting and the national frequency coordination and as Farid rightly said, we notice that there is some space where ITU-D might be of use and help in assisting the countries who are hand in hand with the communication sector and to make sure that this can be solved with technical assistance or some coordination facilitated by the ITU. We look forward to all of your inputs during this meeting apart from the captioning, which in the edited format will be posted on the web and will constitute the outcome of this meeting, we also will be able -- we also invite others to post the comprehensive report out of this meeting, which will be posted for your comments and it is important that we're capturing the main outcomes and we're taking a look at how to incorporate those takeaways into the other work streams of the study groups and also under the technical assistance and under the intergovernmental coordination as well as multistakeholder coordination on particular items. We will be sending to you also notification about this work and we'll be looking forward to on one hand your input on the report, on the other hand, expressing the interest on doing some certain things in the spectrum management.

Of course, we have already some activities programmed in this area and we hope that also this prominent discussion which we have had today will continue in the other occasions and at the latest, we'll have the occasion of hopefully getting together in Budapest next year thanks to the hospitality of the regulatory authority.

Before handing over to Dr. Vari for final words, please let me thank our Directors, Director of the Radiocommunication

Bureau, Mr. Mario Maniewicz and the Director Madam Doreen Bogdon-Martin, Director of the BDT for the great support given to the organization of this meeting which was coorganized by both offices, the Office of Europe and the CIS with the support of the BR.

And let me also thank also to my colleagues who are working day and night, in particular during the last weeks, and to make sure that everything goes smoothly. A sincere thank you to Julian, many, many others who are standing behind the preparations for them.

Usually I would call for a round of applause for them. Also for all moderators, the participants, the captioners, the interpreters who were very -- they have very -- they are modest and understand our requirements during this meeting.

Last, not least, let me thank, a special thank you to the Director of regulatory authority and Mr. Vari, your support was instrumental in this activity and your longstanding support of the ITU in the field of spectrum is really very much appreciated not only by the ITU Secretariat but other Member States and stakeholders who know that almost this is tradition that we visit and are face-to-face, but also visually, in Budapest, to have the good memories and associate the knowledge acquired with a nice spirit of the collaboration and culture.

So with this, thank you very much on behalf of the ITU and I'm handing over to Mr. Vari for the final words and for declaring that event closed.

Mr. Vari, Peter Vari, the floor is yours.

>> PETER VARI: Thank you very much.

Thank you.

Ladies and gentlemen, dear participants: It is our task to close this regional symposium for Europe and CIS. At the beginning of this meeting, I had a picture of the impact of the near future technologies, not easy to identify this effect of why the technology develops and how this changes year by year. After these two days, the picture is becoming clearer. We see clearly the common goals of the future in the services and we have a view that we can reach the goals together, including academic, industrial, government participants. I believe that ITU has key role to have in this collaboration and it is necessary that everyone will have access to this current knowledge available.

I would like to thank the ITU team and experts for the excellent organization. A special thank you to those that did the best for our country to be the virtual host of this event.

What I wish of this meeting, I want to encourage the ITU to continue this initiative. We should have the strength to achieve the targets for all participants and I hope that we can

meet in Hungary next year personally and that we can enjoy Hungary.

I declare the meeting is closed.

Thank you very much. ..

>> JAROSLAW PONDER: We wish safe travel to everybody home.

(Laughter).

>> JAROSLAW PONDER: Thank you very much. The meeting is closed now.

>> PETER VARI: I hope that we can meet as soon as possible in our country or at ITU. Okay. Good-bye!

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