

AUDIOVISUAL DELIVERY IN 4G

One of the biggest breakthroughs in the audiovisual distribution industry is related to the use of 4G and 5G mobile phone networks. For now, the big question to be solved is how to establish the convergence between broadcasting and broadband. The panel will have five speakers: Professor Brito will explain in a didactic way what 5G technology is, where he will work, what its advantages over the others and its potential for several segments of telecommunications. Vandoros, in turn, will show the project of the European Broadcasting Union (EBU), to which Eurovision is linked, for the transmission of audiovisual content using the 4G/5G. In closing, there will be three case studies: a point-to-multipoint transmission test being conducted in Germany with the 4.5G, to be presented by Aziz; and low latency, augmented reality and 4K/8K virtualized UHD 8K point-to-point Hyper-Video applications by Driesen and Pilati, respectively.

Chair: Cristiano Akamine - Professor, Universidade Presbiteriana Mackenzie

- **BROADCASTING AND 5G - EBU/ES VIEW**

Speaker: João Vandoros - Consultant, EBU

This panel aims to give an overview on the EBU studies for 5G and the main applications from remote production to final distribution.

- **5TH GENERATION OF MOBILE COMMUNICATIONS NETWORKS - CHALLENGES, OPPORTUNITIES, AND THREATS**

Speaker: Jose Marcos Camara Brito - Professor, INATEL

The fifth generation (5G) of mobile communications networks promise to revolutionize the telecommunications sector, offering scenarios of use hitherto not contemplated in previous generations. In this presentation, we discuss the scenarios of use expected for 5G networks, defining their performance requirements and typical applications, as well as the technological trends for the standardization of these networks. Also, we discuss the challenges for the implementation of 5G networks, as well as the opportunities and threats they can bring to the various segments of telecommunications.

LTE/5G BROADCAST - TECHNOLOGY INSIGHTS

Speaker: Mohamed Aziz Taga - Product Manager for LTE/5G Broadcast&Transmitter System, Rohde & Schwarz

The deployment of LTE and widespread adoption of smartphones have opened up new opportunities in mobile communications for operators to consider. In addition, nowadays the introduction of LTE/5G Broadcast could open up a worldwide market with millions of smartphones and tablets acting as potential TV receivers able to combine linear and non-linear mobile TV services. This can be offered by leveraging the enhanced broadcasting capabilities of LTE/5G

networks via the High Power High Tower model. This overlay network approach is capable of delivering connectionless Mobile TV services via applying FeMBMS 3GPP Release 14 allowing Lower Latency & Higher Flexibility. Now, FeMBMS technology is capable to make broadcasters and content providers broaden their reach via improving their coverage, enhancing bandwidth efficiency and having more real-time focused applications through implementing simplified architecture and providing UHD Mobile TV services to billions of users daily via LTE/5G networks.

- **8K AND VIDEO RELATED SERVICES IN 5G**

Speaker: Tarcisio Bruneli Pilati - Manager - Pre Sales, ZTE

Video services will be redefined by the 5G technology. The era of Hyper-Video, featuring ultra-fast transmission (5G), ultra high definition (8K), and deep intelligence (AI) is coming. With the 5G ultra-fast and low latency transmission, the traditional video services are transformed into new wireless video services, which are moving us to a new era of video application. This presentation explores this 5G and video related scenario

- **5G IS NOW! THE ULTIMATE VIDEO EXPERIENCE!**

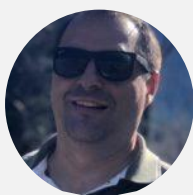
Speaker: Nicolas Driesen - Network Solution, Huawei from Brazil

The talk will interactively address Huawei's 5G end-to-end solution architecture and share 4K, 8K, AR, VR and Cloud gaming cases and applications using 5G..



Chair: Cristiano Akamine - Professor, Universidade Presbiteriana Mackenzie

Cristiano Akamine received the Ph.D. degree in electrical engineering from the State University of Campinas, Brazil, in 2011. He is a Professor with Mackenzie Presbyterian University, where he is a Coordinator of Digital TV Research Laboratory. He is a member of the Board of the Brazilian Digital Terrestrial Television Forum and Society of Brazilian Broadcast Engineers (SET). He works in the ISDB-TB broadcasting standardization and holds several patents, licensing of intellectual property, numerous articles published and has a Brazilian scientific grant of Productivity and Technological Development and Innovative Extension—Level 2 from the National Council of Technological and Scientific Development. He has also served as a reviewer for several periodicals and conferences and has participated as a Guest Editor in the Special Issue Point-to-Multipoint Communications and Broadcasting in 5G of IEEE Communications Magazine and the Special Issue on 5G for Broadband Multimedia Systems and Broadcasting of IEEE Transactions on Broadcasting. He currently serves as an Associate Editor of IEEE Transactions on Broadcasting. His research currently focuses on digital terrestrial broadcasting, software-defined radio, channel codes, embedded systems, and 5G.



João Vadoros- Consultor, EBU

João Vadoros is in charge of Eurovision Services in Brazil, the operational company of EBU. He is post-graduated in Telecommunications by Unicamp and got his bachelor degree as Electrical Engineering at Mackenzie University. Since 2000, has been working in Broadcasting Engineering, focusing his career in the content contribution and distribution segment.



Jose Marcos Camara Brito - Professor, INATEL

José Marcos C. Brito received the B. S. degree in electronic and telecommunications engineering from National Institute of Telecommunications (Inatel), Brasil, in 1986 and the M. Sc. and Ph.D. degrees from Campinas University (Unicamp), Brasil, in 1998 and 2003, respectively, both in electrical engineering. He has worked as a professor at Inatel since 1986, since 1990 as a full professor. He has occupied several management positions at Inatel: General Manager of Research & Development Center, Post-Graduation Coordinator, Research & Post-Graduation Director, and General Vice-Director. Currently, he is the Research & Post-Graduation Director at Inatel, the General Coordinator of Radiocommunication Reference Center at Inatel, the Secretary General of 5G Brasil Project at Telebrasil and the Coordinator of the courses Master's and Doctorate in Telecommunications at Inatel. His research & development interests include 5G networks, telecommunications systems, digital communications, and performance analysis of telecommunications networks.



Mohamed Aziz Taga - Product Manager for LTE/5G Broadcast&Transmitter System, Rohde & Schwarz

Professional Experience Master Degree in Computer Networks & Telecommunication 2015 National Institute of Applied Science & Technology, Tunisia Mobile Core Network Specialist & Technical Trainer 2015 Nokia Networks, Worldwide Product Manager for LTE/5G Broadcast & Transmitter Systems Since September 2018 Rohde & Schwarz GmbH & Co.KG, München Technical Expertise EPC & IMS Networks/ VoLTE / VoWiFi / FeMBMS / LTE & 5G Broadcast xSRVCC / SDM / NFV



Tarcisio Bruneli Pilati - Manager - Pre Sales, ZTE

Manager of the Pre Sales department at ZTE since 2011; responsible for products and solutions of all telecom technologies. Specialist in 5G and Access Networks Work in Telecommunications for 25 years, always working for world leaders like Siemens, Nokia and nowadays ZTE Graduated in Electrical Engineering by FEI and Master Degree in Telecom Networks by Mackenzie University



Nicolas Driesen - Network Solution, Huawei from Brazil

Chief Technology Expert at Huawei Brazil, has extensive experience in deploying mobile and fixed networks in national and international carriers. Master in Business Administration from INSPER and telecommunications training specialized in the development and implementation of innovation projects and new connectivity technologies.