

# NEXT GEN: NEW TECHNOLOGIES FOR DIGITAL TV

There is no doubt as to the success of the first generation of digital television in Brazil. However, it is more than time to plan the introduction of the next generation, so as to guarantee that the Brazilian population continues having access to the best TV viewing experiences, amidst rapid changes of consumer habits. In this session, top specialists will share their knowledge regarding Digital TV technologies under development worldwide.

*Chair: Liliana Nakonechnyj – Former President of SET*

*Co-chair: Luiz Fausto de Souza Brito - Regulatory Strategy Specialist - Globo TV NetworkGlobo*

- **ULTRA HD FORUM CONTRIBUTION TO THE ADOPTION OF ULTRA HD AROUND THE WORLD**

**Speaker: Thierry Fautier** - *Ultra HD Forum President | Vice President of Video Strategy at Harmonic*

- **UPDATE ON NEXT-GENERATION DTTB TECHNOLOGIES**

**Speaker: Hiroaki Kimura** - *Director for Digital Broadcasting Technology / Ministry of Internal Affairs and Communications, Japan*

The next-generation DTTB system project in Japan has proceeded to a testing phase. Activities of the testing project range from large-scale pilot station trials on UHD services provided over DTTB transports enhanced with IBB capabilities to studies of technical parameters for efficient spectrum usage. Information and Communication Council, an advisory body to Ministry of Internal Affairs and Communications, initiated discussions on technical specifications for the next-generation DTTB system based on results of the testing project, with a view to developing technical standards.

- **RECENT TECHNICAL DEVELOPMENT ON HYBRIDCAST**

**Speaker: Masaru Takechi** - *Research Engineer for Hybridcast deployment, NHK STRL and Senior Research Engineer, NHK Engineering System Inc.*

Since Mr. Takechi joined NHK in 1990, he studied many areas of broadcasting technologies at its Science and Technology Research Laboratories including satellite digital broadcasting system, multiplexing, and middleware and interactivity. Among them, his particular interest is middleware and architecture of interactive TV. His research contributed to receiver architecture and system design of Japanese interactive TV systems and Integrated Broadcast-Broadband (IBB) systems, namely BML, ARIB-J and Hybridcast. He has also actively participated both domestic and international standardization in many area. He has been a major contributor in ARIB, IPTV Forum Japan, ITU-R, and ITU-T. He took a lead to create more than 15 ITU-R and ITU-T Recommendations and ITU-R Reports for interactive TV systems, IBB systems, and accessibility.

- **QUASI-CYCLIC SPATIALLY COUPLED LDPC CODE FOR TERRESTRIAL BROADCASTING**

**Speaker: Jian Song** - *Director of DTV Technology R&D Center - China*

Flexible and robust transmission schemes are required to support different coded modulation modes, receiver types and channel conditions in future broadcasting systems. Quasi-cyclic spatially coupled LDPC (QC-SC-LDPC) codes capable to universally achieve capacity over different channels under conventional belief propagation decoding will be introduced. The QC-SC-LDPC coded transmission scheme showing good performance in various scenarios is presented by this talk while its performance is validated by the computer simulation.

- **ATSC 3.0**

**Speaker: Skip Pizzi** - *Vice President, Technology Education and Outreach at NAB*

In his talk Mr. Pizzi will discuss the core technologies within the emerging ATSC 3.0 next-generation terrestrial television broadcasting standard, and describe the new functionalities that the standard enables.



**Chair: Liliana Nakonechnyj – Former President of SET**

Liliana Nakonechnyj is former President of SET (2017-2018). She graduated in telecommunications engineering at PUC-Rio. A large part of her professional life has been dedicated to deploying television distribution systems, initially analog, and later digital – terrestrial broadcasting stations as well as radio, satellite and fiber optics based contribution and distribution systems. Also, for many years, she was in charge of engineering support for broadcasters affiliated to TV Globo. She has always been interested in promoting new technologies, leading studies and tests for the introduction of digital television in Brazil between 1994 and 2006, and demonstrations and tests of UHDTV in more recent years. She represents SET at the IBC Council.



**Co-chair: Luiz Fausto de Souza Brito - Regulatory Strategy Specialist - Globo TV Network**

Professional Master's Degree in Applied Computing (UECE - 2015), Executive MBA on IT (UFRJ - 2011), extension course in Networks and Video over IP (UFRJ - 2009), Bachelor's Degree in Electrical Engineering with emphasis in Electronics (UFRJ/USU - 2005). Currently working as Regulatory Strategy Specialist for Globo TV Network, Coordinator of the Technology Committee of the Brazilian Television Engineering Society (SET), member of the Delegation of Brazil in ITU-R (SG 6) and CITELE (PCC.II), member of the TV Reception Technical Group (GT-Rx) of the Brazilian TV Switch-Over Group (GIRED), member of the Technical Module of SBTVD Forum and member of the Harmonization Working Group of ISDB-T International Forum.



**Thierry Fautier - Ultra HD Forum President | Vice President of Video Strategy at Harmonic**

As Vice President of Video Strategy at Harmonic, Thierry Fautier is in charge of defining and driving the execution of the long term strategy of Harmonic's video business. He is the current President of the Ultra HD Forum, the global organization responsible for promoting market adoption of UHD by defining industry best practices for the phased introduction of the wide set of technologies that will facilitate the next-generation viewing experience. He is a co-founder and board member the VR Industry Forum whose charter is to further the widespread availability of high quality audiovisual VR experiences, for the benefit of consumers. Fautier is also co-chair of the MPEG Roadmap committee that is tasked to present the 2020 MPEG roadmap to the industry. His previous experience at Harmonic includes leadership positions in Solutions Marketing, where his area of responsibility covered Harmonic's major markets, including broadcast, cable, telco, DTH and OTT, as well as multiscreen initiatives. Thierry Fautier has been instrumental at Harmonic to create new markets such as IPTV, OTT, UHD and more recently VR. He is the designated speaker at Harmonic for international conferences as well as for press and analysts

interviews.



**Hiroaki Kimura - Director for Digital Broadcasting Technology / Ministry of Internal Affairs and Communications, Japan**

Mr. Hiroaki Kimura is responsible for international cooperation on ISDB-T and advanced broadcasting technologies and ITU-R SG6 preparations in the Ministry of International Affairs and Communications, Japan. His experience in public policies on broadcast involves surveys on household DTV preparedness during the DTTB migration, promotion of low-cost DTTB STB's and formulation of technical standards on small area DTTB and disaster resilience installations of broadcasting stations.



**Masaru Takechi - Research Engineer for Hybridcast deployment, NHK STRL and Senior Research Engineer, NHK Engineering System Inc.**

Since Mr. Takechi joined NHK in 1990, he studied many areas of broadcasting technologies at its Science and Technology Research Laboratories including satellite digital broadcasting system, multiplexing, and middleware and interactivity. Among them, his particular interest is middleware and architecture of interactive TV. His research contributed to receiver architecture and system design of Japanese interactive TV systems and Integrated Broadcast-Broadband (IBB) systems, namely BML, ARIB-J and Hybridcast. He has also actively participated both domestic and international standardization in many area. He has been a major contributor in ARIB, IPTV Forum Japan, ITU-R, and ITU-T. He took a lead to create more than 15 ITU-R and ITU-T Recommendations and ITU-R Reports for interactive TV systems, IBB systems, and accessibility



**Jian Song - Director of DTV Technology R&D Center - China**

Dr. Jian Song received his B. Eng. and PhD degrees from Electronic Engineering Department, Tsinghua University, China, and conducted Postdoctoral research work in Hong Kong and Canada in 1996 and 1997, respectively. He worked in USA for seven years, and joined Tsinghua University in 2005 as a full professor. He is now Director of DTV Technology R&D Center, one of major technical contributors for Chinese DTV standard. He is vice chairman of WP6A of International Telecommunication Union (ITU) and the founding Editor-in-Chief of ITU academic Journal, ICT Discoveries. He is the Associate Editor of IEEE Transaction on Broadcasting. Dr. Song's current research interest includes digital broadcasting, network convergence, and integration of visible light and powerline communications. He is the recipient of the Best Paper Award of IEEE Transactions on Broadcasting in 2015, and also the recipient of several national and provincial/ministry level awards. Dr. Song has published over 260 peer-reviewed journal and conference papers with good citations. Dr. Song is the Fellow of IEEE, IET, and Chinese Institute of Electronics.



**Skip Pizzi - Skip Pizzi - Vice President, Technology Education and Outreach at NAB**

Skip Pizzi is Vice President, Technology Education and Outreach, at the National Association of Broadcasters (NAB) in Washington, DC, USA. His career has spanned the broadcast and digital media industries, working in audio engineering at NPR, and in audio production, media standards and technical policy at Microsoft. He was also an editor at Broadcast Engineering magazine, and a columnist for several other international industry publications. He remains a technology journalist, editor, author and trainer today. His most recent book is A Broadcast Engineering Tutorial for Non-Engineers, 4th edition, published by Focal Press. He is currently Associate Editor on the NAB Engineering Handbook, 11th edition, which will be published later this year. Skip serves as Vice-Chair of the Advanced Television Standards Committee (ATSC) Technology Group 3 (TG3), which is developing the ATSC 3.0 standard. He is also a member of the Board of Directors of the Ultra HD Forum. Skip is a graduate of Georgetown University, where he studied Electrical Engineering, International Economics and Fine Arts.