EBU
OPERATING EUROVISION AND EURORADIO

Next Generation Audio (NGA)

PROGRAMME

TUESDAY 27 NOVEMBER 2018

| 0900 – 09:05 | **Welcome** | Hans Hoffmann (EBU) |

SESSION 1: HANDS-ON

09:05 – 09:25

10 things you need to know about Next Generation Audio

Martin Black (SKY UK)

09:25 – 09:45

Getting started with NGA production: equipment & tools

Matthieu Parmentier (France TV)

09:45 – 10:05

NGA @ European Athletics Championship – the EBU trial

The European Broadcasting Union and several of its member organisations undertook an ambitious trial over the summer period – a live, UltraHD, High Dynamic Range, High Frame Rate, Wide Colour Gamut and Next Generation Audio production at the European Athletics Championships in Berlin, Germany. AC-4 and two variants of MPEG-H were used. The presentation will describe what was set up, and the lessons learned.

Andrew Mason joined BBC Research Department (as it then was) in 1986. He has worked on a wide variety of audio and video projects over the years, including: digital audio editing; low bit-rate audio coding; audio and video watermarking; A/V synchronisation; audio visualisation; and loudness measurement. He was the first chairman of the EBU Expert Community for Audio when it was created, and later, of the EBU Strategic Programme Group for Future Audio Formats and Radio Production. He has long been a participant in AES, ITU-R, and ETSI standardisation work, and in DVB to standardise technologies for 'next-generation audio' in broadcasting.

10:05 – 10:25

End-to-end NGA chains based on ADM (Audio Definition Model): what is available & roadmap

David Marston (BBC)

10:25 – 10:40

The EBU ADM Renderer (EAR): current status & roadmap

The EBU ADM Renderer (EAR) is a production and monitoring renderer for Next Generation Audio (NGA) content. It is currently the only renderer which renders audio described by the Audio Definition Model (ADM) natively without any conversion. It is developed under the EBU umbrella as a joint effort between the BBC, IRT, France TV and bcom. It is published as EBU Tech 3388 and is accompanied by a reference implementation written in Python. This presentation gives an overview on the feature set of the EAR, the status of the development and the future plans.

Benjamin Weiss (IRT) holds a master's degree in Media Technology from Technische Universität Ilmenau. He works at the Institut für Rundfunktechnik as an Engineer. His research interests include object-based audio and developing the open standards necessary to ensure interoperability throughout the whole workflow. He is part of the team developing the EBU ADM Renderer, which was awarded the EBU Technology & Innovation Award 2018. Apart from this he is also active in the standardisation of a monitoring and production renderer for advanced sound systems and the specification of the necessary metadata to drive it within the ITU.

10:40 – 11:00

NGA: user experience & evaluation methods

Werner Bleisteiner (BR)

SESSION 2: NGA MARKET: REALITY CHECK

11:15 – 11:35

AC-4: enabling compelling NGA for European audiences

AC-4 is the next generation audio standard that has been selected by DVB broadcast platforms including NorDig (for Denmark, Finland, Iceland, Norway, Sweden and Eire) and HDFI Italy. This presentation outlines key aspects of AC-4, including compatibility with the existing Dolby Atmos immersive audio ecosystem, personalisation and accessibility features, typical datarates, and support for open content workflows. It will also highlight how AC-4 is already shipping in large numbers of DVB TVs within the European marketplace, building a ready audience for NGA services.

Jason Power is Senior Director, Commercial Partnerships and Standards at Dolby, based at the European headquarters in London. In this role, he works to enable ecosystems for new content experiences, working with partners in content production, service distribution, consumer electronics and standardisation. His current activities focus on enabling the market success of next generation audio and high dynamic range video. Jason is an active contributor to several industry forums including DVB, HbbTV and DTG, and currently chairs the DVB Commercial Module subgroup on Audio Video Content, CM-AVC. He holds a BSc in Applied Physics with Electronics from Aston University and an MBA with Distinction from London Business School.

11:35 – 11:55

MPEG-H Audio - The Next Generation TV Audio System for Personalized and Immersive Sound

MPEG-H Audio is the Next Generation Audio (NGA) system developed by MPEG for delivery of personalized and immersive sound. Designed for broadcast, streaming and VR/AR applications, it allows viewers to adjust the sound mix to their preferences, while its support for immersive audio improves the level of realism of the listening experience. Including rendering and downmixing functionality, and advanced Loudness and Dynamic Range Control, MPEG-H Audio also tailors sound for optimal playback on a wide range of devices and environments. Additionally, the system allows for highly efficient delivery of multiple languages and advanced accessibility services. Part of the DVB A/V codec specification and of the ATSC 3.0 standard, MPEG-H Audio has been selected for ATSC 3.0 broadcasting in South Korea. On May 31, 2017 South Korea launched its 4K UHD TV service and MPEG-H Audio became the first NGA deployment on a 24/7 basis worldwide. In 2018 MPEG-H Audio has been included in the HbbTV 2.0.2 specification and the first devices compliant to the new release with MPEG-H support were demonstrated during the IBC 2018. The 3GPP Codec and Media Working Group (SA4) has completed work on the support of 360° VR streaming services, within Release-15 of the specifications. Selected as the single audio operating point, MPEG-H Audio becomes the audio standard for VR applications delivered over 5G networks.

Adrian Murtaza (Frauhnofer IIS) received his M.Sc. degree in Communication Systems from the École Polytechnique Fédérale de Lausanne, Switzerland in 2012 and joined Fraunhofer IIS upon graduation, where he works as a Senior Research Engineer. He serves as Fraunhofer's Standrads Manager in a number of industry standards bodies, including MPEG, DVB, ATSC, CTA, HbbTV and SCTE, and is the co-author of multiple specifications in those groups. More recently he focused on specification of Next Generation Audio delivery and transport in ATSC 3.0 systems and MPEG-2 Transport Stream based DVB systems, as well as on enabling of MPEG-H Audio services in different broadcast and streaming ecosystems.

11:55 – 12:15

DTS-X: Personalized Immersive Audio Delivery to Consumers

Jacek Stachurski (Xperi) has over twenty years of industry experience in Digital Signal Processing applied to audio R&D. After completing his Ph.D. at McGill University in Montreal, he joined Texas Instruments in Dallas where for over fifteen years he designed innovative audio solutions. His research included audio compression, noise suppression and echo cancellation for VoIP, as well as audio analytics for security, automotive, and consumer electronics. He directed TI involvement in the ITU-T speech and audio coding activities and contributed essential IP to the G.718 and G.711.0 standards. Since joining DTS in 2014, Jacek developed key technologies for the DTS-X format and was responsible for objective and subjective codec quality assessment. He is currently VP of Engineering, Xperi Office of the CTO, focusing on emerging audio technologies. In spare time, Jacek enjoys sports including tennis, cycling, skiing, and mountaineering.

SESSION 3: DEMO SESSION (PARTICIPANTS SPLIT IN 2/3 GROUPS)

13:30 – 14:30   **Showcases:**   Room Moléson & Room DLR

- **European Championship 2018 + NGA**

- **Song Contest 2018 + NGA**

SESSION 4: ROUND-TABLE

14:30 – 15:15

Producing NGA for the audience: Q&A

SESSION 5: WRAP-UP

15:15 – 15: 25

Closing words

Simon Tuff (BBC)