



TUESDAY 27 MARCH 2018 (MODERATOR: IGNACIO GOMEZ, RTVE)

SESSION 1: KEYNOTE



Welcome to BroadThinking 2018

Bram Tullemans is a senior project manager broadband technology and online services of the EBU Technology & Innovation department. In this role he coordinates the EBU Strategic Programme Internet Services and investigates as programme manager what kind of services the EBU can develop to help its Members in the OTT domain. His main interests are live and video on demand services, the multiscreen ecosystem, content delivery over IP, net-neutrality, (Multi) CDN deployments, (hybrid) cloud services, interactive scenarios merging the linear with on demand experience and the practical applicability of Big Data scenarios for PSM.

Before the EBU Bram worked as senior policy advisor research and development at the Dutch public service broadcast organisation NPO. He developed strategies on a conceptual level and their practical implementations on topics like interactive services, second screen, connected tv's, adaptive streaming, p2p, visual radio, device specific video distribution and strategic policy work related to network neutrality and open source development.

Prior to his activities in the broadcast sector he was director of the Dutch cross media department at the international publishing house IDG Communications, worked as journalist for both ICT business and consumer publications and wrote a book about digital video.

Bram studied at the University of Amsterdam and Liverpool in the fields of Philosophy, Television & New Media and Computer Science.



Challenges for online distribution

What are the challenges of a public broadcaster in 2018? Jan will give an insight from VRT's perspective which technologies to adopt, and which ones to hold off on. Topics that will be discussed include server-side ad insertion, analytics (QoE) and EU cross-border portability regulation.

Jan Devos (VRT) is responsible for the online video and audio publication and distribution architecture at VRT. He is also a driving member of the EBU Flow Multi-CDN project. Previously he consulted for telecoms and content owners such as Orange and Turner Broadcasting.

SESSION 2: STREAMING



Testing AV1 with HEVC and JEM

Dr Hans Hoffmann is EBU Senior Manager and head of unit on media fundamentals and production technologies in the EBU Technology and Innovation department. He has been for 9 years with the Institut fuer Rundfunktechnik (IRT) as research staff in new Television production technologies department until moving to the EBU in 2000. In the EBU he has been leading many activities on media integration, production technologies, video codec evaluations, he established the EBU HDTV testing lab, and work with EBU Members on IT based digital workflows and recently UHD TV. He has been author of many EBU Technical

documents; IEEE papers and is a standing speaker and contributor to international conferences. Hans is a fellow of the SMPTE and a member of the SID and FKT and IEEE and was the SMPTE Engineering Vice President from 2011-13.



AV1: The new open Codec in action

What makes AV1 stand out technologically and how can it be practically used in real applications in the near future? These are the questions that we want to answer in this presentation.

Christian Feldmann is a video coding engineer at Bitmoving working on next generation video coding technologies in the most recent video coding standards, such as HEVC and AV1. After his study of computer engineering at RWTH University Aachen, he completed his doctoral degree (PhD) at the Institut für Nachrichtentechnik (Institute for Communication Technologies) in Aachen. With his detailed experience in video coding, he is developing video coding technologies for the future of video coding. Christian participates in the standardization activities of the Alliance for Open Media (AOMedia) as well as the Moving Picture Experts Group (MPEG).



CMAF for combined delivery of MPEG-DASH for HbbTV and HLS for iOS, Android and HTML5

The presentation will outline the current status of MPEG-DASH within the Internet Link Services (ILS) of ARD and show some CMAF Test-Cases and Results for HbbTV 1.5 Devices.

Martin Schmalohr (IRT) works in research projects like P2P-Next, kuMobile, WiMAC@home, ADAMs and 5GMedia. He runs IRT's AV Testportal to test interop. and QoE of Adaptive Streaming for ARD and ZDF.



Interoperability Efforts for Internet TV Services

This presentation will provide challenges in Internet TV distribution and provide an overview of ongoing interop efforts in this domain, including MPEG, DASH-IF, CTA WAVE and DVB efforts.

Thomas Stockhammer (Qualcomm) Thomas (Director Technical Standards, Qualcomm) is active in 3GPP, DVB, MPEG, IETF, ATSC, CTA, ETSI, VR-IF and DASH-IF in multimedia communication, TV-distribution, CDPs, immersive media and adaptive streaming.

SESSION 3: AUDIENCE TRENDS



Audience trends in media consumption

Dr. David Fernández Quijada Senior Media Analyst, EBU has worked at the EBU's Media Intelligence Service since 2013, where he leads the market research on radio, including DAB, IP and voice-enabled devices. His work also includes public service media, the radio industry and audiences and communication technologies. He is also the manager of the PSM Contribution to Society project. Previously, he worked as a lecturer at the Autonomous University of Barcelona.



The changing role of the TV

Is the TV, being the biggest and best screen in the house and a "Swiss army knife" for bringing content to viewers at home, becoming too unwieldy? Where could The TV go from here?

Paul Szucs (Sony) Paul is Senior Manager, Technology Standards, at Sony's Stuttgart Technology Centre, with 24 years in R&D, industry alliances, biz-dev and standards in all their colours and guises.

SESSION 4: NEW AUDIENCE ENGAGEMENTS



Applicable Machine Learning for Media companies

"Artificial Intelligence is eating the World": AI has rapidly evolved over the past few years and is now considered as a next industrial revolution that will turn society, business, culture and creative work upside down. Smart systems understand images, recognize emotions, read texts, answer messages and emails, predict the outcome of football games, trade on the stock market, write poetry and news articles, understand, recommend and compose music, talk to us as chatbots and virtual assistants, decide on probation penalties and creditworthiness, drive cars, and win Space Invader, Go & Poker. What is Machine Learning? What are neural networks and how does Deep Learning work? What does AI mean for us in editorial, creation, production and newsrooms? With many examples Patrick Arnecke shows the state of the art

and discusses possible **applications for media companies**.

Patrick Arnecke (SRF) Designer, director, advertising photographer. Head of Design & Promotion, evangelizing Digital Strategy & AI/ML technology at SRF.

Targeted advertising in practice

Henry Rivero (Clypd)



In stream localised content congestion

David Holroyd (M2A)



PEACH: Personalisation by Broadcasters for Broadcasters

Sébastien Noir (RTS) Since November 2017, he has joined EBU for one year to work as Product Owner at EBU for PEACH, the Recommendation System developed by Broadcasters for Broadcasters. Before that, he started as a software developer at RTS, the French-speaking Business Unit of the Swiss broadcaster SRG-SSR. He then worked as a Product Owner for several mobile applications or website like RTS Kids, RTS Sport. Later, he worked as Product Manager for Play SRG, the Swiss National initiative to provide all audio and video content produced by in the five languages to the users on responsive websites and mobile applications.

WEDNESDAY 28 MARCH 2018 (MODERATOR: GORAN GVOZDEN, HRT)

SESSION 5: MEDIA PLAYERS



Quality of Experience and Viewer Experience Best Practices

Today, video viewers are more impatient, expecting near real-time feedback with zero loading time and perfect playback. Every second is a chance to lose your viewers and the chance to monetize.

Maarten Tielemans, Founder and CPO. Maarten had severe impact on the first THEOplayer. He sets out our products strategy, defining how our product should work and behave in every circumstance.



Standardisation of statistics from Media Players

The CTA R4WG20 QoE project aims to solve problems in the standardized collection of QoE metrics from OTT players.

Will Law is Chief Architect within the Media Engineering division at Akamai, President of the DASH Industry Forum and Vice-Chairman of the CTA WAVE Project.



DVB and HbbTV on hybrid servicesf

Peter MacAvock is Head of Delivery, Platforms and Services, EBU Technology and Development and DVB Chairman. At EBU, he heads the team responsible for innovation projects relating to delivery technologies, spectrum management and software platforms. Amongst other things, he is responsible for spectrum matters and high level projects related to Hybrid Radio and Television including HbbTV, DVB, RadioDNS and others. In July 2016, he was elected Chairman of the DVB Project, and retains a role as co-chair of the HbbTV Reuirements Group. He is an Irish national living and working in Switzerland.

SESSION 6: CONTENT DELIVERY NETWORKS

**CDN role in 5G world**

Wilfried Dudink is Director Content Solutions at CenturyLink, responsible for the Content Solutions portfolio within the EMEA region, including Content Delivery Networks, Website Acceleration and Media Delivery



platforms operational corporation-wide workflows. He is also

Findings from the EBU Multi-CDN project

The EBU Flow (multi-CDN) pilot is in full swing. The presentation will outline the pilot, what it hoped to achieve and where we are today. The presentation will be from EBU and Member points of view.

Hemini Mehta is the Account & Operations Manager of EBU Flow. She has been involved in the project since the RFP evaluation phase. As well as working in EBU, Hemini has worked in the OTT space for content providers in excess of 10 years. Programmes such as BBC iPlayer, Sky Now TV, Sky Store and MTV. She is also an academic, regularly teaching and guest lecturing.



Yiannis Vougiouklakis New Media General Director, Head of Technology and Product Development and Internet Responsible for the complete delivery of the ERT's online platform, which includes a complete infrastructure refresh, site data centers, streamlining the processes and developing a number of procedures in order to support digital archive & file-based, digital WebTV, HbbTV, production media a driving member of the EBU Flow Multi-CDN project.

**Practical use cases for WebRTC**

Hadar Weiss (Peer5) is co-founder and CEO of Peer5, the world's first WebRTC-based P2P CDN. Prior to Peer5, Hadar worked on several notable startups and was an engineer in the Israeli cyber bureau and IDF.

SESSION 7: ON THE HORIZON**GDPR: Introduction to Privacy by Design**

We provide a dive into Privacy by Design, seen as a matter strategic thinking and designing of systems with privacy built in. With GDPR, Privacy by Design will be one of the pillars of data privacy.

Lukasz Olejnik, independent security and privacy researcher and consultant, specializing in web security and privacy, privacy engineering, privacy reviews, privacy and data protection impact assessments, and strategy.

Inspector Chamber: Interactive storytelling using Amazon Alexa's Artificial Intelligence

George Wright (BBC)

**Virtual reality: Standardisation efforts and viable use cases**

This presentation will give an overview of the standardisation efforts on VR, particularly in 3GPP as well as a few use cases where a VR experience can add value to contents in general.

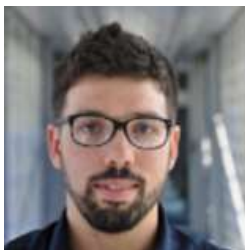
Gilles Teniou is Senior Standardization Manager on Content & TV services at Orange. He is the 3GPP SA4 (Codec group) vice chair and chairman of the Video working group. He is also a regular DVB delegate



Using high quality user generated content in broadcast services

COGNITUS builds an innovative environment enabling the broadcasters to produce Ultra High Definition content based on the contributed content.

Ioannis Markopoulos (Forthnet) PhD and PMP. Working in R&D projects in VAS, content production, etc. Elected president Digital Economy Committee, Federation of Hellenic ICT Enterprises. Leading Forthnet Innovation Department.



Rethinking Multicast protocols

Unveiling and evaluating the most important building blocks of reliable multicast protocols. Do we already know everything about their performance? Is there room for further improvements?

Francesco De Angelis holds a PhD from the University of Geneva.

He joined EBU in August 2017 to work on 5G-Xcast, a European research project on 5G.