EBU
OPERATING EUROVISION AND EURORADIO

PRODUCTION TECHNOLOGY SEMINAR

"SMARTER CONTENT CREATION"

TUESDAY 30 JANUARY 2018 - MODERATED BY HANS HOFFMANN

KEYNOTE SESSION

Welcome to EBU PTS 2018

Simon Fell, Director of Technology & Innovation, European Broadcasting Union, leads the team spearheading developments in broadcast, media technologies and innovation at the EBU based in Geneva. Additionally, Simon is the Chairman of the World Broadcasting Union Technical Committee and of the ETSI Joint Technical Committee for Broadcast Standards. He is also a member of the IBC Council. He has four decades of experience, formerly with ITV as Director of Future Technologies; previously he helped establish Carlton Television where he held several executive positions and helped launch digital broadcasting in the UK.He has chaired the Technical Council at the UK's Digital Television Group, and was Chairman of the HD Forum.Additional roles include Director of Engineering for Rushes, Chief Engineer of 625 and establishing Channel Four. His early career included periods in the USA with Rank Cintel and at YTV in Leeds.

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 UHDTV. 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.

Vision for media creation

Noel Curren took up the position of DG of the EBU on 1 September 2017. Noel is the former DG, Managing Director of Television and Editor of Current Affairs of RTÉ. Before taking on these roles, Curran was an award winning investigative journalist and producer. Noel's programming won numerous international awards for journalism and he was Executive Producer on a range of live television events, including the Eurovision Song Contest in 1997, general election coverage, live entertainment series and factual programming. He attended Trinity College for a Masters Course in European Studies. His research work focused on European Broadcasting Policy. Before that he graduated from Dublin City University in Communication Studies. He is currently Adjunct Professor of Journalism at Dublin City University.

Managing Innovation in a Time of Rapid Change

Kevin Anderson is an international media consultant specialising in digital transformation with an emphasis on audience development and engagement, digital product development and multi-platform media management. He has more than 20 years of journalism and multi-platform leadership experience on staff with companies including the BBC, The Guardian, and Gannett. As a consultant, he has worked with companies including Al Jazeera, Trinity-Mirror, Asian luxury publisher Edipresse, the Times of India, Network18 and the BBC on digital transformation, digital product, and audience development initiatives.

SESSION 1: TRENDS AND TECHNOLOGY DRIVERS

Emerging CE Devices and their Impact

Round up of the progress of UHD television set sales with a review of the key trends as seen at CES 2018. The talk will look towards the future in both TV set technology and product ranges in the coming five years and how other devices will play their part in media consumption.

Paul Gray (IHS Markit) has researched the European TV market and global TV design and technology for a 10 years in DisplaySearch (acquired by IHS Markit in 2014). He conducted in-depth analysis and forecasting of wearable devices, connected TV and 4K Ultra HD. Prior to DisplaySearch, Mr. Gray worked at Philips / NXP Semiconductors in market intelligence and product manager. Before NXP, he held positions of increasing responsibility at Philips Display Components (later LG.Philips Displays), including director and international account manager in both Asia and Europe. He began his career as a production shift leader in a CRT factory.

Emerging Cloud based production

Everyone has heard of, or is talking about, the "Cloud". The film and TV industry is not impervious to its' potential charms and is perhaps an industry that could benefit from its apparent advantages. Being a sister organization to a major Cloud Provider, Amazon Studios may seem to be ideally placed to take advantage of the Cloud and all that it has to offer. During this presentation, Aaron Lovell (Head of Global Post Production) and Callum Hughes (Principal, Global Solutions Architect) will talk about their "quest for the

Holy Grail" and offer potential insights into how you might begin your journey to this new "promised land" and avoid drinking from the wrong chalice.

Callum Hughes is the Principal, Global Solutions Architect for Amazon Studios. Coming from a traditional IT background, first as a Unix and Linux administrator and then as a senior engineer with VMware and then Amazon Web Services, Callum has been at the forefront of disruptive technology for almost 20 years. Focusing now on the challenges faced by Amazon Studios and its' partners, he spends his days dreaming up ways to solve problems such as ever-increasing file sizes, more sophisticated security threats and of course, ever shrinking timelines. When he's not scratching his head and looking perplexed, he's usually out riding his Harley Davidson in the rain, scuba diving or hitting something with a hammer (he does a lot of home building projects!).&

Aaron Lovell is the Head of Post Production and Global Mastering for Amazon Studios. He oversees Post workflows, Localization, and Distribution of every Amazon Original series launched to date. Using his 15 years of experience working in Post Production, Aaron has built a successful operational infrastructure designed to leverage new technologies (and a few old tricks of the trade) to meet the demands of an emerging global audience. In today's digital media world, Aaron focuses on how cloud technology can help content creators and major studios have greater control over their own content and the tools to create that content. Cloud based editing software, automated VFX pipelines, and "anywhere access" that is both secure and instant are just a few of the projects that have established Amazon Studios as a leader of the new generation of digital studios. When he's not envisioning new post workflows, Aaron enjoys going on culinary adventures with his wife and playing basketball with his two daughters.

How new dimensions of media are changing the way content interacts with the audience.

Multiple standards organizations have defined new targets for the future of content consumption. As these reach us through current and developing technological endpoints we will be more connected to our content than ever - And it will be more connected to us. What does this mean for the new relationship between the creator, broadcaster, and audience?

Dr. Poppy Crum is Chief Scientist at Dolby Laboratories. She also holds an appointment as Adjunct Professor at Stanford University in the Center for Computer Research in Music and Acoustics and the Program in Symbolic Systems. At Dolby, Poppy is responsible for integrating neuroscience and data science into algorithm design, technological development, and technology strategy. At Stanford, her work focuses on the impact and feedback potential of new technologies including gaming and immersive environments such as Augmented and Virtual Reality on neuroplasticity and learning. Poppy is a current Vice-Chair to ITU-R Study Group 6 WP6C. Prior to joining Dolby Laboratories Poppy was Research Faculty in the Department of Biomedical Engineering at Johns Hopkins School of Medicine. She completed her PhD at the University of California Berkeley in Neuroscience/Psychology. Poppy is a Fellow of the Audio Engineering Society. She is a 2018 recipient of the Advanced Imaging Society's Distinguished Leadership Award, a 2017 recipient of the Consumer Technology Association's Technology and Standards Achievement Award, and has been named to Billboard Magazine's 100 most influential female executives in the music industry.

Machine Learning for Intelligent, Adaptive Content Request Routing

This talk will offer a foundation for digital media engineers in the theoretical underpinnings of ML programs: what they are, an introduction to classes of both supervised and unsupervised learning algorithms and a peek into the underlying mathematics, and examples of these techniques in practice covered by leading over-the-top (OTT) and media content distribution technologists. Building on these foundations, the talk will introduce new machine learning algorithms that help predict the best (most optimal) source of content in a distributed and heterogeneous storage network, and quantitative results showing the significant benefits in quality of user experience and resource utilization.

Michelle Munson has recently co-founded Eluvio, a software technology company creating new solutions for a content-centric Internet. She and Serban Simu invented the Aspera FASP™ transport technology and she was Aspera CEO from 2004 until May 2017, through acquisition by IBM. Michelle holds several patents in content transport, and will be introducing her latest work in AI/ML. She was the 2016 HPA Charles Swartz awardee, is a SMPTE Fellow, and serves on the IBC Council. She has dual B.Sc. degrees in Electrical Engineering and in Physics from Kansas State University and was a Goldwater Scholar for achievement in Science/Mathematics, and a Fulbright Scholar at Cambridge University for a postgraduate degree in Computer Science. She was the IABM and TV NewsCheck Woman of the Year in 2016.

SESSION 2: INNOVATION STRATEGIES – RIDING THE WAVES

SRG's Best Practices for Innovation with Design Thinking

In times of digital shift incremental change won't be sufficient to stay competitive. Swiss Broadcasting Corporation SRG therefore addressed innovation in its strategy. In the talk you'll get to know SRG's approach to foster innovation and digital transformation by application of design thinking. And you'll learn about obstacles, hurdles taken and best practices in the process which is still ongoing.

Martin Spycher is Head of Innovation Multimedia at the swiss public broadcaster SRG SSR. He directs projects in the innovation and change landscape of SRG. Holding a diploma in journalism and an executive MBA in ICT, having 17 years of product and project management experience in the fields of multimedia and innovation, his strength is to enable interdisciplinary teams to develop new products and accompany the digital shift. In his daily business Martin applies, teaches and coaches design thinking and lean startup methods.

BBC News Labs' practical innovation

As a collaboration between News and Engineering BBC News Labs has the task of connecting the latest research and technologies with editorial needs. In particular News Labs helps internal R&D and external academics find practical outlets in working newsrooms and serving audiences. The EU funded SUMMA project is the latest example of where the BBC is bringing cutting edge academic research into its newsrooms.

Robert McKenzie is Editor of BBC News Labs, which drives innovation for the BBC across News. Leading a small, multidisciplinary team of developers, technologists and journalists (with some people combining more than one skill) Robert introduced the informal team mission statement "we're here to help". News Labs acts as a bridge between News, BBC R&D and best practice in the rest of the industry - providing agile solutions to problems for journalists and new approaches to audiences. Before joining News Labs, Robert spent nearly 25 years working in business, personal finance and technology journalism.

Building Innovation Teams at YLE – Creating Impact

Basically I will be discussing the current innovation strategy based on the Three Horizons framework and sharing some of the secret ingredients of our incubator for future media experiences, Yle Beta. How do we work, ways we think we have had an impact, what have we learnt and what's next.

Anssi Komulainen, Founder of Yle Beta is the Chief Innovation Officer of the Finnish Broadcasting Company Yle. He has over 15 years of experience from TV/radio/transmedia production and creative management. As the founder of Yle inhouse innovation startup Yle Beta he is constantly on a quest for something new. His job is to test the possibilities of emerging technologies and to find out what they can offer to public service media in the future. Previously Anssi has also worked as a media development specialist in South East-Asia (YLE)

Impact of Digital Transformation for broadcasters

In 2017 EBU launched a Digital Transformation Initiative with the aim of providing Members with tools and insights that can help them understand and implement the process of restructuring and transforming PSM. The talk will address the question on how we can define digital transformation for PSM in a distinctive way highlighting some of the drivers, goals, enablers and obstacles of transformation that were identified in a first status report of the initiative.

Ezra Eeman is Head of Digital at the EBU Media Department. In his position Eeman works closely together with EBU Members on their digital strategy and with key digital actors in the industry to exchange experience and to inspire other members. Ezra Eeman comes to the EBU from Flemish Member VRT where he was head of VRT Start-Up, a digital innovation lab founded in mid-2013 to figure out new digital concepts and formats. In 2012, Ezra Eeman received a Fulbright scholarship to investigate the changing media landscape at the City University of New York. There he specialized in the latest technologies, platforms and business models.

SESSION 3: TUTORIALS

Tutorial 1 (Day 1 only)

AI & Machine Learning 101 – The what, how and why for Media Companies

Artificial Intelligence has rapidly evolved over the past few years and is now considered as a next industrial revolution that will turn business, culture and creative work upside down. What is Machine Learning? What are neural networks and how does Deep Learning work? How can we leverage these new tools to better understand, transform and generate content? With many examples Patrick Arnecke shows the state of the art of AI 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.

Tutorial 2 (same on Day 2)

Building an UHD HDR (incl. WCG) ecosystem

The tutorial will discuss the international effort towards building an HDR production ecosystem. With a focus on the HLG format, it will provide a complete guide to the ITU-R's recently published "Operational Practices in HDR television production" (Report BT.2408), the ITU's new HDR colour bar and PLUGE test signals and provide an overview of continuing areas of research.

Andrew Cotton is a Principal Technologist within BBC R&D's Broadcast & Connected Systems Section. He has a background in video compression and image processing. Andrew and his team are responsible for maintaining the technical integrity of the BBC's acquisition, production, playout and IP distribution systems. Most recently their work has focused on high dynamic range TV, as Andrew is one of the developers of the Hybrid Log-Gamma HDR system. Andrew joined BBC Research in

1987 after graduating from the University of Oxford with a BA in Engineering Science. He left to spend 7 years in industry working for a leading broadcast equipment manufacturer, but returned to the BBC in 2002.

& Simon Thompson (BBC)

Tutorial 3 (same on Day 2)

Advanced Sound Systems

Matthieu Parmentier (francetélévisons) started his audio career recording classical music CDs. He joined France Televisions in 1999 as a sound engineer for live programs, then in charge of sound recording, video editing and outdoor satellite transmissions for the news department. Since 2008, he has been working as manager for 3D audio and UHD video development projects, also organizing conferences and professional workshops. Matthieu chairs the audio strategic programme of the European Broadcasting Union, the French section of the Audio Engineering Society and chairs or participates in several collaborative R&D projects. He holds two license degrees in sound recording and video post-production and a master degree in audiovisual research from the Toulouse II University.

Tutorial 4 (same on Day 2)

A project management based framework for innovation and culture change

Kevin Anderson

WEDNESDAY 31 JANUARY 2018 – MODERATED BY FRANS DE JONG (EBU)

Creating user experience in HDR and UHD

Studios and content distributors are asking the creative community to incorporate this rapidly rising image technology into their projects. HDR does offer creative opportunities that will be well received by consumers interested in cinematic, episodic and live programming. We are those people whom every day are trying to use the expanded spectrum of light and colors that HDR provides, helping to accentuate story elements and heighten the overall experience for the audience.

Simona Elena Franceschetti &

Daniel Marini (RAI) works as Director and Creative Director in the On-Air Multi-Platform Broadcast Promotion Department. He Develops concepts, Direct Promos, oversees Art Directors, Graphic Designers, Editors and Sound designers under the supervision of the Managing Creative Director. He Directed many award winning Promos and Channels Idents trying always to captures audience attentions. Rai (Radiotelevisione italiana) is the Italian National Public Broadcasting Service with 15 channels and 7 radio channels nationwide.

SESSION 4: VR AND AR – AND WHAT NOW?

Volumetric Capture

Volumetric video is regarded worldwide as the next important development step in the field of media production. Especially in the context of the extremely rapid development of the Virtual Reality (VR) und Augmented Reality (AR) markets, volumetric video is becoming a key technology. The researchers from Fraunhofer HHI have developed an award winning technology for volumetric video. This innovative technology transmits the realistic image of a person into a virtual world.The presentation will give an introduction to this technology and highlights main components of the data acquisition, processing and rendering chain.

Paul Chojecki (Fraunhofer HHI) is a project manager and scientist at the Immersive Media and Communication group in the Vision and Imaging Technologies department. His R&D activities are related to the following keywords: human-computer interaction, spatial interaction, gestural interaction, multimodal interaction, feedback, usability & user experience, science marketing, project,- innovation and key account management.

Beyong 360 video towards full VR: a broadcaster's perspective

With linear 360 video moving closer to a business-as-usual activity, BBC R&D has been looking at how to make such videos more interactive, and how to make use of existing assets such as locations and sets to create full VR experiences. This presentation will show examples of some of these projects, and also talk about our initial explorations of AR, including headset-based augmentation of the living room TV for applications such as sign language, and phone-based AR for exploring objects associated with a programme.

Prof. Graham Thomas leads Immersive & Interactive Content Section at BBC R&D, developing technology for new forms of content, with a focus on computer vision and image processing. His work has led to many commercial products, including a broadcast standards converter, and technology for sports graphics and virtual studios. Current work areas of his team include aspects of video standards beyond HD (higher frame rate and high dynamic range), augmented graphics overlays for video, and panoramic/immersive video for interactive scene navigation and VR. His team also covers audio work, including 3D and object-based audio. He is a Visiting Professor at the University of Surrey and a Fellow of the IET.

Interactive Storytelling with AR technologies

Augmented Reality Technology based on Microsoft HoloLens opens the possibility to create mixed reality worlds placed directly in our surrounding environment. You can “meet” and interact with the “holographic projected” characters, objects and scenes from yours beloved TV shows/series directly in your home! There arise completely new ways to extend & to augment parts of TV or Web Video content, action, drama and suspense into a very directly experienceable Multimodal Interactive Storytelling.

Rainer Kirchknopf studied computer science and works since 2000 at ZDF German Television as System engineer. Thereby the emphasis is set on distribution, standardization and new technologies like HbbTV or VR.

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Robert Strzebkowski is since fifteen years Professor for Interactive Media at the Department of Media Informatics at the Beuth University of Technology in Berlin/Germany. He has worked several years in the area of Interactive and Connected TV (HbbTV) and for ca. three years is he focussing on the application of AR/MR technologies in connection with TV as well as in educational scenarios.

SESSION 5: UHD, HDR AND HFR IN OPERATION

EBU Video Systems: helping Members create quality

Dagmar Driesnack (IRT) graduated in Media Technology at the University of Applied Sciences in Mittweida. In her diploma thesis at IRT, she focused on quality investigations of HD codecs and on a comparison of HDTV formats. In summer 2006, she joined IRT as a research engineer and is now active in the department “AV Technologies” working on topics like compression in production, contribution and distribution for HDTV and beyond HD. She was leading the EU funded project DIOMEDES at IRT. She chaired the former EBU D/HDrec-group and now vice chair of the SP BHD group. She is also a member of the DVB project, SMPTE and the FKT.

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Andy Quested started as a BBC Technical Assistant in 1978 becoming a video tape editor in 1985. In 1998 Andy moved to BBC technology where he led the technology for the BBC’s first HD programmes including the iconic “Planet Earth I”. Andy has led many EBU groups and is the chairman of ITU-R Working Party 6C, responsible for Audio and Video production and exchange Standards. He is the technical lead for the DPP’s AS-11 format and the joint DPP, NABA and EBU IMF initiative. Currently Andy is co-chair of the EBU Video Systems Strategic Programme and chairs the EBU IMF and QC groups Andy is an active member of SMPTE, especially the UK Region and became a Fellow in 2014.

Producing UHD HDR @ Montreux Jazz Festival 2017

RTS (SRG SSR) in collaboration with the EBU, Sony, Canon, EVS and the Montreux Jazz Festival has recorded UHD Higher Dynamic Range (HDR) and Wide Colour Gamut (WCG) material at the Montreux Jazz Festival 2017. The objective was on one hand to gain profound experience, know-how and competences in producing UHD HDR while finding concrete answers on the question, how to integrate an UHD HDR workflow into HD live productions.

The project successfully fulfilled the wide task, in particular the impact of the new technologies on all operational processes. The project demonstrated the potential and added value of HDR and WCG live to all partners, management and staff.

Derya Aydemir (SRG SSR) works as Business Architect Specialist at the Media Technology department in Zurich. She joined the team in 2015 focusing on new formats. She is investigating new production codecs, distribution formats and on the development of the UHD strategy and related concepts for SRG SSR.

For couple of month, Derya joined her colleagues at RTS in Geneva taking the lead to develop and implement the project UHD HDR Test Shooting at the Montreux Jazz Festival 2017. Derya received her Dipl.-Ing. degree in Media Technology at the University of Applied Sciences in Hamburg. She worked in media production and operations for several sport-federations and content aggregators before moving to SRG SSR.

From a Full-IP UHD OB-Van to Metechno – the path from tpc into a Full-IP Production world

Schweizer Radio and Fernsehen (SRF) is under construction of a new Building (Technology-building) in 2019 that will be based on a full-IP (SMPTE ST 2110) approach. On the road to that new building tpc switzerland ag (100% subsidiary of SRG SSR) decided to build a full-IP UHD OB-Van to get as much experience as possible. The Focus of the Project is in the Orchestration of the IP-World where interoperability in a multi-vendor environment is evident

Andreas Lattmann (TPC) is working in the Broadcast and Video-Production industry since more than 20 years. Starting as Project Manager he is the CTO of tpc since more than 5 years and head of the Planning & Project department with more than 25 project Managers.

Comparison of HEVC, JEM, and AV1

In this presentation, the subjective quality of the three video coding algorithms HEVC (High Efficiency Video Coding), JEM (Joint Exploration Model), and AV1 (Alliance for Open Media Video 1) is compared for Ultra High Definition (UHD) test sequences.

Dr. Matthias Narroschke (Hochschule RheinMain) was Oberingenieur and teaching assistant at the University of Hannover from 2001 – 2007 with a focus on video coding. In 2007, he joined the Panasonic R&D Center Germany and became a Principal engineer with responsibilities for video coding standardization. In 2014, he became a manager for R&D at the VISCODA GmbH with responsibilities for scene analysis and computer vision for automotive applications. Since February 2017, he is a Professor at the Hochschule RheinMain. Since 2008, he has been also serving as a guest lecturer at the University of Hannover. He is an active contributor to MPEG and to VCEG and is a member of the JCT-VC, which has received the 2017 Primetime Emmy Engineering Award for the development of the HEVC video coding standard.

SESSION 6: ADVANCED RADIO PRODUCTION, SOUND AND AUDIO

VRT RadioBus automated production workflows

Juergen Baert (VRT)

An ideal VR audio processing chain

This presentation will explore the requirements for production of audio within virtual reality systems and examine the current state of the industry. Formats and tools that allow interoperability, archiving, and creative freedom are needed. Broadcasters will need to gain new skills to effectively work with immersive and interactive media systems, but tools can also be improved to bridge the gap between conventional filmmaking and virtual reality production.

Chris Pike leads the audio research team at BBC R&D, which focusses on the technology for immersive and personalised listening experiences. He leads the BBC Audio Research Partnership, through which the BBC collaborates with world-class universities on audio research, and is active in industry bodies such as the ITU and the EBU. His work has seen the BBC using spatial audio with some of its biggest programme brands, such as the Proms, Planet Earth and Doctor Who. He is also a PhD candidate in the Audio Lab at the University of York, investigating the quality of binaural audio systems.

Scene- and Object-Based Next-Generation Audio Production and Multi-Device Delivery

Next-Generation Audio (NGA) can be produced using a combination of Scene- and Object-Based audio materials. Since NGA content can be complex due to the variety of signals involved, production workflows have to be effective, intuitive, robust, and flexible in order to aid the mixer engineers in their production efforts. In this talk, we describe how a combined Scene- and Object-Based NGA audio production paradigm can be accomplished using a minimal number of tools which seamlessly integrate with existing production workflows. In addition, we discuss the advantage of such a production workflow for the specific use-case of delivering to multiple types of devices (TVs, tablets, etc.) with different consumption models (linear TV, VR, 360 video).

Dr. Ferdinando Olivieri received his MSc in Telecommunications Engineering from the University of Florence (Italy) and his MSc in Acoustics from the Institute of Sound and Vibration Research (ISVR), University of Southampton (UK). He received his PhD in Audio Signal Processing from ISVR. He is currently working at Qualcomm as a Research Engineer in 3D Audio. His research interests include array signal processing, inverse problems in acoustics, beamforming, and sound field capturing and reproduction. He is a member of the Audio Engineering Society and of the IEEE Signal Processing Society.

Practical use of audio objects in the real world

Next Generation Audio (NGA) and in particular object-based audio offers many advantages and with them many challenges in a live broadcast scenario. In particular, real-world capture and mixing of the audio objects can be problematic. In this paper we address some of the practical aspects of object-capture, encoding and transmission in real-time. Up to now object-based broadcasts have typically targeted immersion as the key driver but we propose an enhanced system where objects are granular in time and space, with metadata descriptors to allow interaction and personalisation of the content at the user end. In order to achieve this new capture and source extraction schemes are needed and are presented in this paper along with a proposal for metadata extraction in real-time.

Rob Oldfield (Salsa Sound) completed his PhD at the University of Salford in Audio technology, and continued working at the university in a research and consultancy for several years until he co-founded Salsa Sound Ltd. Rob's interests are primarily in improving broadcast audio quality and developing new audio capture technologies for a better end-user experience. Patented technology from his research led to the recent formation of spin-out company (Salsa Sound) which received backing from the Royal Academy of Engineering who appointed Rob as one of their Enterprise Fellows. Salsa Sound focuses specifically on sports broadcast and Rob's goal is to make the sound of sport on the TV more engaging, more cinematic and more interactive.

Tutorials 1 (Day 2 only)

Enabling technologies for user generated content enhancement and high quality programme delivery: the COGNITUS project

The COGNITUS project aims to combine the advances in UHD broadcasting technologies with the explosion of UGC in order to create new interactive, immersive modes of production. The tutorial will give an overview of the overall architecture of the COGNITUS platform, along with a description of the typical workflow of the system. This includes a description of some of the key components used for UGC quality control, video quality enhancement, content delivery, integration architecture based on micro services and system deployment in trials.

Andre Seixas Dias (BBC) is a research engineer at the BBC's Research & Development department. Since he joined BBC R&D in 2014, André has been working in the video compression team of the Distribution Core Technologies section. Within his team, André has mainly been involved in the development of video compression algorithms, following closely recent developments in video coding standardisation groups. He is also involved in the design, development and testing of the Turing codec, an open source HEVC encoder.

THURSDAY 01 FEBRUARY 2018 – MODERATED BY WILLEM VERMOST (EBU)

SESSION 7: GAME CHANGER: THE ROADMAP TO IP, CLOUD AND DEMATERIALIZATION

Standards update : What '2110' is and what it is needed in addition

Willem Vermost joined EBU Technology & Innovation as Network IP Media Technology Architect in 2016. He obtained a Master's degree in electronic engineering and a Master's degree in applied computer science. Before this, Willem gained 16 years of experience at the Belgian public broadcaster VRT in different roles. He has always sought to combine broadcast and IT technology in the best possible ways and in many different projects. Willem is a member of SMPTE and the AES

Time-Compensated Remote Production Over IP

Much has been said over the past few years about the benefits of moving to use more 'IP' in broadcast, most of which has focussed on simply replacing the existing SDI connections with IP ones. This paper will look at where the use of IP can enable innovative ways of working that would not be possible or practical without IP. The paper will pay specific focus to remote production as this is an area where latency cannot be avoided but if it is embraced can lead to more flexible methods of production which could drastically change the costs models for live production of outside events.

Ed Calverley (SuitCaseTV) started his broadcasting career joining the BBC in 1999 as a Project Manager, where he oversaw the digitisation of a number of playout services. While at OmniBus (later acquired by Miranda, now GV) he was involved in the implementation of a number of large automation, newsroom, and MAM installations before becoming a key player in the delivery and product management for the new iTX platform which brought about the 'channel-in-a-box' revolution in playout. At OASYS he continued to innovate in solutions for playout and helped move the company forward significantly increasing turnover and ultimately leading to acquisition by BroadStream. Now at Suitcase TV, he continues to embrace new ways of using emerging technologies to empower the next revolution.

The BBC's Object-Based Studio in the Cloud

This presentation outlines BBC R&D's approach to unlocking object-based production on top of new IP studios. Cloud technology is leveraged extensively to blur the lines between live and non-live, and a new systems architecture for broadcast based around software and commodity IT equipment.

Chris Northwood is a Senior Engineer working for BBC Research & Development. His background is as a software engineer building audience-facing services including BBC Bitesize & BBC Taster, but joined BBC R&D in January 2016 to apply software engineering techniques to the new world of IP broadcast. He currently leads a team applying site reliability engineering to the problem of a software-defined IP studio,

as well as developing a cloud-based architecture for next-generation object-based production tools that bridge the world of live and non-live production.

SESSION 8: GAME CHANGER: THE POWER OF DATA AND AI IN MEDIA CREATION

AI and Machine Learning demystified

This presentation will examine how we can apply predictive techniques in exploiting media intelligence to increased efficiency in journalistic workflows and be more effective in monetizing content. With a wide variety of technologies and services available, we will look at what types of data sources, or combination thereof, add the most value. Next, we will address the steps needed to validate and en-sure the reliability of data - ultimately determining a level of trust to ensure that "alternative facts" and rogue algorithms don't detrimentally impact workflows. The processes by which we nurture machine learning in the media ecosystem to ensure the continuous improvement and quality of generated data.

Yvonne Thomas (ARVATO) graduated in Television Technologies & Electronic Media Engineering from University of applied Science Wiesbaden in Oct. 2010. She received a prominent award of the ARD/ZDF Academy for her thesis in September 2011 at the IFA, Berlin. In 2011 she started to work at the EBU in the Technology & Innovation Department as Project Manager. She was responsible for strategic programs on 3D and Future Television technologies, such as UHDTV or LED studio lighting. Since September 2015 Yvonne joined Arvato Systems as Product Manager where she is responsible for the frontend “MediaPortal” of the MAM system VPMS and follows new trends in the media lands-cape, like analytics and machine learning. At NAB 2017 Yvonne was presented with the Technology Women to Watch Award from TVNews Check.

RTE Data Analytics for data driven journalism

Efforts to maximise the impact and efficiency of journalistic investigations in the era of big data and the challenges this brings for existing structures.

Conor Ryan is a journalist with the RTE Investigations Unit. He has been involved in large data-driven projects to expose political corruption and bad practices in State bodies. He was a contributor to Ireland and the Freedom of Information Act FOI@15 (Manchester University Press, 2015).

RTE) RTÉ Investigations Unit – is delivers long-and short-form investigative programmes and reporting across television, radio and online.

In recent years it has broken new ground for the broadcaster in data-harvesting and data-journalism. In 2017 it received support from the Google DNI for a large project to a build a database infrastructure which can acquire, integrate and interrogate large banks of data in order to generate journalistic story leads.

Video AI: What’s in Your Content?

Martin Wahl will take the audience through the capabilities of Microsoft's rich new AI-based video indexing service and give a view to its underlying machine learning models and cognitive services. Martin will demo how the platform allows users to achieve automatic metadata curation directly from uploaded video content including speech-to-text transcription and closed captioning, face and object detection, language translation, now made available in a vertical platform API for next-generation media workflows both for video on demand and live broadcast scenarios.

Martin Wahl is a 10-year veteran of Microsoft based in Redmond WA and is currently working as Principal Program Manager in Microsoft’s Azure Media Services product engineering group. Martin focuses on technical evangelism and global customer & partner engagement for driving live broadcast and premium on-demand video streaming solutions developed and running from the Azure cloud. He is a regular speaker at media industry conferences including NAB and IBC and has been working in the digital media technology space for nearly 22 years. Prior to working for Microsoft, Martin has held a variety of senior-level positions at companies including Nortel Networks, Motorola, OpenTV, and Arris. Martin lives in Seattle, Washington (USA), but originally hails from Boston, and proudly has 2 daughters.

EBU Activities Update: Metadata Extraction & FIMS in the Cloud)

Jean-Pierre Evain joined the EBU’s Technical Department in 1992 to work on “New Systems and Services” after several years spent in the R&D laboratories of France-Telecom (CCETT) and Deutsche Telekom. He is now looking after “Media Fundamentals and Production Technologies” and coordinates all EBU technical activities concerning metadata and new production architectures. He is the co-author of several EBU metadata specifications. He is actively promoting the use of semantic web technologies in broadcasting. He is the Project Manager of the joint AMWA-EBU FIMS Project on Service Oriented Architecture. He represents EBU in many standard groups and industry forums like AES, ETSI, IPTC, MPEG, SMPTE, UK-DPP, W3C, among several others.

SESSION 9: GAME CHANGER: NEW WORKFLOWS AND TOOLS

IMF for broadcasters - the road to object-based workflows

Pierre-Anthony Lemieux is a Partner at Sandflow Consulting, where he works with both Hollywood and Silicon Valley clients on worldwide standards and software R&D. His expertise covers the entertainment technology ecosystem, from content authoring to playback, including audio, video, timed text, file formats, and content protection. His recent engagements include representing clients at industry forums, authoring specifications, and implementing software libraries for media processing. In particular, he currently chairs SMPTE TC 35PM and the IMF User Group (https://imfug.com), and serves as editor in the W3C Timed Text Working Group and the EBU QC Group. Pierre-Anthony has a Ph.D. in Physics from UCLA and a B.Sc. from McGill University. He is a SMPTE Fellow.

IMF Use Case at FranceTV R&D

Matthieu Parmentier (francetélévisions)

Revolutionizing Digital Content Commerce with Decentralized Ledgers

The industry is still reliant on ad-hoc supply chain and contracting, disparate storage, and a legacy distribution architecture. We identify the key technical challenges and introduce the capabilities of the new decentralized blockchain ledgers, including the key concepts of decentralized trust, zero knowledge proofs, and smart contracts. We describe a new system that utilizes a distributed ledger and a new scalable storage solution governed by the ledger, to enable fast, fluid distribution of media and complete (programmatic) control for content owners. We demonstrate the concept of smart contracts utilizing the ledger and a few fully functioning workflows reinvented in this new decentralized platform and highlight the significant innovations that can result.

Serban Simu (Eluvio) Serban is a technology innovator and hands-on practitioner in all things "data". Serban has a B.Sc. degree in Computer Science from the Universitatea Politechnica Bucuresti in Bucharest, Romania, and a Masters degree in Telecommunication Networks from Ecole Nationale Superieure des Telecommunications where he finished first in his class. He came to the United States to work for Cisco's Content Networking group, was a lead software engineer at Digital Fountain, and founded Aspera with Michelle Munson in 2004 where he led technology and product development for 13 years. Currently working on a breakthrough idea that reimagines and reconstructs from scratch the technology stack used for operating digital content.