YOUR MEDIA & IT RENDEZVOUS – 2017

TUESDAY 20 JUNE

MODERATED BY PHIL TUDOR (BBC)

Phil Tudor is a Principal Technologist at BBC Research & Development, London, U.K. He read Electrical and Information Sciences at Cambridge University. Phil's technical background includes video compression research, software engineering, digital television standardisation, and the development and standardisation of professional media file formats. Phil leads a team of researchers looking at file-based workflows for production & archives, high-speed IP networking for live production, capturing richer production data sets, and the development of open standards. He was awarded the SMPTE workflow systems medal in 2014 for his work on MXF, AAF, IP production and the UK's Digital Production Partnership. Phil is a SMPTE fellow, a Chartered Engineer and a member of the IET.

KEYNOTE SESSION

Welcome to NTS 2017 (09:00 – 09:15)

Simon Fell is Director of Technology & Innovation for the EBU, a position he took up in September 2013. He has more than 35 years' experience in senior broadcasting technology roles, including at British broadcaster ITV, where he was Director of Future Technologies (2008-2009) and Controller of Emerging Technologies (2004-2006).From 1991 to 2004 Mr Fell worked for Carlton Television, the ITV franchise holder for the London region, where he held several executive roles linked to operations and emerging technologies.Mr Fell, prior to joining the EBU, was Chairman of the Technical Council at the Digital Television Group, the industry association for digital television in the UK. He also represented UK broadcasters on the EBU Technical Committee between 2006 and 2009./

Hans Hoffmann (EBU T&I) 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.

What does a broadcaster want?! (09:45 – 10:15)

Technology changes massively when migrating live production from SDI into the IP domain. To make this transition a success it'll will impact todays operational workflows and best practices. Changing to IP because it's cool technology and trendy is not sufficient. It is important to identify key factors to make a business case out of it.

Markus Ostertag (SWR)

May 2017 - today
Südwestrundfunk (Baden-Baden / Germany)
Board of Engineering and Production
Strategic Planning and Project Management
- Project manager „LiveIP Production"
- Business planning strategist

Relocation for Maison de Radio-Canada (09:45-10:15)

Félix Poulin, Eng. Senior Manager, Architecture and Strategic Development CBC/Radio-Canada
Felix just came back at CBC/Radio-Canada to lead the evaluation lab team, running tests and proof of concepts to support architecture and engineering work, were he previously worked as production system expert. For the last six years, he was looking after the topic of IP production at the EBU. There, he co-chaired the Joint EBU/SMPTE/VSF/AMWA Task Force on Networked Media and coordinated the annual Network Technology Seminar as well as the Strategic Programme on Future Networks and collaborated to the multi-award winning VRT Sandbox LiveIP project. Felix completed his diploma in electrical engineering at Montreal's Polytechnic with his final thesis done at MIT. He began working as an audio engineer on international productions amongst which Cirque du Soleil. Felix is a contributing member of EBU, SMPTE, VSF and AMWA groups.

Demo pitches (10:15 – 10:30)

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

SESSION 1: STANDARDS AND BEYOND

JT-NM Roadmap & Coordination (11:00 – 11:30)

Brad Gilmer is Executive Director of the Advanced Media Workflow Association (AMWA). He is also Executive Director of the Video Services Forum (VSF), and President of Gilmer & Associates, Inc, a management and technology consulting firm, providing business and technical consulting services to the television industry. Brad is a Fellow of the Society of Motion Picture and Television Engineers and he has been an active participant within the SMPTE since 1984. He currently chairs the 32NF-60 Video over IP Working Group.

Brad was previously employed as Director of Engineering and Operations at Turner Broadcasting System, Inc. in Atlanta. His staff managed all technical aspects of Turner's Entertainment networks including TBS, TNT, and Cartoon Network, worldwide.

Brad is author of the monthly Computer and Networks column in Broadcast Engineering Magazine, Editor-in-Chief of the File Interchange Handbook (Focal Press), a contributor to the NAB Engineering Handbook, and is a frequent presenter at Broadcast conventions including SMPTE, VidTrans, NAB and IBC.

SMPTE 2110 – Traffic Models for IP Network Design (11:30 – 12:00)

IP Networks use complex statistical models for data traffic. Video, can be modeled in a more precise way for studio applications. Shaping traffic lets the IP switch behave more predictably.

Chuck Meyer is CTO - Production for Grass Valley. His focus is IP technology for live production. He is published, holds 28 patents, and was a Graduate Fellow at University of California at Berkeley.

SMPTE 2110 – Finishing the Job (12:00 – 12:30)

John Mailhot (Imagine Communications)

Studio Video over IP - How it All Comes Together (12:30 – 13:00)

Concepts and ingredients of ST2110

Andreas Hildebrand is best known as RAVENNA technology Evangelist. His experience is based on more than 25 years of occupation within the Professional Audio / Broadcasting industry.

SESSION 2: THE STATE OF LIVE AND IP

Introduction to the discussions (14:00 – 14:15)

Mike Ellis (BBC)

Panel discussion: Control the facility (14:15 – 14:40)

Johannes Kuhfuss (Lawo), 2001 - 2006: Avid-Support @ ProVideo / 2006 - 2012: PdM for ContentShare2 @ GV / 2012 - 2016: PO for STRATUS @ GV / 2016: Chief Technology Manager, member of the Advisory Board to the CEO @ LAWO

Markus Greiter (BFE) CTO for BFE Studio und Medien Systeme - responsible for the IT strategies in the systems integration business units and for the KSC Broadcast Control and Monitoring System product line.

Peter Schut (Axon) As an electronics graduate from HTS Eindhoven, Peter Schut's career started in the Dutch Ministry of Defense. It was not long after this that his passion for audio took over and he started working as a design engineer in the high-end audio industry.

Peter joined Axon in 1994 and has worked his way up through the company with stints across customer support, applications engineering and product management, to become chief technology officer. Ever since, Peter and his team have pioneered many developments in high-end audio monitoring and processing.

With Peter's guidance, Axon's Synapse modular AV processing system has fast become a global market leader, and the company has developed close working relationships with many other audio pioneers.

Panel discussion: Management of Connections & Control of devices (14:40 – 15:05)

Lewis Kirkaldie (Cinegy) comes from a background of implementing software solutions to broadcast challenges. Always with an eye to the practical, he's never met a problem that couldn't be solved with a dab of C#.

Simon Reed (Evertz),

Chuck Meyer (Grass Valley),

John Mailhot (Imagine Communications),

Ryoichi Sakuragi (Sony),

Andy Rayner (Nevion)

Panel discussion: Design & Management of the Network (15:05 – 15:30)

Sébastien Keller (Arista),

Subha Dhesikdan is a Principal Engineer at Cisco Systems. She leads the architecture and systems for IP Production for Media in Cisco. She holds 20+ patents on various topics

Julian Lucek (Juniper),

Richard Hastie (Mellanox)

SESSION 3: USE CASES

The Next Generation Tools for audio contribution and Outside Broadcast (16:00 – 16:30)

How audio over IP has changed the possibilities to make radio. Both with new tools for contribution and tools for easier Outside Broadcast.

Lars Hedh 44 years with Swedish public service media in various positions. Sound engineer, project manager, IT infrastructure manager and Head of Technology development. &

Hasse Wessman (Swedish Radio) has been working at Swedish Radio for 32 years in different positions, both local and national and now as a strategist at the development departmen at Swedish Radio

RTL City BCE (16:30 – 17:00)

Costas Colombus (RTL / BCE)

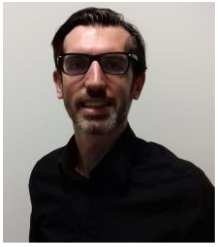
BBC Wales Cardiff Central Square Project (17:00 – 17:30)

An update on the Cardiff Central Square project and our adoption of Live IP for our core routing, looking at progress so far, next steps and issues encountered.

Mark Patrick has worked on multiple major BBC projects including W1, Salford and now Cardiff, specialising in broadcast infrastructure including routing, central apparatus rooms and MCRs

Sky's Master Control Room using IP (17:30 – 18:00

A use case of the change from HD-SDI to SMPTE2022-6 within SKYs master Control Room, why it was done, how it was done and what we'll next



Martin Richard (Sky)

YouTube Spaces (18:00 – 18:30)

Christopher Lock (Google)

WEDNESDAY 21 JUNE - MODERATED BY MARKUS BERG (IRT)

Markus Berg joined the IRT's Digital Networks department in January 1997 after he graduated in communication engineering at the Technical University of Saarbruecken. He worked as a research engineer and project leader in the field of adaptation of broadcast applications on high speed networks, especially ATM and IP, leading projects dealing with co-operative postproduction over ATM/IP networks, Wide Area Networking Technologies and research on QoS issues for broadcasters. Since April 2002 he is head of IRT's "Network Technologies" department. Markus is a regular speaker on national and international conferences and seminars on networking and is the chairman of the EBU's (European Broadcasting Union) Strategic Program on Future Networks and Infrastructure (SP-FNS)

TUTORIALS

Tutorial A – Room Montreux - 09:00 – 09:50

Basics of all IP production

Tutor: **Franz Baumann** (IRT)

Tutorial B – Room Geneva - 09:00 – 09:50

Sync delivery using PTP (Precision Time Protocol)

1. Basics of PTP
2. Overview of applications that use PTP for sync delivery.
3. SMPTE profile and IP TV broadcast application
4. Challenges in PTP based sync delivery

Kamatchi Gopalakrishnan (Juniper) is responsible for Timing Architecture and Design for Juniper Networks products. . He holds multiple patents in the field of Timing and Synchronization, and Wireless LAN technologies.

Tutorial C – Room Geneva - 10:00 – 10:50

Advanced PTP requirements

Thomas Kernen is a Staff Software Architect at Mellanox. His main area of focus is defining architectures for the media & entertainment market.

Nikolaus Kerö (Oregano Systems)

Tutorial D – Room Montreux - 10:00 – 10:50

NMOS in depth

MWA Networked Media Open Specifications

Peter Brightwell is a Lead Engineer at BBC R&D, leading work on IP production. He is a major contributor to industry groups such as EBU FNS and is chair of AMWA's Networked Media Incubator group developing NMOS.

Tutorial E – Room Montreux - 11:00 – 11:50

SMPTE 2110 - It's all about timing

This presentation will cover in detail the two key areas of timing in SMPTE2110 - the system/RTP and the IP packet timing.

Andy Rayner is Nevion's Chief Technologist and is based in the UK. Before joining Nevion 6 years ago, he spent 22 year heading up BT's broadcast technology centre.

Tutorial F – Room Geneva - 11:00 – 11:50

An Open Source Internet-of-Things Approach to IP Media Workflow

Less about timing, more about data! A tutorial on a novel open-source, software-only implementation of the JT-NM Reference Architecture, including: NMOS; TR-03 streams; MPEG-TS/SDI/file/MXF/cloud.

Dr Richard Cartwright is CTO of Streampunk Media, a start up applying cutting edge IT to media. A computer scientist, previously Richard worked at the BBC, SAM and as TSC chair of the AMWA.

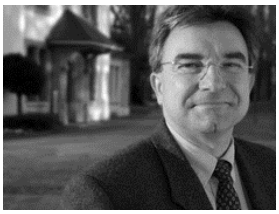
SESSION 4: DEMATERIALIZATION

AMWA Labs (13:30 – 14:00)

Cloud-fit; secure; self-describing; scalable; dynamic; Internet-based IP media workflows, in the context of the JT-NM RA - all topics of the AMWA Labs activity. A presentation of discussions and findings, describing work involving inputs from Streampunk Media, Cinegy and the BBC

Richard Cartwright (Streampunk Media)

FIMS in the cloud (14:00 – 14:30)



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.

NMOS and IP Studio in the Cloud 14:30 – 15:00)(

An overview of how BBC R&D is using NMOS and its own IP Studio work to develop a cloud-hosted production system. This talk will also explore challenges and tools associated with cloud deployment.

Alex Rawcliffe is a Project R&D Engineer at BBC Research and Development. He has spent a number of years designing, building, testing and evangelising about IP broadcast technologies."

SESSION 5: SECURITY

Recommendation on cloud security (15:00 – 15:30)

Andreas Schneider born and raised in Munich, Germany, entered the field of IT Security at an early stage. Having completed his apprenticeship (System Programmer), he soon was responsible for a regional bank institute's entire mainframe landscape security. He continued specializing in the field of IT Security and IT Risk Management ever since throughout different roles and branches and after more than 10 years of international experience currently holds the position of Chief Information Security Officer (CISO) at SRG SSR, Switzerland's nationwide broadcasting corporation. He further holds several well-respected professional certifications, such as the C-CISO, CISM, CISSP, and is also certified in ISO 27001 as well as ITIL V3. He lives with his wife in Zurich, Switzerland.

Panel discussion: What about security, while moving to IP? (15:30 – 16:00)

Mr Adi Kouadio is currently Senior Project Manager at the EBU coordinating the strategic programmes on Cybersecurity and Beyond HD systems. After working for Fastcom Technology SA on projects related to video based object recognition, he entered the EBU Technology and Innovation department in 2007. He has coordinated several EBU project groups related to production technology (Cameras, Displays, MXF, 3G-SDI, contribution over IP, …). He is leading video research activities around UHDTV including HEVC and High Frame Rate within the EBU and the Broadcast Technology Future's group.

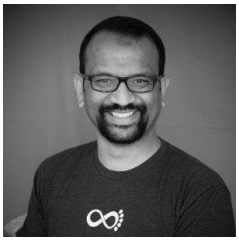
In addition, he acts as a technical advisor to the Eurovision Network where he was involved in the network technology migration (e.g. MPEG-2 to MPEG-4 H.264/AVC). He is also involved in establishing operational practices/trials for new services such as 3DTV or the award winning UHDTV service at the 2014 FIFA Worldcup in Brazil.

He obtained his B.Sc. and M.Sc. in communication systems at the Swiss Federal institute of Technology in Lausanne – EPFL (Switzerland). He represents EBU's interest within JPEG, MPEG and DVB working groups on video and he is a SMPTE Member..

Peter Brightwell (BBC R&D), Andreas Schneider (SRG), John Mailhot (Imagine Communications), Lewis Kirkaldie (Cinegy)

SESSION 6: BROADCAST, FORECAST

Future of Programmable Networks: A P4 Programmable Forwarding Plane for Professional Network Media (16:30 – 17:00)



Today's network forwarding plane is predominantly fixed-function and is ill equipped to handle the varied use cases and applications network owners and operators need to enable. With the advent of P4 and programmable Ethernet switch silicon it is now possible to create a network top-down by specifying the functionality one needs in the forwarding plane. This presentation will introduce a few use cases Fox Networks is solving using P4 and Tofino

Prem Jonnalagadda is responsible for Product Management at Barefoot Networks and Community and Outreach at P4.org. Prior to Barefoot Networks, he held various technical leadership, marketing and

engineering management roles at companies including Broadcom, Intel and Infosys. He has extensive experience in computer networking spanning software, hardware, systems & architecture..

Thomas Edwards is VP, Engineering & Development at FOX Networks Engineering & Operations, where he works on advanced technology development, such as UHD, OTT, and live IP production systems. Previous to joining FOX in 2007, he managed the engineering planning of the PBS video interconnection, and streaming media for the ISP DIGEX. He holds an M.S. in EE from the University of Maryland, is a board member of the Streaming Video Alliance, chair of SMPTE 32NF-60 WG on Video over IP, a SMPTE Fellow, and recipient of the SMPTE Workflow Systems Medal.

How an SDN approach for media can deliver: QoS/Deterministic, Scalable, Converged and cost-effective networking (17:00–17:30)

Since September 2013, Lieven Vermaele is the CEO of SDNsquare, a start-up company he co-founded. Based on innovative technologies like Software Defined Networking, the company has a storage (WARP) and network (GRID) solution that lead to extreme efficiency, absolute reliability, guaranteed performance and easy manageability for the media, medical and military domain. The baseline of the company is 'Guaranteed performance. Predictable'. He started his career in 2000 at the Belgian Flemish public broadcaster VRT, where he played a key role in developing and implementing the organization's digital strategy. He was in charge of the negotiations with Telco operators and with the Flemish Government of VRT's management contract for 2006-2011. After more than six years with VRT he moved in 2006 to the telecommunications company Alcatel Lucent, and from there he moved to the EBU/Eurovision. Since mid 2007, Lieven was Director of Technology and Innovation at the EBU - Eurovision, the European Broadcasting Union. Lieven Vermaele was also responsible for DVB, Chairman of DigiTAG, and the ETSI/EBU/CENELEC Joint Technical Committee, which is responsible for setting European standards for media and broadcasting systems (WorlDMB, DVB, Hbb.TV).Mr Vermaele is also member of the council of IBC, the European largest media industry event.Lieven has given many presentations across the world on the media future, and has written articles on this that have appeared in leading publications.As media organisations face a challenging period of transition, where new technologies and business models are emerging more quickly than ever before, Mr. Vermaele 's passion is to endure that media organisations are able to operate within the optimal technical frameworks in terms of cost effectiveness, maximizing their audience and reach, and enhancing the media consumer's experience.

Wrap-up (17:30 – 17:45)

Hans Hoffmann (EBU)