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FULL REPORT INSIDE

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Seminal motives for Digital TV:
Metamorphosis of ATT into DT**

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This edition of the Technical Review is coming to you at a time of great difficulty for everyone due to the COVID-19 pandemic. We are extremely thankful for the contributions and support from everyone.

As usual this first quarter edition of the TR is always focused on our biggest annual event, the Digital Broadcasting Symposium. With the unwavering support from our members and our industry partners we were able to organise the event successfully given the rising concern and difficulties many were facing due to the travel restrictions starting to be enforced around the world. We were lucky that the event was early in March and it went smoothly although we had a limited turnout and much fewer exhibitors this time. You will find a detailed report on the proceedings of the event inside. Once again, we would like to extend our gratitude and appreciation for all those who joined and supported us at DBS2020.

This edition has only once featured article which was contributed by our member DD-India. The article with the title "Seminal motives for Digital TV: Metamorphosis of ATT into DTT" looks into the motives and main reasons behind the transition from analogue to digital. Considering the economic and regulatory benefits the article shares an in-depth knowledge and experiences in digitalisation of analogue transmitters and some results from practical implementation examples.

This edition also includes highlights from some activities organised by ABU Technology during this the last few months. These include the "Regional Workshop on Engineering Fundamentals" and "A20 HFCC Coordination Conference". It also includes a quick highlight on the BES2020 event organised by BES-India. The edition concludes with our regular highlights from the Industry news, digital updates and the latest in equipment trends. We hope you will benefit from the information and materials included herein. Stay safe and take care.

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The Asia-Pacific Broadcasting Union (ABU) is a professional union of broadcasting organisations in the Asia-Pacific area which aims to co-ordinate and promote the development of radio, television and allied services in the region. It is non-governmental, non-political and non-commercial.

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Seminal motives for Digital TV: Metamorphosis of ATT into DTT

M. S Duhan, DDG(E), DDI.

Introduction

Throughout the World, countries are in various stages of switching over from analogue Terrestrial TV (ATT) to digital terrestrial TV (DTT) broadcasting, due to technical, regulatory and economic motives. The seminal benefit of digitalisation is greater control over channel performance. The overall performance of an analogue communication channel is dictated largely by the characteristics of the channel itself. There is considerable compatibility between digital and analogue TV transmission systems, particularly in RF Power Amplification, feeder cable and antenna system etc. With a change of modulator, an Analogue TV Transmitter can be metamorphosed into a Digital TV Transmitter. The average power is constant for digital television and not dependent on the picture content, as it is in analogue television.

Migrating to DTT involves considerable costs especially for broadcasters. The challenges and difficulties of costs, regulations and attic manoeuvring for Digital Switch Over (DSO) may be outweighed by the significant advantages digital broadcasting delivers for all players across the entire value chain. This article portrays experiments and

experiences of metamorphosis of various types of Transmitters and various levels of RF power of ATT Transmitters into DTT Transmitters, which may considerably leverage the augmented learning's to the planners and operators in broadcasting world.

Motives for Digitalisation of Transmitters?

The use of various compression coding techniques allows relatively high picture & sound quality to be accommodated in a smaller channel bandwidth and thus enables optimal use of scarce spectrum. The digital television transition involves huge infrastructure change and cost to the organisation. The digital transmitter offers various combinations of standard definition (SDTV) programs, high definition (HDTV), Ultra High Definition (UHD) programmes, radio channels and ancillary data in the same amount of spectrum as one analogue channel. The other attribute of DTT includes e-governance, thematic content, e-commerce & applications service, mobile TV, interactive services, video-on-demand, SMS voting, e-education, emergency and disaster information etc. An attractive aspect of digital TV systems is the ability to offer the viewer and listener more services, greater variety and higher technical quality. Better spectral utilisation and high energy

efficiency are other big regulatory & economic motives for the DTT.

Drivers to implement DTT?

There are two options - either procure & install a completely new DTT System or augment existing ATT into DTT by replacing the existing analogue modulator with a suitable digital modulator. India needs about 630 TV Transmitters and many gap fillers for pan country coverage of Digital Terrestrial Television (DTT). But the cost of new equipment and infrastructure will be large for achieving digital switchover, which is a challenging task for any organisation. Many countries have carried out this process in phases. One of the viable options is to convert existing solid state TV transmitters. So, the feasibility of conversion of some low power amplifiers and high power amplifiers were experimented with. The pace of digital switchover may be accelerated with the conversion of analogue TV transmitters to digital TV transmitters.

Where there is a large ATT network, then it is economical to augment the ATT system. A variety of innovative and high-resolution programming has to be produced and viewers must have receivers to receive it. It requires investments, co-ordination and synergy among Producers, broadcasters, manufacturers and viewers. Suitable incentives and regulation may speed up the implementation of DTT. Thus, financial burdens can be lessened by conversion of ATTs into DTTs.

Metamorphosis of ATT into DTT

The exciter performs signal conditioning for the RF signal to be transmitted. The input signal (MPEG-2 transport stream) is modulated by a DTT modulator onto a carrier signal at a channel frequency. The amplification process in the output stages of the TV transmitter as well as the RF filter, result in distortion in the actual



Fig.1 Visible Offerings in DTT



Fig.2 Test Set up for Experiment for DTT in ATT

output signal and this distortion must be eliminated from the signal that is transmitted. Analogue TV transmitters for up to peak sync RF Power of 10 kW can provide up to 2.8 to 3.0 kW of DVB-T2 rms power. The modulation error ratio (MER) is the most important quality parameter for a DVB-T2 transmitter. It is a measure of the sum of all interference that affects a digital TV signal. The deviation of the points in the constellation diagram from their theoretical position is measured. This makes a quantitative assessment of the signal quality possible. It is important to know the crest factor so that the components that follow the transmitter – such as the mask filter, combiner, the coaxial cable and the antenna etc., can be adequately dimensioned. The other point of concern is junction temperature, the quiescent transistors currents and RF output of the power amplifier. Poor carrier suppression is recognizable as a notch directly at mid-band on

MER(f) and results in a contorted and compressed constellation diagram in mid-band. Amplitude imbalance and quadrature error negatively affect the MER of all COFDM carriers. The carriers above the DVB-T2 mid-band relate to the carriers under mid-band and vice versa.

A country the size of India needs about 630 TV Transmitters and many gap fillers for pan-India coverage of Digital Terrestrial Television (DTT). But the cost of new equipment and infrastructure will be large for achieving digital switchover, which is a challenging task for any organisation. Many countries have carried out this process in phases. One of the viable options is to convert existing solid state TV Transmitters. So, the feasibility of conversion of some such analogue TV Transmitters and RF amplifiers was experimented with. There were encouraging results. The pace of digital switchover may be accelerated

with conversion of analogue TV transmitters to digital TV transmitters.

Experiment with 10 kW DD HPT at Agra:

There is a 10 kW Rohde & Swartz model NM 8508 VHF (Ch#9) TV high power analogue transmitter at Agra. It consists of eight Power Amplifiers, two analogue exciters and a transmitter control unit. The normal current of each MOSFET was about 6.4 amps. with reference voltage of power amplifier as 54% and the power of the analogue transmitter was 5.95 KW (sync average).

The VHF Power Amplifier R&S VM602A1 produces a DVB output of 485 W or sync peak power of 2.2 kW for analogue TV. The broadband amplifier operates in the range 170 MHz to 250 MHz. The input signal is applied to the multi-stage preamplifier, which also comprises a power control circuit, amplitude and phase controls and several monitoring functions. It is followed by a driver amplifier and four output stage modules. The combiner and transformer networks are entirely in microstrip and suspended substrate technology. Total gain is approx. 63 dB. The amplifiers can be used unmodified for digital and analogue TV. Like in the UHF version, there is a three-phase switching power supply fitted on the underside of the heatsink in the amplifier module. An over-temperature and reflection-responsive circuit plus an input level monitor are provided for amplifier protection.

In order to convert it for DVB-T2, the exciter unit APEX M2X of DVB-T2 transmitter (made by Harris) was used at the DD site at Agra, having 10 kW ATT. The Exciter was configured for VHF Channel 9 with about 10 dBm output. The modulation parameters were set as per Table 1.0.

This output was fed to 1:8 splitters for feeding to eight power amplifiers. The reference voltage of transmitters was adjusted as 37% and out power was obtained as 3.0 KW. The current of each LDMOS D 1029 was about 4.9 Amp. The MER after the output of the channel filter was measured as 31dBm. All parameters of the transmitter were observed to be normal. The test set up arrangements are shown in figure 2. The MER could be improved up to 35 dBm

DVB-T2 Parameter	Chosen Value		
Modulation	QPSK	16QAM	64 QAM
FFT Size	8 k	8 k	32 K Ext
Guard Interval	1/8	1/8	1/32
Code Rate	1/2	2/3	4/5
Pilot Pattern	PP2	PP2	PP7
BW	7 MHz	1.7 MHz	8 MHz
Data(Mbps)	5.6	3.25	35
Table 1.0			

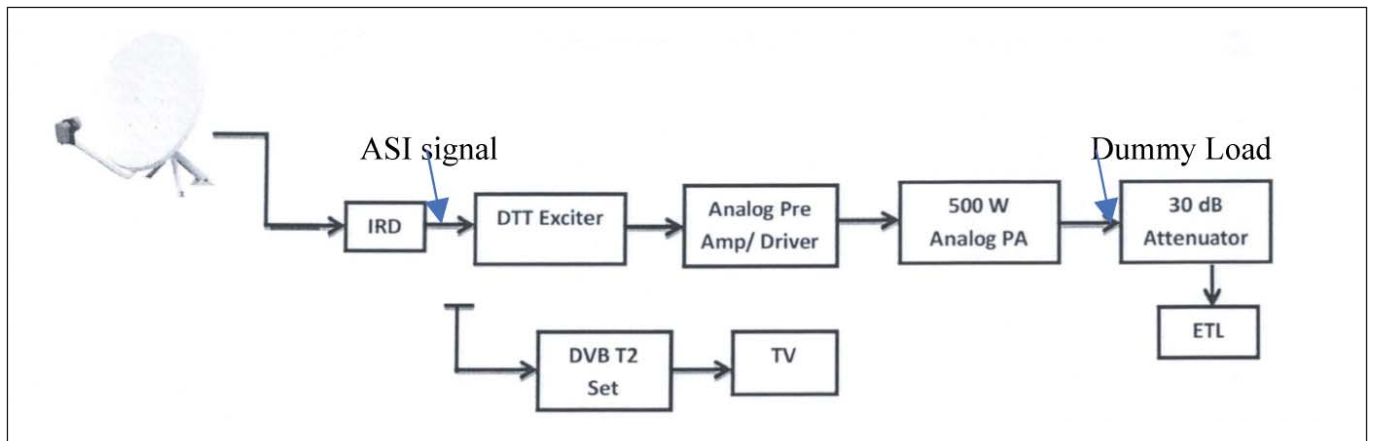


Fig.5 Schematic diagram showing full chain of experiment

observed as: MOSFET current 4.8 Amps, output power 180W (rms), MER 30dBm and picture quality was OK.

Using pre-corrections, the MER could be improved up to 34dB. The outputs were measured with dummy a load/RF Attenuator. The experiment may prove to be useful step in digitalisation of LPTs.

The block schematic diagram of the conversion of a 500W LPT to the DVB-T2 system is shown below:

Thus the 500W low power TV Transmitters made by IMP Telecom could be used for DTT also.

Amplifiers with Bipolar Transistors Vs LDMOS

The lateral double-diffused metal-oxide semiconductor (LDMOS) Technology has improved on ruggedness and significantly reduced the I_{dq} drift. Such devices offer greatly improved output power and gain over existing bipolar technology

and thus reduce the cost per watt of output power for transmitter.

Latest LDMOS like D1029 (for VHF), MRF 6VP 3450H & BLF 861A (for UHF) demonstrates exceptional performance for DTT transmitters. LDMOS BLF861A is capable of

withstanding abrupt source or load mismatch errors under nominal power condition.

Amplifiers using such LDMOS perform exceptionally well in both ATT and DTT. Experiments with such devices were highly promising in the case of

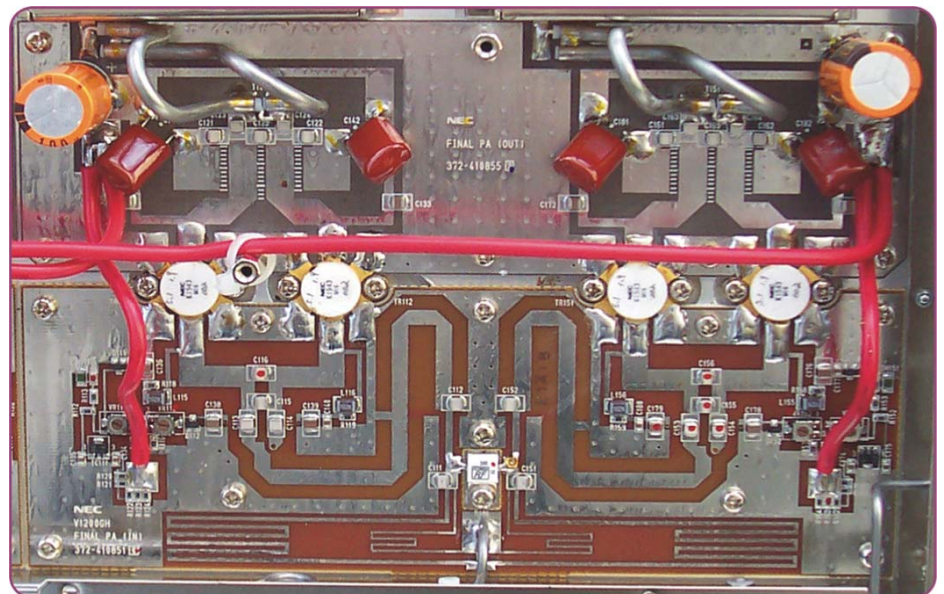


Fig.7 Amplifier using Tr 2SK 1543M

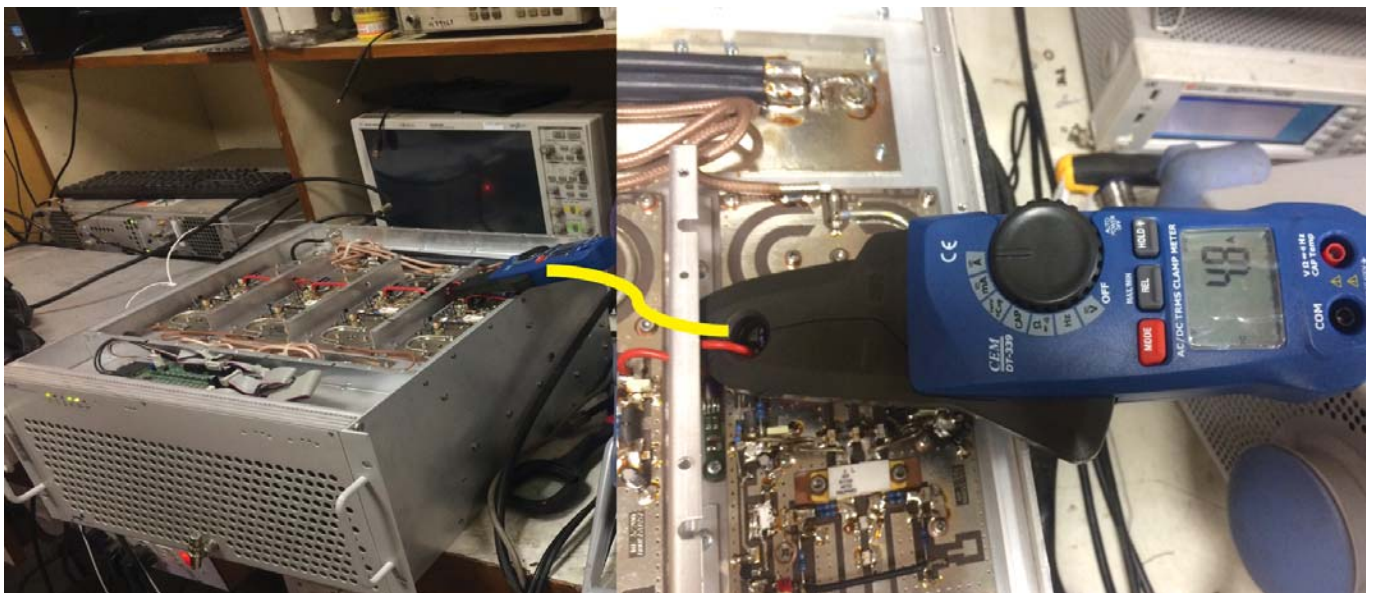


Fig.6 Use of ATT LPT Amplifier as DTT

above LDMOS used in HPT and LPT detailed in preceding paragraphs.

Further experiments were also carried out with other models of analogue amplifier using Bipolar Transistors/ MOSFETs. One such experiment on a power amplifier, using transistor 2SK 1543M (as shown in Fig. 7) was also carried out. The VHF Channel 5 analogue RF Power Amplifier using 10 such transistors gave 1 kW (Peak Sync) for ATT. When this amplifier was used for DVB-T2 using DVB-T2 Modulator, it could provide up to 170 W rms RF Power with MER up to 31 dB. When the drive from modulator was increased, the MER value reduced further. While the DVB-T2 power with 500 W ATT using LDMOS, was observed up to 180 W and excellent performance.

Conclusion:

The consumer motives & impulses arising from digital switchover are primarily driven by increases in programme content & quality and to provide e-government and other digital services with efficient use of RF spectrum and optimal energy usage. The move to digital broadcasting is a

complex, costly and theoretically long process. The extent of benefits and costs is widely dispersed across the players but rapid DSO is of paramount importance. The seminal motives for DTT can be amassed optimally by metamorphosing the ATT into DTT. About 25% to 30% of rated peak sync power of analogue Transmitter can be achieved for conversion as DVB-T2. MER is improved significantly using real time adaptive pre-corrections.

Acknowledgements:

- i. Technical manuals of various Transmitters and Amplifiers.
- ii. Inputs from Technical Team at DD High Power Transmitter Agra.
- iii. Benefits of digital broadcasting "www.gsma.com/spectrum/wp-content/uploads/2014/02/Benefits-of-Digital-Broadcasting-Consulting-" Jan 2014.
- iv. Inputs from Sh. Satyapal DDE, Sh. Mahak Singh AE, Sh. Vijay Kher SEA Sh. Dharmender Kumar SEA and Sh. Bhanu EA from field units under North Zone of Doordarshan
- v. General inputs from various websites related to technological upgrades.



Mr M S Duhan is Deputy Director General (Engineering), Doordarshan Delhi. He has over three decades of

experience in the broadcasting sector with a focus on digital terrestrial technologies, eco-system and solutions.

Mr Duhan has played a key role in accelerating engineering activities such as the digitalisation of Doordarshan's terrestrial network during the 11th and 12th five year plans, and the implementation of the FM transmitter 7th five year plan. He has contributed significantly to the implementation of DVB T2 transmitters in India.

Mr Duhan has published many papers and articles on issues related to terrestrial TV and radio transmission. He holds a degree in Electrical Engineering, an MBA and a Master's Degree in Mass Communication.

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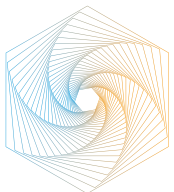


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DIGITAL BROADCASTING SYMPOSIUM 2020: COLLABORATE AND INNOVATE

The 2020 ABU Digital Broadcast Symposium was held on 2-5 March 2020 at Hotel Istana Kuala Lumpur. This symposium, aptly themed 'Collaborate and Innovate', was the sixteenth in the series of symposia organised annually by the ABU.

The three-day conference, together with an exhibition, provided a unique opportunity for attendees to have access to information on various aspects of broadcasting, ranging from technologies to business strategies. The symposium attracted participants representing broadcasters, telcos, regulators, manufacturers and other industry players.



Dr Javad Mottaghi

Opening Session

The ABU Secretary-General, Dr Javad Mottaghi delivered the opening address which was followed by the conference sessions.

Advances in Technologies & Broadcast Standards

The first conference session was moderated by Mr Masashi Kamei, NHK-Japan, and the panelists were Mr Lindsay Cornell, BBC Digital, Dr Peter Siebert, IEEE BTS and Dr Fintan McKiernan, Ideal Systems.

They elaborated on the developments of the various broadcast, telecom and cloud technologies over recent years and the improvements achieved.

Broadcast TV typically means scheduled content delivery for live TV, provided by broadcasters on a 24/7 basis. Non-broadcast TV is classified as, non-live or on-demand content such as provided by Netflix and YouTube. According to statistics, for the past 5 years, daily TV viewing time per Individual based on EBU markets is around 3hrs 40mins and has remained stable. In 2017, the share of total TV viewing time in the UK was 56%, but online content is progressively eating into traditional

TV viewing time. Among youth in the age group 16-34 years, viewing behaviours are rapidly changing and only 33% are watching live TV. The video consumption forecast is that online video is expected to continue boosting total viewing time and the TV set is becoming the main screen for streaming. Broadcast TV will stay with us, though user pattern and behaviour will change. It could be seen from the survey that the trend towards on-demand content is evolutionary and not revolutionary.



From left to right: **Mr Lindsay Cornell**, BBC Digital, **Dr Fintan McKiernan**, Ideal Systems, **Mr Masashi Kamei**, NHK-Japan, and **Dr Peter Siebert**, IEEE BTS.



Broadcasters will have to adapt progressively, even though they are in a good position as trusted brands. Besides, in many countries they are the leading on-demand providers. Overall, the big screen is still the first choice, and now comes with hybrid broadband access.

Delivery via broadcast networks has reached a high degree of sophistication encompassing UHD, HDR, HFR, immersive audio and hybrid interactive solutions combining broadband and broadcast. Standards development organisations, like ATSC and DVB are working on delivery solutions, namely DVB-IPTV for managed networks with QoS, DVB-I for unmanaged networks without QoS and ATSC 3.0 IP based transport layer. Mobile devices, such as tablets and smartphones, are not equipped with a broadcast interface. Nonetheless this is set to change, as broadcast TV reception is now possible with 4G and Wi-Fi by installing a broadcaster specific app. Furthermore, SDOs like DVB and ATSC are working on solutions to make delivery of broadcast content to mobile devices more user-friendly.

With regard to IP and cloud infrastructure, when SMPTE 2110 is ready to roll-out cloud broadcast systems may become a reality soon. However, SMPTE 2110 has its own inherent problems at the moment. With no native camera support for it, a SMPTE 2110 converter and then another converter back to SDI to connect a monitor or vision mixer is needed. The SMPTE 2110 standard is uncompressed and is bandwidth intensive. As it has high latency and jitter requirements, it is almost impossible to implement in a pure software stack and a physical

card is required in order to get it to work. SMPTE 2110 is itself split into standards for video (2110-20), audio (2110-30) and ancillary data (2110-40) together with separate time stream (2110-10) and all of this is defined by a session description protocol (SDP). However, the SDP and how this is controlled is not a part of the scope of SMPTE 2110. Networked Media Open Specification (NMOS) describes how devices on a network can interact with each other, detect what streams are available, and how to connect to other devices. NMOS specifications are the glue that enable SMPTE 2110 to function.

Against this background, cloud broadcast systems will be successful if they offer benefits. Most of the channels are now scheduled playout channels that would benefit from virtualisation. They are already virtualised in the cloud for several reasons, such as faster speed and lower cost to deploy new services. They are perfect for spin-up channels, allowance of micro-services for computing efficiency, shared production and distribution, embedded metadata for further automation consolidation and to drive monetisation, scalability of functions, and easier Integration across value chain services.

In Digital Radio, WorldDAB has

developed newly improved display capabilities for non-Latin scripts. The ETSI TS 103 176 specification defines the framework for using non-Latin text and includes an additional signaling field to provide key complexity indicators. The regional profiles concept is also incorporated to define scope and limits for particular markets. This idea has also been adopted by DRM, which has extended it to include a simplified bidirectional algorithm. The three regional profiles presently are Latin, Full Europe (Latin, Greek Cyrillic) and ASBU (Arabic, Latin).

The DRM Technical Committee has been updating DRM's minimum receiver requirements (MRR). The MRR was originally created in 2004, focusing on short wave broadcasting, and was extended in 2012 to include DRM in the VHF bands (DRM+). However, the requirements were made without much field experience and the rapid expansion of DRM in India led to its review in order to ensure that limits and requirements matched current technology capabilities and price points. Thus, simplified functional requirements have been set for lesser used features and methods for measuring performance have been made easier to carry out. It has also begun a review of the DRM system specification, with the



aim to remove complexity from the standard, reducing the likelihood of interoperability issues. Other features will be reviewed, and the expected timeframe is around 6 months.

Evolving Media Business-Strategies and Opportunities

The moderator was Mr Alex Reza Shariman Othman, Radio Television Malaysia, with the panelists comprising Ms Joan Warner, Commercial Radio Australia, Mr Steve Ahern, Ahern Media & Training, Mr Mazlan Mahdi, MYTV Broadcasting, and Mr Joseph Goddard, James & Wilkinson Media.

A recent study of listening habits indicated that live Australian Radio held a share of 61.3% whilst streaming was at 15%. 49% of Australian households have access to a DAB+ device and there are more than 3.8 million listeners. In 2019, time spent listening to podcasts overtook owned music for the first time. The Australian podcast ranker was launched in October 2019 and released every four weeks. Its dual purpose is to increase awareness and grow podcast consumption, as well as to help advertisers understand opportunities within the podcasting space. The ranker lists the most popular podcasts across publishers by downloads. Artificial Intelligence (AI) is progressing, in the form of partnerships with Google and Amazon.

AI makes radio easier to discover and access on mobile phones, voice assisted devices like smart speakers and cloud-based assistants. Google partnership accessibility on current and future Google Assistant enabled devices and smartphones are to be rolled out soon. More than 300 Australian AM, FM and DAB+ digital radio stations are easily accessible on Google Nest devices via voice command.

RadioMATRIX, an advanced industry-wide planning and ad buying platform, was launched enabling advertisers to easily connect with every commercial radio station on a single platform. It updates and synchronises thousands of radio bookings each day. Buyers receive online booking confirmations, can know who is listening, monitor



changes and see where and how frequently their ads have run. Cloud based solutions will allow checking of spots against audience segments, with radio networks able to access real time insights on availability of spots. During the bushfire disaster in Australia, 74% of listeners looked to radio for information. Radio is a vital part of communications plans for the height of emergencies. Stations provided rolling local coverage of news and important information with regional communities. Radio is a reliable means of broadcasting information in times of emergency.

Transmission is now a level playing field with the result that there is no longer any competitive advantage in owning transmitters. Instead of spending money to compete in transmission, it is better to hire the best talent and produce the best content. The balance sheet must be stabilised to become healthier, strengthening the company and ending up in better control of future direction. Shared sites are becoming the norm, with joint ownership of the infrastructure and fixed ratio of cost contributions. OTT and Streaming have a different cost base from terrestrial transmission. Costs are not fixed, as they increase

with audience and there is little competitive advantage in going alone. Therefore, national and commercial broadcasters have formed a joint venture company and most functions of the ABC TV master control are replaced with centralised switching, captioning, watermarking facilities for contribution & playout to transmitters and streams. The ABC and WIN Media hub operates on IP based technology with 150 channels and potential for 300 channels.

In Malaysia, MYTV was appointed to transform the nationwide broadcast system from analogue to digital. It was tasked to develop and operate the Digital Terrestrial Television (DTTV) infrastructure in Malaysia for the next 30 years. DTTV is regarded as a means for improving the living standards of Malaysians with the creation of new digital revenue streams. MYTV is also given the task to execute frequency restacking, as well as clearing up frequencies above 700 MHz. RM1.1 billion was spent on CAPEX and OPEX and 2 million free set top boxes were distributed to the lower income group.

The traditional media of TV, radio and outdoor advertising still dominates with at least 70% reach





across all groups aged 15 and above, and remains relevant for mass marketing. From a recent survey, 87% population watch TV and 73% listen to the radio as means of media consumption. Marketing communications were successful in informing and preparing people for the transition from analogue to digital broadcasting. The primary source of awareness being television advertising, news articles and advertorials.

Feedback from viewers indicated that improved reception and sharper pictures make TV viewing much more enjoyable. It is possible to get HDTV of the same quality as Pay TV, which acts as the benchmark for picture quality. Present services are SDTV, HDTV, Digital Radio and hybrid broadband broadcast television. Future services will be Pay TV for both SDTV, HDTV, HbbTV, OTT and segmented linear services. Other services envisaged are, reception using USB Dongles to be used on android devices and Smart TVs.

Marketing prioritisation within the media industry is critical to having a robust marketing strategy using owned promotional resource. Commercial competitors are agile, addressing audience needs and have very deep pockets whilst PSMs need to serve a wide and diverse national population under government/ public scrutiny and must be seen to be relevant but not overly populist. For the rest, marketing budgets are under more pressure than ever before, are not as agile, and work in silo, rarely reaping the benefits of working as a united portfolio. Five factors to shape promotional strategy are, revenue streams, content & services, competitive threats,

brand perception, and audiences. Marketing, airtime sales and programming, likewise, should be on top priority within each business. Selecting campaign categories for each task with enriched value ensures the business objectives are being adhered to.

There are four key factors that influence campaign communication level, such as target audience, lead time to launch and support, channel or media mix, and campaign weight. Applying the model across one's owned, earned and paid media and strategically allocating media and creative resources between these services best fulfils organisational and service requirements.

Integrated Broadcast Broadband Interoperability

T-NET Japan and Internet Initiative Japan, Advanced Warning Response Network (AWARN) Technical Partners and members of the IPTV Forum Japan, conducted a workshop to showcase Japan's initiatives on IBB interoperability from the viewpoint of disaster management. The TV service mission is to be a trusted media during emergencies, when news can be fed without fear, uncertainty and doubt. Live, timely information feed is necessary to maximise disaster mitigation and to save people's lives by complying with interoperability requirements.

Currently, Japan has an early warning broadcasting system, wireless emergency alert system and Asian Disaster Reduction Centre. Some of them are quick to trigger, but there is no geo-targeting capability. Thus, it is proposed to have an advanced emergency warning system, smart disaster information management



system and upgraded Asian Disaster Reduction Centre for much more precise, area-targeted and personalised solutions.

Interoperability is warranted for borderless disaster management where every nation and every language can be included at lowered cost. It is possible with global content creation guidelines, receiver management, content delivery network, and sustainable IP network. IPTV Forum Japan is working with the ATSC 3.0 and AWARN to realise interoperability. Recently Hybridcast and HbbTV 2.0 harmonisation and few initiatives in the ASEAN region are ongoing. These initiatives in IBB domain enable disaster management more advanced and high reach, geo-targeting, public education by datacasting.

Digital Radio, The Podcast Generation & Enhanced Audio Technologies

Moderated by Mr Steve Ahern, Ahern Media & Training, the panelists were Ms Nurulhusna Mohamad Kasim, Radio Television Malaysia, Ms Joan Warner, Commercial Radio Australia, and Mr Nick Piggott, RadioDNS.

Public Service Media core functions are to reach all citizens with their services, make their content accessible everywhere and offer a diverse selection of content. They should keep citizens informed, provide innovative content and services. RTM Malaysia has undertaken many efforts to study and familiarise with the DAB+ system in order to gain relevant experience and confidence before its implementation. Digital radio has modulation and coding robustness as well as power and spectrum efficiency. Increasing demand for FM radio frequencies can no longer be met due to frequency congestion and analogue radio is a bottleneck to innovation. According to a recent survey, 22.4% of radio listeners have heard about digital radio and 73.4% of them were interested to own a digital radio set. There are opportunities to extend brands, launch new services, grow audiences and revenues. Malaysia has a lively radio market with multiple players and services in different languages. Radio remains one of the primary information media and reached 20 million listeners in 2019. Most are listening to radio in the morning and afternoon as they commute between home to office for an average of 13 hours 23 minutes weekly.

Public Service Media (PSM) are frontrunners when it comes to producing and disseminating high quality news, documentaries, fiction and sports coverage. In order to meet society's cultural and social needs, PSM content must be easily accessible on all platforms, networks and devices. The key principles are giving prominence to content of public value, exploiting open internet and free to air broadcast synergies, and preserving the content and signal integrity where content developed by broadcasters must maintain its



From left to right: **Mr Nick Piggott**, RadioDNS, **Ms Joan Warner**, Commercial Radio Australia, **Ms Nurulhusna Mohamad Kasim**, Radio Television Malaysia, and **Mr Steve Ahern**, Ahern Media & Training.

original characteristics at all points of access. Digital intermediaries must not be allowed to alter or exploit content unless authorised by the media service providers.

Over 80 million DAB receivers have been sold worldwide, representing a 15% yearly increase. There are now over 529 million people within reach of a DAB/DAB+ signal and DAB/DAB+ services are now available in 45 countries/territories. New receivers are now incorporated with smart features, Bluetooth and voice technology. As competition for advertising revenue intensifies, commercial broadcasters must keep evolving in order to survive. DAB+ is more spectrum efficient, so broadcasters can launch more stations and develop new commercial partnerships. AM, FM, DAB+ and online streaming all play an important role in the evolving future of commercial radio, where audiences can access radio in multiple ways. Each platform provides benefits for different sections of the community at different times of the day. When combined, they create a successful and thriving radio industry.

An update on Hybrid Radio concerned combining broadcast

radio and IP in connected cars. Hybrid Radio delivers audio using broadcast which is reliable, ubiquitous, free to air and economic. Hybrid Radio enhances radio with IP in parallel, by adding content, metadata and interactivity. DNS is the internet address book which converts domain addresses to an IP address that is fundamental to making the internet function. Hybrid Radio leverages DNS to make it work for radio. The listener finds stations by tuning as normal and the radio connects directly to radio station over IP. Hybrid Radio has open standards and interoperability that protect broadcasters and manufacturers from proprietary lockins. It is durable, global and works with FM, HD and DAB+. Hybrid Radio allows switchover from broadcast to streaming or vice versa. It provides streaming URLs for each station where Radio can switch automatically to streaming when broadcast is unavailable. Seamless switching is possible, if streamed audio closely matches the broadcast mode.

The system allows broadcasters to recommend on-demand content, alongside live radio and it is easy to switch from linear to on-demand and back again.





From left to right: **Dr Peter Siebert**, IEEE-BTS, **Mr Roberto Muss**, Vizrt, **Mr Albert Feytons**, MEDIAGENIX, **Mr Emanuele Porfiri**, Tecla System, and **Mr Rob Hopkins**, Openbroadcaster.

Media Management and Advanced Broadcast Applications

The moderator was Dr Peter Siebert, IEEE-BTS with the panelists comprising Mr Roberto Muss, Vizrt, Mr Albert Feytons, MEDIAGENIX, Mr Rob Hopkins, Openbroadcaster, and Mr Emanuele Porfiri, Tecla System.

The importance of an efficient content supply chain was emphasised with four case studies. The first case study tackled the problem of tedious manual processes, lots of issues in getting subtitling and dubbing ordered and delivered. The solution was to integrate with suppliers, automate the entire ordering process, including compliance and transmission, and give visibility from the beginning to the end of the workflow. The benefits accrued were proactive management of missing items made possible by real time status, large reduction in mails, duplication, manual tracking and elimination of most spreadsheets. There was a huge reduction in rush charges and reliable workflow with predictable lead times. The 2nd case study investigated the problem of manual entry of 25000+ sports events per year and keeping them up to date with changes. The solution was to integrate with sports metadata platform for up-to-

date sport event information. The benefits were, the huge reduction in manual entry, and triggering automated workflows when events are postponed. Other benefits include immediate updates to EPG, rights automatically verified when the teams & location are known and better overview of available content per event.

The 3rd case study was about the problem of linear and VOD content, rights, schedules, promotions managed in separate systems and teams. The solution was to merge the workflows managing the linear and VOD supply chains. Among the benefits are huge reductions in manual and double entry, automated catch up based on linear schedule and rights. Additional benefits are, single overview of content available for publication and huge reductions in effort to setup cross platform promotions.

The 4th case study examined the problem of revenue from linear channels dropping with profits when under pressure. The solution was cost reduction by using Artificial Intelligence (AI) to schedule off-peak linear channels. The benefits are freeing up resources, better use of rights and more control over costs by setting limits for the AI engine. Other benefits include better balance between cost vs revenue of the schedule and better competitive offer.

The Emergency Alerting System (EAS), with open source technologies, is available in Canada with Common Alerting Protocol (CAP). It is based on the ITU standard

X.1303 which provides support for UTF8 and indigenous languages. It is far preferable to the proprietary systems from a couple of EAS manufacturers from the US, which come with secret coded firmware. CAP in Canada delivers text, audio and image support for radio and television. The profiles are available in both English and French and CAP feeds are distributed by TCP/IP socket and C-Band satellite. National Public Alerting System entails the CAP alert content flow from alert issuers to aggregators and then from distributors to the public through different channels. Examples are alerts on aggressive wild animals, extreme cold and blizzards, power and telecommunications outages. Other alerts involve evacuation and biohazards, such as the ongoing Covid-19 crisis. The equipment is configured to available languages in the alerting area. Valid CAP message is received matching alerting area polygon and starts with standard alerting tones. Artificial Intelligence plays the message in CAP alert with available recorded phrases and regular detailed messages follow in English and French.

An indigenous alerts solution utilises artificial intelligence with Amazon POLLY voices, with 20 phrases recorded by community members. The framework is available for other countries and as open source for communities. The challenge is that not everyone is located near a cell base-station or has a smartphone. Not only that, equipment manufacturers do not support Indigenous dialects. The alerts are understood by indigenous people in remote communities. Emergency workflow allows priority override of a scheduled show, with public service announcement message delivery to all stations.

A Network Digital Interface (NDI) infrastructure is user friendly, very easy to configure, extremely efficient and easy to manage. NDI is completely interoperable between equipment, applications and standards. NDI video uses compression and has variable bit rate (VBR) where the typical data rate can be up to 250 Mbit/sec. SDI to NDI conversion latency is less than a





frame and NDI compression quality is extremely good with fewer artefacts. NDI contains video, alpha channel, audio, bidirectional control, metadata and is bi-directional. The idea behind NDI is to have a very efficient compression of the sources and to avoid any further recompression until delivery. An NDI stream can be recorded to disk and played back without a recompression cycle.

The OpenStack solution in cloud systems offers flexibility, resource optimisation and cost saving supporting multicast services. OpenStack is a cloud operating system that controls large pools of resources throughout a datacentre, such as computing, storage and networking. All these are managed and provisioned through APIs with common authentication mechanisms. Beyond standard infrastructure as a service (IAAS) functionality, additional components provide orchestration, fault management and service management, amongst other services, to ensure high availability of user applications. OpenStack services are Cinder, Neutron etc where Cinder is a block storage service for OpenStack and Neutron is an SDN networking project focused on delivering networking as a service (NaaS) in virtual compute environments. An example of an OpenStack solution is HPE MWM Orchestrator Manager which is an IT orchestration approach for managing, not only broadcast software app like MAM, playout and encoding, but also the complete OpenStack infrastructure via API.

Advanced Broadcast Delivery Systems and 5G Technology

The session was moderated by Dr Les Sabel, S-Comm Technologies and the panelists were Mr Pavel Kokoshka, Progira, Mr Masashi Kamei, NHK-Japan, and Mr Colin Prior, ENENSYS. Broadcasters and broadcast network providers want their content to be

received by handheld terminals in the form of mobile phones, tablets or in cars. 5G Broadcast may offer such a possibility in fully evolved multimedia broadcast multicast service (FeMBMS). However, the vexing question is whether the existing conventional broadcast networks are suitable. Broadcast networks can be subdivided in 3 different categories, such as HPHT-High Power High Tower (DTV and FM Stations); MPMT-Medium Power Medium Tower (DAB SFNs) and LPLT-Low Power Low Tower at less than 1kW and lower than 100m. In Denmark, the task is to plan a 5G Broadcast network (FeMBMS) SFN based on 3GPP Release 16 using the existing terrestrial DAB infrastructure. All T-DAB VHF transmitters are converted to FeMBMS network at UHF to provide handheld reception for indoors and outdoors. For outdoor handheld reception, the T-DAB infrastructure can provide up to 10-15 Mbit/s covering 95% of population. For indoor handheld reception, the T-DAB infrastructure can provide Indoor handheld coverage using 5G Broadcast SFN, up to about 3 Mbit/s, covering 70% of population. It must be noted that 5G Broadcast offered in FeMBMS has no frequency and time interleaving, which exists in all digital broadcast systems; i.e. DVB-T/T2, T-DAB and ATSC 3.0. Thus, degradation of required C/N is nearly 10 dB for portable indoor and mobile reception. It is difficult for most broadcast network providers with HPHT or MPMT networks as additional infrastructure is needed, increasing network cost. It is also hard

to compete with mobile network operators using LPLT cellular networks for providing 5G broadcast to handheld terminals.

Japan started regular HDTV via 12GHz band digital satellite broadcasting nationwide in 2000 with the development of ISDB-S for multi HDTV programs in a single 34.5MHz transponder channel. In 2003, Japan also started regular HDTV via UHF band DTTB in three major cities with the development of ISDB-T for simulcasting both HDTV and mobile programs in a single 6MHz channel. In 2018, Japan progressed further with regular UHD TV via 12GHz-band digital satellite broadcasting nationwide with development of ISDB-S3 for 8K UHD TV programmes in a 34.5MHz transponder channel. For Diverse Vision, a future broadcasting service in Japan, high capacity transmission beyond UHD TV would be required in 21GHz-band. Among the improvements are higher efficient modulation from 8PSK to 16APSK, sharper roll-off filter from 0.35 to 0.03 and LDPC code to decrease required reception C/N. Most Asian countries have to consider severe rain attenuation in the 21GHz band compared to 12GHz band. A solution to this problem is to increase satellite EIRP in large rain attenuation areas, while keeping nominal EIRP in other areas. This can be conducted by a variable radiation pattern in accordance with rainfall by on-board array fed antenna.

Latest trends show OTT video not only generates a lot of revenue



From left to right: Dr Les Sabel, S-Comm Technologies, Mr Colin Prior, ENENSYS, Mr Masashi Kamei, NHK-Japan and Mr Pavel Kokoshka, Progira.

but also an enormous amount of internet traffic. When popular events create Content Storms and in such cases scalability of the CDN deems essential. Quality of Experience is key for customer retention for faster start up time and better quality video leading to longer user engagement. OTT@Scale Multicast ABR aims to provide solutions on how to compete effectively in the OTT video market. With a fully virtualised and end-to-end portfolio, it relies on multicast ABR architecture with multicast controller, server and agent. It scales and manages busy hours and peaks of traffic, switches automatically between unicast and multicast, scales and manages busy hours at much lower costs, and reduces latency. The portfolio is also said to enable a wide range of applications with OTT video delivery for cable and broadband, telecom, mobile network, terrestrial and satellite DTH operators.

Media Personalisation – Applications to Big Data and Artificial Intelligence

The Moderator was Dr Fintan McKiernan, Ideal Systems and the panelists were Mr Hiroki Okamoto, NHK-Japan, Mr Andrew Kunaseelan, TechKnow Solutions, and Mr Colin Prior, ENENSYS.

Smart Production is underway at NHK for high quality TV programme production using AI and other technologies. Social Media Analysis System (SMAS) analyses tweets and messages circulating in social media for content that can be broadcast to viewers. It gives an at a glance understanding of what is happening and where. News producers can find the information they need more quickly and respond quickly to the viewers. SMAS can detect incident related object from images on tweets through a BOT agent. A BOT is an agent that communicates more or less autonomously on social media, often with the task of influencing the course of discussion or the opinions of its readers. However, it can be detected by SMAS and there are algorithms to prevent BOT. Some BOT accounts post non-valued tweets and their tweets disturb viewers of already reported incidents. By reference to their post's constancy, SMAS estimates their BOT likeliness.



BOT behavior evaluation algorithms gather tweets from target accounts and count appearances on timestamps. The algorithms evaluate timing randomness by appearance mean-to-variance ratio and if random, the account is handled by humans. BOT posts more regularly than human and auto-correlation by one day difference is a helpful indicator. Detection ability becomes more robust against BOT, with micro time noise. BOT detection expected as a part of fake detection; but misinformation or fake spreading is often manually handled. BOT is not always evil and fake issues need to be considered also in a non-technical perspective.

Localisation of content for production and broadcast normally uses machine translation and not automatic speech recognition. It is not intended for the hard of hearing and needs to maintain consistent timing. Machine translation can translate existing subtitles, add non-domestic subtitles at marginal cost and enable producers and distributors to extend their reach. Automatic Speech

Recognition (ASR) automatically turns audio into timed text in many languages using NLP and NER that supports automatic tagging and categorisation of content fragments. Centralised transcription and logging of material facilitates faster cataloguing, better search and offline edit. Automatic creation of subtitles provides benefits, including a 50% cost saving compared to manual subtitling. In this way, the producers can create subtitles themselves, whilst retaining the rights of those subtitles.

TV Advertising is the media to address millions of users instantly but every household receives the same ads, creating hurdles for local advertisers to access to TV media. There is no real time access to media consumption and campaign measurement and at the same time there are regulation constraints protecting other media. Targeted advertising can be realised by dynamic ad insertion at suitable points along the transmission chain. Centralised architectures require



From left to right: Dr Fintan McKiernan, Ideal Systems, Mr Hiroki Okamoto, NHK-Japan, Mr Andrew Kunaseelan, TechKnow Solutions, and Mr Colin Prior, ENENSYS.

delivery of as many multiplexes as regions, consuming huge bandwidth in order to distribute the regional multiplexes to transmission sites and high OPEX costs. On the other hand, Regionalised architectures operate on transmission sites, without the need to duplicate national content and result in lesser CAPEX costs with fast ROI. In order to facilitate targeted and addressable advertising, the DVB-TA standard was specified in liaison with HbbTV in February 2020.

Advanced Production Technologies and All-IP Infrastructure

The session was moderated by Mr Lindsay Cornell, BBC Digital and the panelists were Dr Kong Bin, NRTA-China, Dr Mohieddin Moradi, IRIB-Iran, and Mr Thomas Gunkel, Skyline Communications. The presentations of Dr Kong Bin and Dr Mohieddin Moradi were pre-recorded.

National Radio Television Administration (NRTA) China forms the world's largest broadcasting transmission and coverage system, which not only caters for domestic broadcasting but also international broadcasting. The number of DTV subscribers has reached 140 million. serviced by 450 HDTV channels and two 4K UHDTV channels. The Emergency Broadcasting System of China (ChinaEBS) supports the broadcasting of emergency information through various platforms such as satellite, FM, AM, DTMB, DVB-C, and IP. ChinaEBS satisfies the technical requirements of emergency information by terminal activation, timely response, zone control, and end to end information authentication. Since the Lushan Earthquake on 20 April 2013, Emergency Broadcasting has been a very important part of the public service system, and the pilot construction of emergency broadcasting has been promoted on a full scale. Emergency broadcasting system plays an important role in providing effective and efficient emergency services in emergencies such as earthquake and flood. China's standard system of video and audio content digital rights management (DRM) supports various forms of platform, including digital TV, IPTV and Internet TV. The system fulfils the current demand

for integrating media, ensuring a positive advancement of the media content industry. NRTA China encourages other institutions to promote the standardisation of video and audio content and digital rights management. Future planning includes mobile priority strategy by promoting the integration of national cable TV networks and 5G infrastructure. China's intention is to make radio and television available to every village and household and mobile access to every person. For all-IP Infrastructure, the PTP standard has been designed for engineered environments. The Precision Time Protocol (PTP) is a protocol used to synchronise clocks throughout a computer network. There is to be no packet delay variation (PDV), no asymmetry and perfect timestamps. The mechanisms to alleviate these sources of errors involves creating timestamps in hardware, using QoS to prioritise PTP traffic and fine tuning PTP settings. Common sources of errors are typical configuration issues, device issues and network issues including missing or corrupted event messages and increased packet delay variations (PDV). There are solutions with automated PTP provisioning and PTP monitoring & control. Automated PTP provisioning automatically detects new PTP aware devices, automatically extract PTP topology, define and apply certain configurations. Likewise, PTP monitoring & control monitors every single PTP metric on all PTP nodes, monitor PTP performance, monitor PTP multicast-traffic and apply PTP security workflows.

For live IP production, the IP world

of broadcast and media routing includes IP video routers, modular switches, Precision-Timing-Protocol for synchronisation. IP video routers must have very large bandwidth, must handle all the port bandwidths at the same time and at full capacity, increased IP switch stream capacity, must be IGMPv3 compliant and must support protocol independent multicast. Modular switches are high-performance and high-density switches with interconnections using small form-factor pluggables (SFP) of multiple different variants. The media industry is constantly looking for workable solutions, such as unchanged operator workflow, deterministic low latency and jitter, zero packet loss, Video/ Audio end point sync and lock with micro-sec accuracy, fast and clean switching, better system availability and network security.

Live studio production using IP technology means to run networked devices with standard and open API in an IP network. In media service management and orchestration, the orchestrator glues the entire operation together and sets up the workflows as the user wants. It may be provisioned in two approaches; using a broadcast controller with orchestration capability, or using individual broadcast controller and orchestrator. The orchestrator monitors, controls and manages one or multiple physical, logical and virtual devices or functions in such a way that it is aware of the availability, capability, and capacity. The controller sends commands to one or more physical or logical devices to execute single or multiple actions using manual or automated



Mr Lindsay Cornell, BBC Digital and Mr Thomas Gunkel, Skyline Communications.



From left to right: **Mr Aale Raza**, Whiteways Systems, **Ms Mardiah Nasir**, IPSB Technology, **Mr Mika Kanerva**, Sofia Digital, and **Mr Chao Yin Loong**, Akamai.

processes. Thus, media flow is orchestrated in all imaginable manners, by controlling sources, switching fabrics and endpoints directly, by using multiple vendor-optimised SDN controllers, or a mixture of the two. Some examples are Skyline DataMiner's media-over-IP monitoring and SDN orchestration, and Grass valley's GV convergent broadcast controllers.

The motivations, business benefits and real world rollout of SMPTE ST2110 suite are flexible workflows, maximum efficiency, reduced bandwidth, assured interoperability and future-proof investment. However, IP-based systems still have a few inherent problems, like orchestration and monitoring software's issues and broadcast controller licenses issues.

Content Delivery Methods, OTT Platforms and IBB Systems

The session was moderated by Mr Aale Raza, Whiteways Systems and the panellists were Ms Mardiah Nasir, IPSB Technology, Mr Mika Kanerva, Sofia Digital, and Mr Chao Yin Loong, Akamai.

OTT and Streaming content are being delivered faster with ultra-low latency. It is possible to reduce latency without shortening segment duration. In fact, latency can be decoupled from segment duration. Common Media Application Format (CMAF) is an ISOMBBF fragmented mp4 container that can be simultaneously referenced by HLS or DASH presentations. It was standardised by MPEG and supported across the Apple and DASH ecosystem. Competing codecs,

protocols, media formats, and devices make the already complex world of live streaming infinitely more so. In addition to causing a headache, the use of different media formats increases streaming latency and costs. What could be achieved with a single format for each rendition of a stream, instead requires content distributors to create multiple copies of the same content. In other words, the streaming industry makes video delivery unnecessarily expensive and slow. The number of different container files alone is exhaustive: .ts, .mp4, .wma, .mpeg, .mov and the list goes on. Hence competing technology providers have agreed on a standard streaming format across all playback platforms. CMAF brings us closer to the ideal world of single-approach encoding, packaging, and storing. What's more, it promises to drop end-to-end delivery time from 30-45 seconds to less than three seconds. Ultra-low latency over streaming standards is possible today and chunked encoding and transfer encoding is a key technology that has been adopted by DASH and DVB. A common basis of a CMAF container holding chunk encoded content holds the foundation for interoperable low latency playback.

DVB-Internet or DVB-I makes linear television over the Internet as user-friendly and robust as traditional broadcast television. The DVB-I specification defines requirements for television services that may be delivered through broadband and/or broadcast mechanisms. It also defines the methods to retrieve electronic programme data for those services, and also the internet content delivery

format based on DVB-DASH with multicast adaptive bit rate and low latency support. Consumer devices can present an integrated list of services and content, combining broadband and broadcast services, giving users the best of both worlds. Broadcasters can deploy common services across a wide range of devices. OTT providers can increase their offer's visibility and audience reach. Manufacturers can create a single consistent user experience for all video services. DVB-I is the first major specification to benefit from DVB's new verification and validation activity that aims at accelerating the implementation of its technologies in the marketplace. A recent media survey found seven key areas to be critical, when assessing consumer appetites for on-demand and streaming content.

First and foremost is that content is still 'king' and it flows in push or pull modes or through search engines. Getting answers to what should one watch and how much time a user spends on given content is getting difficult. Second, is the language and locality i.e to offer different genres and category of program contents in a specific country or region. Platform is another honourable 'queen' to deliver and publish media e.g in instagram, YouTube, Netflix, Tiktok etc. Broadcast technologies such as digital, satellite, OTT etc are impacting an expanding device landscape and continue to do so with big screens, like connected TVs, smart TVs to smaller screens and mobile technologies.

However, ultras and fans have a say in it as audience autonomy blurs the boundary between audiences, content producer and monetisation. A recent PWC study shows 65% of TV watchers prefer to watch live streaming, up from 53% last year. Sixth, money out of consumers' pocket means the battle for wallet share is getting intense now, with offers and payment tiers and multiple revenue source for operators. Lastly, media companies ought to think big, start small and scale fast. To serve the audience and consumers' appetite, the major requirements are branding, centralisation, technology, and strategy. ■

DBS2020 Industry Debate

The Changing World of Broadcasting - Challenges, Opportunities and Strategies

The debate session was moderated by **Mr Steve Ahern**, Ahern Media Training, and the panelists were **Dr Peter Siebert**, IEEE BTS, **Dr Fintan Mc Kiernan**, Ideal Systems, **Mr Aale Raza**, Whiteways Systems, **Ms Mardiah Nasir**, IPSB Technology, and **Mr Thomas Gunkel**, Skyline Communications.

The moderator started the debate by conducting an online poll survey of the audience. They were to select two pertinent matters that broadcasters should discuss from a number of issues, ranging from cost, technology, staff, management to training. Money and Management were identified as key challenges faced by broadcasters. There was growing concern regarding OTT platforms, as FAANG (Facebook, Amazon, Apple, Netflix and Google) has been intruding and cashing in on areas and content traditionally the domain of broadcasters. Netflix and others have made inroads with live feeds, even into developing countries, especially with non-English programmes that cater for Asian mass audiences. They are also exploiting the advantage of their non-linear platform, allowing



Mr Steve Ahern



Mr Aale Raza



Dr Peter Siebert



Ms Mardiah Nasir



Dr Fintan Mc Kiernan



Mr Thomas Gunkel

viewers to pause for a break or snack between viewing times.

Production costs for broadcasters are going up and it is wise to invest in cloud systems. Cloud systems are coming of age with several benefits, such as lower maintenance cost, higher compression ratios and a move from client servers to cloud servers, which has made single servers possible. A suggestion was made that public service broadcasters (PSB) could charge in some way, even for free to air (FTA) services to their audiences, as there are costs incurred throughout the delivery path from

studio to viewer. The telcos are benefitting from this situation as they own the delivery paths and can monetise the usage per minute. One of the ways of recovering costs is by charging per set-top-box and earning through targeted advertising. PSBs need more investment to be empowered to reach their next level goals.

It is not advisable to think only of money when investing in infrastructure, but to collaborate on sharing it. Broadcasters should also not invest in silos, but instead strive to generate and aggregate more content, and



venture into multiplatform. They should put money into content that can better satisfy end users. New technologies, such as High Dynamic Range (HDR), High Frequency Range (HFR) and Immersive Sound, can extend the life of broadcasters. Podcast is another long-term business venture that can reap profits for them.

The pace of technology is changing and a lot more training is needed. Training must be regular and technical certification

is needed. It could be preferable to do on-line training, so that costs can be reduced. The ABU could be a good starting point, as it conducts short courses all around the Asia Pacific. These courses are up-to-date, delivered by industry professionals and provide hands on experience.

Public Service Broadcasters (PSB) must change outdated regulations, that are no longer valid in these challenging and competitive times. They need to get involved in developing

future standards and in exploiting the benefits of 5G technology. However, PSBs are still relevant, as they are trusted brands and can provide accurate news, especially in an era of rampant fake news circulation. Fake news travels fast and PSBs must learn to monitor situations and take control. There have been cases of unfortunate incidents caused by rumours on Social Media and this is where PSBs can step in to broadcast the real facts and present balanced opinions to viewers. ■



DBS Exhibition

The DBS Exhibition was held on 3-5 March. The 12 exhibitors who took part were Tiara Vision, TechKnow Solutions, T-Net Japan, Radio Frequency Systems, Whiteways Systems, Canara Lighting, Ideal System, MEASAT, MEDIAGENIX, Blonde Robot, Stagetec Asia and PROGIRA. We thank them for their support. ■





DBS Lucky Draw and Best Booth Award

The DBS Lucky Draw was sponsored by GlobeCast, Malaysia Healthcare Travel Council, Ideal Systems, Hotel Istana Kuala Lumpur and Holiday Inn Express Kuala Lumpur. The Best Booth was awarded to Blonde Robot who will receive a complimentary booth at DBS2021. ■



ABU DBS 2020

Thank you Radio Television Malaysia



Thank you Media Prima



The Media Prima camera crew posing with Mr Masashi Kamei, Vice-Chairman, ABU Technical Committee and Senior Research Engineer at NHK Science and Technology Research Laboratories.



Report on DBS2020 by Jeewa Vengadasalam, Specialist II, Department of Electrical & Electronic Engineering, Lee Kok Chiang, Faculty of Engineering & Sciences, University Tunku Abdul Rahman, Malaysia



Regional Workshop on Engineering Fundamentals for Broadcasters

6-10 January 2020, Kuala Lumpur



The Regional Workshop on Engineering Fundamentals for Broadcasters was organised by the Asia-Pacific Broadcasting Union in Kuala Lumpur from 6 to 10 January 2020. The workshop, targeted mainly young broadcast engineers from the ABU member organisations was the sixth in the series. The week-long workshop was aimed at providing knowledge of the fundamentals of broadcast engineering including basics of audio and video systems, evolutions of digital technologies and concepts. The course schedule was designed such that it would facilitate the participants to learn about the basics of analogue to digital conversion of audio and video signals and the integration of computer and networking technologies within the broadcast workflow. In addition to these, topics such as electrical power systems, contribution and distribution of media, current trends and advancements in broadcast applications were introduced to them during the workshop.

The workshop commenced with topics focusing on basics of image and light with reference to human visual system, photometry, and colorimetry. The waves of visible light from 380nm to 750 nm wavelength are perceived as variations of colour in a captured scene. The video signal is a mix of colour and luminance signals that are synchronised while capturing and displaying them. Picture scanning is based on the persistence of vision, a phenomenon of the eye by which an after image is perceived to persist for approximately one twenty fifth of a second on the retina. Progressive

scan delivers higher spatial resolution for a given frame size. Interlaced scan delivers higher temporal resolution for a given frame size. Luminance is actually how bright a given object will look to a human eye, or the only light form that we can see. A chrominance signal is represented by hue, saturation and brightness attributes. The Composite video signal has video signal, blanking and sync pulse. RGB signals offer the most faithful reproduction in both image brightness and colour depth while the Y/C signal packs the R-Y and B-Y channels into one signal called the chroma signal. The composite signal is obtained by combining the luminance and chrominance.

Different size camera films in use for visual media are super8mm, 16 mm, 35 mm, and 65 mm. A super16 format is also widely used for television production where its aspect ratio fits 16:9 widescreen format and 35 mm is more popular for feature films, commercials and US television. The 65 mm format is used as a camera film gauge for making prints on 70 mm print film for widescreen presentation such as IMAX. Colour bars, a vertical step pattern of colours from left to right, is useful to check connections, quality of colours and for chroma, brightness and contrast adjustment. The Tri-level Sync system uses a symmetrical sync signal and locks the centre of the signal and ensures that the same lock point is always used even when signal attenuation occurs. High quality image production is defined by elements such as spatial resolution, temporal resolution,

dynamic range, colour gamut, coding and compression artifacts. In conversion and transmission processes, some artifacts maybe produced such as noise, geometrical distortion and pixellation.

Audio signals are characterised by loudness, pitch and timbre which are sensory characteristics of sound produced by the amplitude, frequency and complexity of the sound wave. Humans can hear sounds with frequencies ranging from 20 Hz to 20,000 Hz, an impressive range of about ten octaves. In audio equipment, we usually handle voltages rather than powers, so audio signal levels are expressed as dBu or dBFS rather than dBm. Usually 0VU level in volume unit meter reference level corresponds to +4dBu. Dynamic range is the difference between the quietest and the loudest sound and a compressor reduces dynamic range. A typical microphone, with source impedance of 150 Ω , generates an open load voltage of 100 μ V to 1 mV at 74 dB SPL while the audio signal source (line level) output impedance is 600 Ω . Standard operating level (SOL) for old equipment was chosen as +4 dBm into 600 Ω . Normally, the output impedance of a unit of audio equipment is low and input impedance is high. Microphones are classified by form factor, application and polar pattern. The speaker size is related to wavelength of sound, so that low frequency speakers are big and high frequency speakers are small. To generate high quality, MIDI is a protocol that enables computers, synthesisers, keyboards, and other musical devices to communicate with each other. Broadcast



equipment typically uses balanced signals with 3-pin (XLR) connectors and the standard operating level is 4 dBu. Professional and consumer equipment typically uses unbalanced signals with RCA or phono jack connectors and the standard operating level is 10 dBu. AES/EBU digital audio signal structure consists of 192 frames for each digital audio block and each of the 2-channels carries 32-bit size words. Normally, AES/EBU interface bit rate is 3.072Mbps with a 48kHz sampling rate.

Treating signals in the digital domain offers advantages such as spectrum efficiency, greater reliability, lower cost, less maintenance, greater functionality, powerful self-diagnostic systems, and computer control. Converting analogue to digital requires considerations in parameters like sampling rate, bit

resolution etc. Signal to noise ratio restricts the minimum bit resolution, while channel bandwidth limits the maximum bit resolution. The quality of the digital signal can be increased while compromising bandwidth, storage capacity, increased complexity. MPEG is an encoding and compression system that reduces the amount of data needed to represent video many times over, but still manages to retain very high picture quality. For encoding SD, HD, 4K and 8K UHD videos, H.262, H.264, H.265 and VVC coding have been standardised over successive years. The MPEG video compression algorithm achieves very high rates of compression by exploiting the redundancy in video information namely temporal and spatial redundancy. While compression, artefacts are added to the signal or data such as blocking, contouring in image or video

and clicks, pops, crackles in audio. In audio compression, we make use of psychoacoustic modeling, like frequency or temporal masking and perceptual encoding which exploits audio elements that the human ear cannot hear well. Audio and Video compression schemes can be characterised as either constant bit rate (CBR) or variable bit rate (VBR). General strategies to reduce digital media file size are to reduce sampling rate, reduce bit depth, apply compression and reducing the number of channels, and shorten the length for the audio.

An interesting topic on Serial Digital Interface (SDI) was presented at the workshop. SDI is a family of digital video interfaces used for transmission of uncompressed, unencrypted digital video signals within broadcasters' studio facilities. The interfaces, standardised by



Facilitator,
Dr Mohieddin Moradi,
IRIB-Iran



the ITU and the SMPTE, are SD-SDI, HD-SDI, 3G-SDI and 12G-SDI. SD-SDI, known as ITU-R BT.656 or SMPTE 259M, provides 270Mbps data interface for standard definition video defining its resolutions, frame rates, color depth while HD-SDI provides about 1.5Gbps data interface. Other standards for supporting increased video resolutions for full HD at 3 Gbps is the 3G-SDI, for UHD at 12 Gbps is the 12G-SDI standard. Simple test and measurement procedures should be carried out to ensure the performance of each of these interface data links. This ensures that each piece of equipment performs to its specification. A waveform monitor with eye and jitter measurement capability is used in investigating physical layer problems with the SDI signal. Other tests in the physical domain of the SDI signal are signal ripple, DC offset, overshoot, return loss and impedance measurements. Digital signal level, timing reference signal (TRS) verification, cyclic redundancy checks (CRC), luminance/ chrominance delay, colour gamut verification and propagation delay are measured in the data domain to ensure the integrity and quality of the signal. The blanking intervals in analogue video signals are analogous to the ancillary data spaces in digital video signals. Sixteen channels of digital audio could be carried, along with the digital video signal, with any other additional data in the ancillary data spaces. This is known as embedding the audio and data signals into the video signal.

Production of audio and visual content takes place in the studio facilities. An interesting session on Radio and TV studio design dealt with the production set-up and a number of design considerations to be taken to build the production facility. The raw content from audio and video sources such as cameras, VTRs, microphones must be processed first before suitably mixing in vision and audio mixers. The production and post-production rooms should be equipped with camera, lighting & audio fixtures and control devices. Proper acoustics and soundproofing require the desired studio to be treated with appropriate shapes and size of diffusors and combinations of absorbent and reflecting materials on the walls, floor and ceilings. The size and shape of such studios are normally decided by considering the purpose, equipment placement and audience capacity. Generators, UPS and Air cons are the major electrical equipment in addition to other broadcast accessories such as sync pulse generators, patch panels, communication system, distribution amplifiers, monitors, measuring equipment, audio/video servers and networking devices etc.

For transmission of the A/V signals from



the studio, they are modulated onto an RF signal and radiated through antenna. Analogue and digital transmission techniques were presented at the workshop to refine the knowledge of the participants on transmission systems. The need for modulation arises as radiation and reception of the baseband signals is not practical owing to length of the antenna. So, the message signal is modulated using either AM or FM in analogue mode or ASK, PSK, or QAM in the digital domain. The passband signals occupy a certain bandwidth in the RF spectrum assigned to the prescribed broadcasting services i.e. Radio, TV etc. To exploit the advantages of digital signals over their analogue counterparts, they are digitized and modulated appropriately. Better modulation schemes are available that are spectrum efficient and carry higher data rates as the higher order modulation are used in x-PSK or x-QAM mode. The channel capacity of a medium or a channel is determined by its bandwidth and the signal to noise ratio of the signal for the communication link as per the Shannon theorem. Different coding techniques are used for increasing the efficiency and reducing the error rate of data communication over noisy channels to achieve the maximum channel capacity.

The basics of electrical power systems were also introduced, to the foundations of basic electrical theory, circuits, and protection systems. Fundamental concepts of electrical quantities and circuit elements form the basis of any power system. Laws of electricity including Faraday's law and Lenz's law represent the phenomenon behind how electrical machines and devices work. Ohm's law and Kirchhoff's network laws define the working of any electronic circuits that form the basic blocks of broadcast equipment. The participants were given brief examples on how loads are estimated and how the

capacity of power sources to energize them are calculated. The concept of electromagnetic interference was described as critical to the operation of broadcast equipment and how radio wave propagation may be affected by conductive and inductive effects of close by power lines. Potential electrical hazards such as shocks and burns could be prevented with the use of personal protective equipment and safe working practices while working in high or medium voltage sites. Possible damage to audio visual and RF equipment could be avoided with the use of appropriate equipment and system grounding/ earthing mechanisms.

On the last day of the workshop, participants were taken through a session on information technology, with details on computer networks, TCP/IP protocol, networking and routing, cloud services and applications. The end devices, media, protocol and networking devices make up the building blocks of a computer network. The LAN or WAN network could be configured on bus or ring or star or a hybrid topology for file sharing or internet access. The seven layers of the OSI model is the basis of all network communication and make use of specific protocols at each layer. TCP/IP and HTTP are the most used protocols and services, used both in the OSI and TCP/IP model, for end to end delivery of multimedia data. The components of a network, such as several client devices, switches, hubs, routers, network cable or Wi-Fi, servers etc. are vital for different applications and services. The session dealt with network storage in both the Network Attached Storage (NAS) and Storage Area Networks (SAN) architectures, both utilising RAID configuration for more complex and larger storage applications. The recent trend in IT is virtualisation, which creates a software based virtual representation of a physical function and applies equally to applications, servers,

storage and networks. The Hypervisor configuration was discussed, citing several benefits and services. One of the applications of the virtualisation concept is Cloud Computing which delivers computing services, such as databases, networking, analytics, intelligence besides other conventional IT functions. Cloud computing stacks, managed by AWS, Google and Azure are more popular nowadays in terms of IAAS, PAAS and SAAS service models. Private, public and hybrid clouds are used, each having its own pros and cons. A demonstration of Infrastructure as a service (IAAS) was shown to the participants to get a feel of how and where it works.

Participants got abreast of the recent trends of advanced technologies and applications in the media industry. Media workflows in the broadcast chain utilise new techniques, optimization and content management. On content creation, mixed reality experience with VR, AR and MR are the new applications. Likewise, object-based 3D spatial audio and HDR video are catching up in the media industry. Media over IP finds place in the management of signal contribution and distribution. The SMPTE Standard ST2110 has been the main specification enabling fully IP based operations. In video processing, H.265 also known as HEVC, is the successor to the current generation of the MPEG-4 H.264 codec and is fully capable of encoding / decoding 4K resolution video. HEVC comes with most 4K TVs and computer monitors. Google's VP9 codec has gained popularity in web applications with the gradual shift from Flash to HTML 5 technology. It is implemented in many web browsers and used in Google and YouTube. Dynamic Adaptive Streaming over HTTP (MPEG DASH) is an adaptive bitrate streaming technique that enables high quality streaming of media content over the Internet delivered

from conventional HTTP web servers. It can seamlessly adapt to changing network conditions and provide high quality playback with fewer stalls or re-buffering events. For content delivery, a content distribution network (CDN) is used that accelerate the delivery of web content and rich media to internet connected devices. Unlike downloaded media, IPTV offers the ability to stream the source media continuously. As a result, a client media player can begin playing the content almost immediately. This is known as streaming media. IPTV is widely deployed in subscriber based telecommunications networks with high speed access channels into end user premises via set top boxes or other customer premises equipment.

A remarkable session on file-based workflow, media asset management, online delivery and new media platforms comprised a mix of lecture and content demonstration. File-based workflow has been in use for more than a decade and offers increased efficiency, better throughput, more content to more devices with better cost savings. Ingesting, storage, processing, managing and networking & playout of media assets has been the required flow chain in the broadcasting houses. Media asset management is the key concept that such a system enhances to create, manage, distribute, archive and retrieve in-house digital assets. The digitization and archiving of tape based analog contents is a must in which degradation of the valuable and historical heritage tape contents is avoided. A step by step approach is considered where preservation of old media, cataloguing and categorizing, and creating metadata is prerequisite before digitising and archiving them. Traditional broadcast workflow faces problems and challenges and moving to file-based workflows offers more benefits if some issues

related to content protection, file formats and archiving are taken care of prudently. New media platforms are proliferating that allow delivery of such digitized and networked media contents via internet, social media. Nowadays, OTT, IPTV, IBB and Streaming platforms like Facebook, YouTube are popular for broadcast applications. Over the top (OTT) refers to content providers that distribute streaming media as a standalone product directly to viewers over the Internet. OTT comes in service models like Subscription (SVOD) or ad-supported (AVOD) or transaction (TVOD) based video on demand. Netflix, YouTube, Amazon prime video, Toggle, Tonton, MyKlik are a few examples of new media platform services run worldwide. Hybrid Broadcast Broadband TV (HbbTV) is one of the standards in IBB to harmonise the broadcast, IPTV, and broadband delivery of entertainment to the end consumer through connected TVs and set top boxes. HbbTV can show digital television content from several different sources, including traditional broadcast TV, Internet, and connected devices in the home.

Participants were also informed of the importance of spectrum management and functions that the ITU provides in planning and allocation of frequency resources, together with standardisation, international co-ordination, monitoring and enforcement.

This refresher course for broadcast technicians, engineers and managers was delivered by speakers with intensive experience in Radio and TV broadcasting arena. The event was joined by 50 participants from 16 countries representing 19 member organisations. The knowledge gained will help participants to build confidence in operating in an evolving media environment. ■



A20 HFCC Global Coordination Conference

24-28 February 2020, Kuala Lumpur



The A20 HFCC Global Shortwave Coordination Conference was held in Kuala Lumpur on 24-28 February. At the conference, delegates from short wave broadcasters and frequency management organisations had an important opportunity to coordinate their frequencies directly with the frequency managers of other broadcasters. Out of the many requirement files submitted, a sizeable number of frequency collisions and interference instances were eliminated by face to face coordination or e-mail coordination with those who were not present at the conference.

The conference commenced with an opening plenary session that discussed the programme for the week, and technical procedures for frequency coordination. In a presentation by George Ross from Trans World Radio, the delegates were briefed on DRM Short Wave receiver development status. There are a few receiver models, such as Starwaves, Inntot, Gospel already available in the market and cheaper

versions are on the way. Some receiver modules from Cambridge Consultants are in the development phase, and so is the Android version of an App with DSP module.

The HFCC steering board meeting also took place to streamline the conference proceedings and to study progress of forthcoming conferences for B20 and A21 seasons. On the sidelines of the conference, a Group of Experts (GoE) meeting brainstormed various prominent issues, such as WRC-23 agenda item 1.9, relevant to HF broadcasters. The meeting proposed to urge HFCC members to follow up the work on this agenda item at their national administration and regional broadcasting organisation levels and, if possible, to play an active part in the process to protect HFBC services from any possible out of band interference from Aeronautical Mobile stations. The HFCC also proposed to offer its assistance to the WHO and make use of its International Radio for Disaster

Relief (IRDR) resources to help in the fight against the Covid-19 coronavirus.

Held twice a year, the conference provides an important forum to resolve or minimise instances of mutual interference among shortwave transmissions for two different seasons; namely the Summer (A) and Winter (B) seasons. The A20 season runs from 29 March to 25 October in the 2020 calendar. Previously scheduled to be held in Hainan, China from 10-14 February 2020, the HFCC conference had to be shifted to Kuala Lumpur at short notice, due to the outbreak of the Covid-19 epidemic in China. Thirty-one frequency managers from 18 countries, representing 21 frequency management organisations, took part in the week-long conference. The ABU was the host organisation for the A20 Conference, which was jointly organised by the High Frequency Coordination Conference (HFCC), the Asia-Pacific Broadcasting Union (ABU) and the Arab States Broadcasting union (ASBU). ■





BES Conference and Expo, New Delhi



The annual BES conference and exhibition took place in New Delhi on 13-15 February 2020.

The expo, which focuses on broadcast and media technology, is organised each year by the Broadcast Engineering Society of India, (BES.)

This year's show was the 26th. Its theme was Disruptive Technologies: Shaping Future Broadcasting.

ABU Technical Committee Vice-Chairman, Mr Sunil (centre), chaired a session on Disruptive Technologies, 5G, IP based Production, ATSC. He is Additional Director General (Engineering) & Head International Relations, Prasar Bharati.

Among the other participants was the non-profit DRM Consortium, which highlighted its recent achievements under the theme DRM for India - Smart Radio for All.

The ABU is a supporting organisation and has a longstanding partnership with BES. ■



News from The ABU Region

astro
Radio



New radio app to serve Bangladeshis in Malaysia

Radio stations in Bangladesh and Malaysia have joined hands to serve the Bangladeshi community in Malaysia.

Radio Today, a Bangladeshi radio and digital audio content provider, has appointed Malaysia's Astro Radio as its exclusive local representative for BONDHU, a 24-hour digital radio app for Bangladeshis living in Malaysia.

BONDHU, which means 'friend', provides music, specially curated Bengali content and the latest news and updates from the two countries, delivered by BONDHU announcers.

The app can be downloaded for free via Google Play or the App Store. BONDHU is also available at www.bondhu.com.my/ and on Facebook at www.facebook.com/bondhu.my/

Jeyapuvan Somasundram, Vice President, Astro Media Solutions said: "We are pleased to be the

exclusive local representative for BONDHU in Malaysia, offering engaging content for our local Bangladeshi community through immersive dialogues and relevant updates.

"At the same time, BONDHU offers advertising and sponsorship opportunities for businesses to reach and engage with the Bengali speaking community which is largely an untapped segment in Malaysia."

Rafiqul Haque, Managing Director, Radio Today, said: "We are pleased to bring both entertainment and news content tailored for Bangladeshis living in Malaysia, designed to keep them in touch with information from Malaysia and back home.

"On top of entertainment, BONDHU's content also includes public service announcements, health and safety updates, and other social messaging. We hope this effort will bring meaningful benefits for the Bangladeshis living in Malaysia."

Estimates put the number of Bengali speakers in Malaysia who are active on Facebook at 700,000 to 800,000. [Asia Radio Today]

beIN Asia extends service deal with Encompass

beIN Asia Pacific, a media platform that offers live streaming of sporting events, has signed an agreement with Encompass to extend the latter's existing contract services – playout, streaming and distribution.

Encompass is a global technological company that dedicates its video solutions to TV networks, broadcasters, sports leagues and OTT providers.

For many years, Encompass has been delivering beIN sports feeds from the facility in Singapore. The partnership enables beIN Asia Pacific to meet the changing needs of live sports broadcasting as Encompass provides a range of services such as channel playout, global distribution, OTT/TVE streaming, live events, disaster recovery and radio. [APB]

NAB 2020 cancelled through Coronavirus fears

After being hit by cancellations from a growing number of its major exhibitors due to the Coronavirus outbreak, leading US flagship broadcast technology show NAB, due to run in its traditional April slot in Las Vegas, has been pulled.

In a statement, the show organisers said that they had been carefully monitoring Coronavirus developments both in the US and globally and that in the interest of addressing the health and safety concerns of stakeholders and in consultation with partners throughout the media and entertainment industry, they had decided not to "move forward" with NAB Show in April. The statement added that keeping the show community safe and healthy was NAB's highest priority and that therefore the show was deferring to the developing consensus from public health authorities on the challenges posed by Coronavirus.

The sequence of events leading to the decision to stop the show were reminiscent of that which happened to flagship telecoms

show MWC in Barcelona with a trickle of major cancellations becoming a flood. The leading post production technology firm Avid, which always has a significant presence at NAB, decided not to attend as did Red Bee Media and Imagine Products which also took a sizeable presence.

Going forward, the NAB Show organisers said that they were still weighing the best potential path forward and expresses a commitment to exploring alternatives. [Rapid TV News]

Globecast begins 'game-changing' infrastructure as code

Embarking on a whole new direction for both the company and the industry, global media solutions provider Globecast has begun deploying Infrastructure as Code (IaC) solutions, what it sees as a whole new way of working for the media entertainment industry.

Globecast defines IaC as the process of creating and managing cloud-based technologies using scripts – hence code – to do so. The script is then “read”, or accepted, by systems like AWS’ CloudFormation or the cloud-agnostic solution from Terraform. The company sees three clear benefits to IaC: changes to any platform/service, or security patching, can be easily handled by editing the code, with the changes then instantly made; once a system is up and running, it can be taken down in a matter of seconds; it can then be redeployed as required for another service launch or ad-hoc event almost instantly. One-off sporting events are seen a prime use case where the benefits of this will be seen.

Globecast believes that the systems created using IaC can be as simple or as complex as required. For example, it suggests that entirely cloud-based complex playout infrastructure can be generated far more quickly and cost-effectively via this method. Acknowledging the time taken to create the code, it added that the process removes any on-premise installation work and, increasingly more relevant, removes the complex, multi-faceted manual processes of cloud service creation.

Globecast has already deployed IaC, allowing providers of advertising content for a Globecast playout customer to simply hit a button to feed relevant commercials via the cloud to a variety of landing areas for insertion. This means the ad providers don’t have to install any proprietary software – which could vary from playout provider to playout provider – and don’t have to use older technologies, FTP being the prime example. Globecast claims that the set-up allowed the ad providers to implement the system in a tiny fraction of the time it would previously have taken. Any changes in ad providers can be made in a matter of minutes each time. [Rapid TV News]

Coronavirus prevention campaign on Bangladesh Community Radios

Eighteen Bangladeshi Community Radio Broadcasters have started broadcasting program on Coronavirus Education for the rural people about the virus and the precautionary measures needed to escape the infection for making aware since 1 March. A broadcaster in each radio stations was assigned as the focal person to coordinate the special

education program.

The stations are broadcasting four hours of programming on Coronavirus contamination, precautionary steps for preventing contamination, symptoms of the patients, service provider, service providing agencies and service delivery points, experts’ opinions, and the role of rural people in line with WHO COVID-19: strategic preparedness and response plan operational planning guidelines to support country preparedness and response.

The focal persons of the stations are collecting and following the information from Institute of Epidemiology, Disease Control and Research (IEDCR) Government of Bangladesh, UNICEF and WHO for developing programs about Coronavirus prevention in different formats like news, Public Service Announcement (PSA), radio talks, magazine, drama, jingles, interview and expert opinions.

Bangladesh NGOs Network for Radio and Communication (BNNRC) has been monitoring the situation 24 hours and coordinating with community radios on prevention of Coronavirus contamination, developing program guidelines and materials for by considering the situation and updating information.

This awareness campaign will continue until the situation is normal. [bnnrc.net]

ITU reschedules two key conferences in response to COVID-19 to protect staff, speakers and delegates

Given the global COVID-19 outbreak, the International Telecommunication Union (ITU)

and its partners have decided to postpone the dates for the upcoming World Information Society (WSIS) Forum (originally in April and now from 31 August to 4 September 2020), as well as the AI for Good Global Summit (originally in May and now from 21 to 25 September 2020). Both events will take place at the same venue – the ITU Headquarters in Geneva, Switzerland.

Open only to representatives of Member States, Sector Members and to chairmen and vice-chairmen of Study Groups, the Telecommunication Development Advisory Group (TDAG) originally scheduled to be held from 24 to 27 March is postponed until 2 to 5 June 2020. Likewise, the 17th World Telecommunication/ICT Indicators Symposium, originally planned for 15 to 17 April 2020, will also be postponed and new dates will be communicated shortly. The dates and venue for the Global Symposium for Regulators (1 to 3 September 2020) remain unchanged.

On Friday, 28 February 2020, the Government of the Swiss Confederation announced and put into effect a ban on large-scale events which involve more than 1000 people.

In response, ITU and its partners are proactively shifting the dates of events as per above.

Along with its co-organizers and partners, ITU will continue preparations and remain fully committed to the success of both events.

The registration for AI for Good Global Summit remains open and all registrations received remain valid for the new date. All open calls are extended to 30 June.

As regards WSIS, registration for participants who have already registered remains valid - they do not need to register again. Registration will re-open on 22 June. Media registration for the WSIS Forum remains open and media registration for the AI for Good Global Summit will open in July 2020. [ITU News]

Sony, NTT and Intel collaborate on 6G technology

Casting an eye into the future, NTT and Intel are already forming a partnership to work on 6G mobile network technology. 5G networks are only just being switched on, but the trio wants to establish an organisation for 6G in the US by next spring. The three partners also intend to invite other major global companies to participate, including players from China.

While 5G is already up and running in South Korea and some US cities, and Chinese carriers are about to launch the world's largest 5G network, Japanese telcos are planning to start their new services next spring. Meanwhile, US chipmaker Qualcomm, Finland's Nokia and Sweden's Ericsson have raced to the front of the chip competition, with China's Huawei Technologies also snagging patents and building up its development capabilities.

Sony and NTT hope to gain an edge by teaming up with Intel. One goal is to develop more advanced semiconductors. The specifics of 6G chips and telecom standards will be decided in a few years.

On a trial basis, NTT has already successfully produced chips that run on light instead of electricity, and which consumes

one-hundredth of the power used by conventional chips. NTT aims to use the partnership to speed up progress towards mass production. [APB]

Voice of Maldives reactivates Nautel DRM-ready transmitter

Kintronics Labs has reactivated a 25kW DRM-ready Nautel transmitter on 1449 kHz for the Maldives state media provider Public Service Media (PSM). The transmission site is on the remote island of Thilafushi in the Republic of the Maldives under a contract with Radio Frequency Systems (RFS) Australia. Thilafushi is a man-made island built on top of a landfill.

Kintronic provided custom, wideband MW phasing and matching networks for the two-tower directional operation on 1449 kHz at 25 kW transmitter power. The towers are triangular, series-fed, guyed towers with overall heights of 53.3 meters. The whole system was designed for DRM compatibility. It also provided technical support in the design of the RF ground system; the physical and electrical design of the towers; the site layout defining the location of the transmitter building relative to the two-tower array; the design of the directional pattern as per the customer's direction; and the final antenna system adjustment, full power testing, and pattern proofing.

Following final adjustments of the antenna system, the resulting input impedance VSWR was < 1.4:1 at 1449kHz +/- 15kHz, which conforms to the contract requirement to provide single-channel, DRM-compatible performance. [Asia Radio Today] ■

DIGITAL BROADCASTING *Updates*

BBC gives free DAB radios to those in need

BBC local radio has partnered with manufacturers, retailers and a loneliness charity to provide free DAB digital radios to the most vulnerable people aged over 70 in the UK.

The initiative came as millions of people were forced to stay in their homes and isolate from their friends and families because of the coronavirus outbreak.

The BBC said radio was a vital source of news, information and companionship in these unprecedented times and that BBC local radio wanted to ensure as many people as possible had access to it.

DAB radios were being given away from 30 March to people nominated by local radio listeners.

The offer was part of the BBC's Make A Difference campaign, which was launched in the wake of the coronavirus outbreak.

"Local radio is a lifeline at this time and has never been more important as a source of trusted local news and information, and also as a companion for people who are isolating," the BBC's Director-General, Tony Hall, said.

"We want everyone who needs access to the radio to have it, that's why we're giving away DAB radios. I'm proud we've been able to coordinate this initiative with our partners who have been so generous in offering their resources." [BBC & WorldDAB]



DRM publishes minimum receiver requirements (MRR) document

Version 4.1 of the document describes the DRM (Digital Radio Mondiale) receiver characteristics for consumer equipment intended for terrestrial reception operating in the frequency bands below 30 MHz (i.e. DRM robustness modes A to D) and also those for the frequency bands above 30 MHz (i.e. DRM robustness mode E). Dedicated receivers for specific applications like data service decoders without audio representation are not within the scope of this document, but quality aspects of the RF front-end and baseband decoding for example may be applied accordingly. The goals of the document are to provide guidelines to receiver manufacturers for minimum receiver performance and technical features, to provide confidence for broadcasters that their DRM transmission can be received by all receivers in the market, to provide assistance for broadcasters to plan their network, to provide confidence for consumers when buying a receiver that all important DRM features are supported by receivers and all DRM transmissions can be received.

It details basic implementation and functional performance requirements, RF and Data Interfaces, optional features, minimum performance levels and measuring methods for DRM receivers designed to operate below and above 30 MHz. [DRM]



Digital Radio Mondiale (DRM);
Minimum Receiver Requirements for DRM Receivers
Version 4.1
6th December 2019

HbbTV Association releases targeted advertising specification

The HbbTV Association, a global initiative dedicated to providing open standards for the delivery of advanced interactive TV services through broadcast and broadband networks for connected TV sets and set-top boxes, is proud to announce the release of the HbbTV specification for targeted advertising (HbbTV-TA).

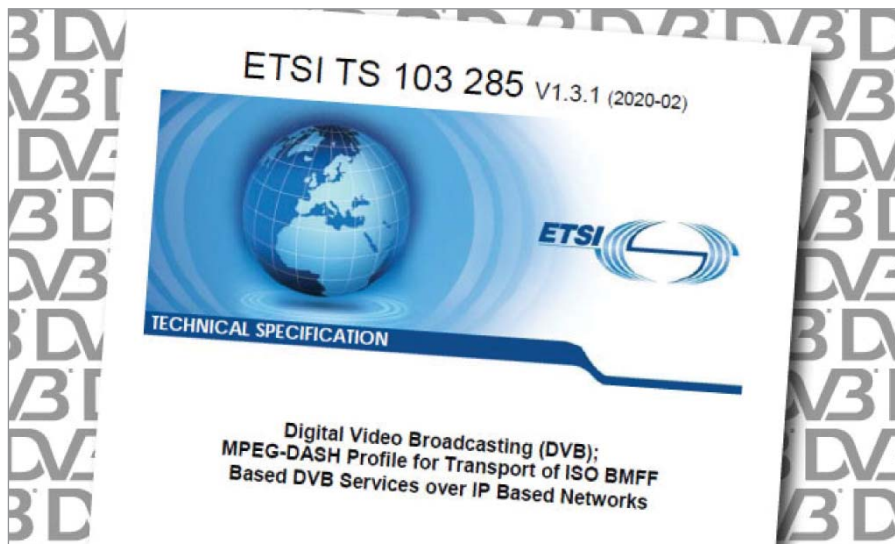
The landmark move will set a standard for broadcasters and the advertising industry to create new business models and generate new revenue sources by making use of targeted advertising opportunities which have so far been largely restricted to the advertising market on the internet or OTT/streaming services. The HbbTV-TA specification, initiated in collaboration with DVB, enables broadcasters to provide specific audience groups with customised advertising during commercial breaks, where the 'normal' advertisement on the TV channel's conventional broadcast feed is replaced on a screen-by-screen basis with a specific targeted advertisement. The addressable TV capabilities of the new specification also enable personalisation and localisation features which will open up significantly improved accessibility options for people with vision or hearing impairments.

At the same time, DVB is releasing its targeted advertising specification that complements the HbbTV-TA specification with a standardised way of signalling the advertisement substitution opportunities in the live TV broadcast. [HbbTV]

ETSI publishes DVB-DASH with low latency and HDR DM

ETSI has published TS 103 285 V1.3.1, a new version of DVB's MPEG-DASH profile for transport of ISO BMFF based DVB services over IP based networks. The main changes are the inclusion of a low latency mode and HDR dynamic mapping.

DVB-DASH builds on MPEG DASH, which was the first internationally-standardized



adaptive bitrate HTTP-based streaming solution. To improve interoperability and facilitate implementation for television services, additional constraints and requirements are defined in DVB-DASH. The goal is to satisfy the core requirements for live and on-demand use cases. The resulting standard is a subset of MPEG DASH with a few extensions, along with a set of requirements for the DASH player in the client. The new low latency mode in DVB-DASH breaks the streamed segments into smaller chunks, which are then delivered as soon as they are available at the encoder. So instead of outputting entire segments at one time, the encoder splits the segments into groups of frames – the chunks – where none of the frames in a group requires a frame from a later group to enable decoding. This approach cuts the end-to-end latency from 20–30s down to 3–4s.

The new version of DVB-DASH also includes solutions for HDR dynamic mapping, allowing the receiving device to adapt a high dynamic range video signal to the characteristics of the display. This provides content creators and device manufacturers with a means of adapting video content so that it replicates as closely as possible the intended appearance, as produced in a reference viewing environment. DVB's Service Information (DVB-SI) specification and its

video and audio coding specification have also been revised to support HDR DM. [DVB]

Steering Board approves specs for DVB-TA signalling and Multicast ABR

The 94th meeting of DVB's Steering Board approved the publication of three BlueBooks, including two that will ultimately lead to new ETSI standards. DVB BlueBook A178-2 is the signalling specification for DVB Targeted Advertising (DVB-TA). It complements the specification for interfacing and preparation of media, published as BlueBook A178-1 last November. Broadcast signalling is needed for targeted advertising to indicate precisely the start and end boundaries of the broadcast service segment that can be replaced. This replaceable segment is referred to as a placement opportunity.

The HbbTV Association, with which DVB cooperates closely, also published its targeted advertising specification. It was developed to address those commercial requirements from DVB that relate to the interface between a broadcaster app and the TV set or set-top box. The HbbTV-TA specification enables a broadcaster app to control the process of replacing a broadcast advert with a broadband-delivered advert. The Steering Board also approved a revision of DVB BlueBook

A176, the specification for adaptive bit-rate streaming over multicast (DVB-mABR). The reference architecture had already been published in March 2018, but the new version represents the first stable draft of the complete specification. Relevant external organizations will be invited to review it before it is forwarded to ETSI for standardization.

For consumption of the same linear media stream at the same time by a large audience, the number of simultaneous connections to the edge serving infrastructure carrying the same media payloads results in a high degree of redundancy which can be mitigated by the use of multicast packet replication at Layer 3. This version of DVB-mABR focuses on vertical deployments where both ends of the multicast transport are managed by a network operator. The multicast receiver is deployed either at the edge of the network, or integrated into an operator-supplied gateway device such as a DSL router or cable modem. [DVB]

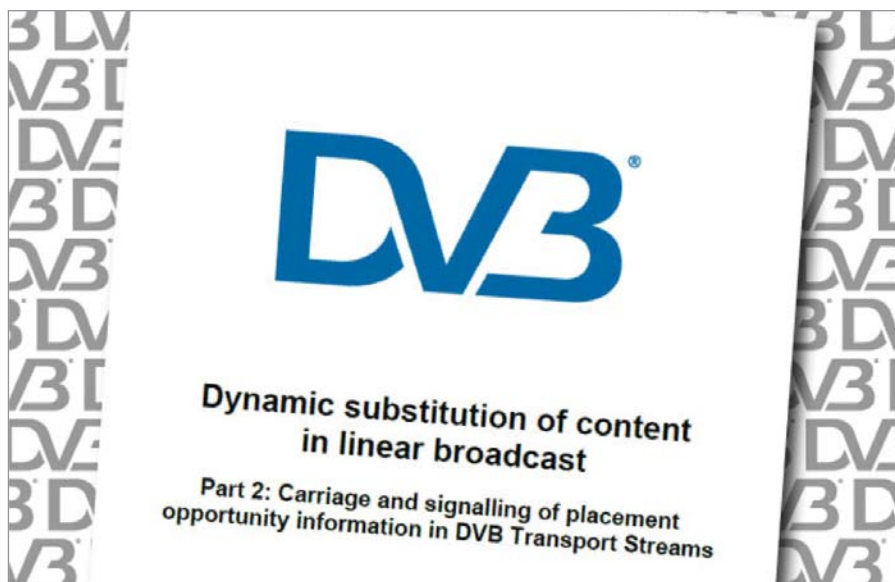
Eurofins becomes certified test centre for Alexa integrated products

Eurofins Digital Testing will now provide certified, third-party testing services to help developers and manufacturers earn Amazon's 'Alexa-Built-in' Badge.

Alexa is Amazon's cloud-based voice service available on more than 100 million devices from Amazon and third-party device manufacturers. Amazon offers a collection of tools, APIs, reference solutions, and documentation to make it easier to build for Alexa. Eurofins Digital Testing will test other companies' Alexa-integrated devices, according to the Alexa Voice Service (AVS) self-test checklists, which are required in order to carry the Alexa Built-in Badge from Amazon.

The Alexa Built-in program helps device makers create products that are certified to bring high-quality Alexa experiences to new categories—from smart speakers, sound bars, thermostats, smartphones, home appliances, PCs, TVs, wearables, hearables, in-car accessories, head-unit integrations, light switches, mirrors, smoke detectors, set-top boxes, and more. Eurofins Digital Testing will provide the device, acoustic and service testing required for certification and badging, which consists of four key areas: Functionality, User Experience (UX), Music Service Provider (MSP), and Far-Field (FF)/ Hands-Free Acoustic.

The company will also provide implementation support for customised acoustic testing for choice of materials and mechanical design, white-box testing, code review, and more. [CSI magazine]



EU urges switch to SD in effort to conserve bandwidth

The odd mobile outage apart, European networks have for the most part coped well with a sudden surge in residential bandwidth as societal and working practices change. Nevertheless, the European Commission is not taking anything for granted and doesn't want abnormal traffic distribution during the Covid-19 pandemic straining the internet infrastructure at a time when it was needed for healthcare services, online teaching and other uses.

Thierry Breton, who is in charge of the internal market and digital policy, wants streaming platforms to cooperate with telecom providers and temporarily downgrade the quality of video streaming by offering standard definition rather than high definition. He spoke with Netflix CEO Reed Hastings on measures to alleviate congested internet capacity, with a switch to standard definition during peak time as a best option.

In Switzerland, Swisscom's network is under pressure due to heavy demand from users streaming content from Netflix and others, which has led the telco and the Swiss Federal Council to advise residents to use communications services "cautiously" and "sensibly". According to local press reports, the government could even impose stricter measures to stop access to video streaming services to maintain network access for essential communication. This is partly because Switzerland was last year the first European country to switch off DTT and make it more reliant on online TV transmission, which is now straining broadband infrastructure. [CSI magazine]

Audio Engineering Society Honored with Technology & Engineering Emmy® Award

The National Academy of Television Arts & Sciences (NATAS) has honored AES for "Development of Synchronized multi-channel uncompressed audio transport over IP Networks" in the 71st annual Technology & Engineering Emmy® Awards. The Audio Engineering Society (AES) has been named a recipient of a Technical & Engineering Emmy® Award for "Development of Synchronized multi-channel uncompressed audio transport over IP Networks."

The distinction for "Development of Synchronized multi-channel uncompressed audio transport over IP Networks" cites the AES alongside ALC NetworX, Audinate, Kevin Gross, QSC, Telos Alliance and Wheatstone. AES's AES67 standard for high-performance streaming audio-over-IP interoperability was introduced in 2013.



AES67 compliance allows audio content interoperability between the proprietary IP-based audio networking protocols developed by the Emmy co-winners: RAVENNA, Dante, Q-Sys, Livewire+ and WheatNet-IP. Co-Emmy-winner and AES Fellow Kevin Gross led the AES67 Standards effort and is the chair of the AES Technical Committee on Network Audio Systems.

The Technology & Engineering Emmy Awards are awarded to a living individual, a company, or a scientific or technical organization for developments and/or standardization involved in engineering technologies that either represent so extensive an improvement on existing methods or are so innovative in nature that they materially have affected television. A Committee of highly qualified engineers working in television considers technical developments in the industry and determines which, if any, merit an award. [AES]

Broadcasters must transform to survive the next five years

In the face of digital disruption and a changing market landscape, 50% of executives revealed that a traditional business model will no longer allow them to succeed in the current landscape,

and 34% of media and entertainment companies admit they must change or risk being obsolete in the next five years.

These were some of the key findings from Ernst & Young's (EY) new survey, 'How are media and entertainment businesses reinventing in an age of transformation?', which analyses the views of more than 350 global industry executives to reveal the catalysts, strategies and actions that are shaping business transformation. The survey reveals that there is no single path to reinvention, but businesses can succeed by prioritising three key levers of change: operational excellence, innovation and upskilling talent. With 55% of the respondents indicating interest to streamline the business through consolidation of internal segments, a simplified enterprise delivery model may become pivotal in the next generation of M&E operating model.

The survey also revealed that businesses are tapping on the 'explosion of data' to achieve operational transformation, with two-thirds of the respondent seeing increasing availability of data as an opportunity. [APB] ■

Equipment Trends

Dalet StoreFront opens media shopping portal

Offering what it claims is a frictionless and secure way for media organisations to showcase their content to their clients, partners and affiliates, media solutions provider Dalet has launched StoreFront. The SaaS (software as a service) portal solution acts a window into the Dalet MAM inventory engaging clients through a shopping cart approach that is designed to bring in untapped revenues connecting content to clients. This is said to be done by maximising inventory exposure, repurposing and retail opportunities, bringing value to the overall media operation and business.

Underpinned by Dalet MAM orchestration engine for content preparation and delivery, StoreFront manages multi-user access to Dalet MAM stored content with advanced search tools to locate assets, filtered to only show relevant materials to a qualified client. StoreFront is targeted at most Dalet customers, ranging from news networks sharing assets across affiliates to sports leagues servicing licensees.

With StoreFront, Dalet believes that licensing content is easier than ever. Content owners can identify and tag content rights for their community of licensees as well as establish rights to visitors and potential licensees. Dalet StoreFront secures content inventory by keeping all the source content under the control and management of Dalet MAM. Only after an order has passed through all checks, automated by Dalet Orchestration, can the fulfilment happen, thus creating a segregated browse/shopping experience from the source catalogue. [Rapid TV News]

Studio Technologies introduces new Dante-enabled StudioComm multichannel monitoring solution

Studio Technologies is introducing its new StudioComm Dante® Audio-over-IP-enabled multichannel monitoring system, the Model 792 Central Controller and the Model 793 Control Console. The new system combines a robust rack-mounted main electronics unit with a desktop user control surface. The “fully-pro” signal path uses programmable logic to support both digital and analog audio. An extensive set of configuration features allow the system to support next-gen immersive formats including 5.1.4, 7.1.4, and 10.2.

The Model 792 Central Controller has multiple digital and analog inputs with configurable time delay, source selection, and level control. Digital and analog outputs support formats of up to 16-channels. Analog two-channel inputs and outputs offer convenient support for stereo reference signals. Features, including trim levels, delays, dim and reference level, and pre/post outputs, can be optimized using the system's built-in web server-based menu pages. An FPGA-based 32-bit audio architecture offers high headroom and superior audio quality.

The multichannel analogue I/O stems use the Model 792's rear-panel 25-pin D-sub in banks of eight channels, while a front panel 3.5mm stereo jack and level control provides a two-channel input for laptops, phones, and other stereo reference feeds. The digital audio I/O uses two Gigabit Ethernet interfaces to support switched and redundant Dante. A separate GigE Ethernet interface provides access to the Model 792's management web pages. These allow connection to fully-independent audio and management networks. The unit also features both universal AC mains and 10-18V DC inputs, which allow redundant power supply operation.

All analog and Dante sources have independent level trim controls. Input signal delay of up to 999 milliseconds allows synchronization with video display latency. On the output side, all Dante and analogue channels have independent trim controls, pre- and post-fader source selection, selectable dim attenuation, user-definable reference levels, and custom labeling for the multichannel and stereo stems.

The Model 793 Control Console provides convenient, fast, and intuitive selection of all sources and outputs, reference level, dim function, mutes, and solos. The user control surface features tactile, responsive, single-function buttons and a high-

resolution encoder along with a graphics display. Four user definable input stems and two outputs are directly selectable on the front panel, along with mute/solo buttons for every individual channel. Users can also select dim, reference level, and mute all functions. The rotary encoder supports level control for stems of up to 16-channels. The graphics display provides numerical level and status information, along with important system information such as the system's LAN IP addresses. [studio-tech.com]

Sony announces new 8K LED, 4K OLED and 4K LED models, with advanced picture quality and sound capabilities

Sony announced the new Z8H 8K LED, X95H, X90H and X80H 4K LED Televisions as well as the A8H OLED BRAVIA TV. Offering a premium viewing experience consumers have come to expect from Sony, this new line-up features proprietary technologies previously only found in Sony's MASTER Series models. These new televisions aim to deliver Sony's most immersive viewing experience. Utilizing evolving technologies and premium large screens, the latest range of BRAVIA TVs have been created to optimise the consumer experience by delivering content the way creators intended in both 4K and 8K resolution. Sony's best-in-class Picture Processor X1™ Ultimate achieves clear and precise picture quality, offering customers a highly realistic viewing experience. Additionally, with TRILUMINOS™ Display, Sony reproduces the subtle nuances of colour, light and gradation from video lens to living room, offering more shades of red, green and blue than ever before. Premium quality sound is a key part of the viewing experience as well, and the new models feature Sound-from-Picture Reality™, which aligns the position of the sound with the images on the screen to offer a uniquely lifelike experience.

The new models will continue to deliver the creator's intent with Netflix Calibrated Mode, offering studio-quality Netflix content which brings the immersive entertainment experience into the home. This line-up also introduces Ambient Optimisation, a new technology that optimises picture and sound quality in



any customer environment. To bring this new concept to life, Acoustic Auto Calibration detects where the customer views their TV from during initial setup and calibrates sound quality based on the environment. This new feature brings the television's full sound potential to any environment. In addition to Ambient Optimisation, this line-up will feature a new Immersive Edge design concept. In order to maximise the immersive experience, a noiseless stand is now located at the edge of the screen. The minimalist stand is less noticeable, offering customers an improved and unobstructed viewing experience. For the upcoming next generation gaming consoles, selected new models will support 8K resolution, 4K 120fps high frame rate and fast response time via HDMI inputs to deliver their maximum performance for a cutting-edge gaming experience.

The features are:

- TRIMASTER technology offering precise greyscale and accurate colour reproduction, achieving 100 percent colour gamut coverage of the industry-leading BVM-HX310 master monitor,
- 4K resolution of 3840 x 2160 pixels and HDR capabilities,
- New Black Detail High/Mid/Low to reproduce the correct colours and gradations in low-luminance areas,
- Dynamic contrast ratio of 1,000,000:1 by Dynamic Contrast Drive, a new backlight driving system that dynamically changes the backlight luminance to adapt for each frame of a scene,
- 4K/HD scopes with HDR scales that are Waveform/Vector,
- Quad View display and User 3D LUT functionality,
- 12G/6G/3G/HD-SDI with auto configuration. [\[Sony\]](#)

Avonic introduces advanced IP capabilities

Avonic introduced the benefits of their new IP-based software upgrades for the CM44 series of PTZ cameras. The CM44 has always represented incredible value for money in the field of video conferencing, with technical specifications that outstrip many competitors at that price point. However, with a new software upgrade to facilitate IP control (VISCA-IP), the range has now become more versatile and interoperable than ever before.

With full HD 1080p30 image output, delivered by a 1/2.8" high-quality, 2.07 megapixel CMOS sensor, the CM44 is able to also combine digital noise reduction techniques to deliver exceptional clarity even in low light conditions (0.5 lux at F1.8). A 5x optical zoom, 83.7° horizontal angle view and 255 presets with 0.1° accuracy also make the camera highly practical – especially in video conferencing environments. With output over USB 2.0, the addition of backwards compatible IP control through the latest software upgrade now makes the CM44 a relatively unique proposition for this segment of the market.

With full HD 1080p60 video delivered by a Panasonic high SNR CMOS sensor, the CM70 range delivers the exceptional image quality that is the hallmark of all of Avonic's camera range, even in low light conditions. Moreover, with huge flexibility in terms of concurrent output (HDMI, HD-SDI, IP streaming, MJPEG and SRT) and control (RS232, RS485 or IP), the CM70 range offers a level of versatility that makes the camera suitable for a wide range of professional applications.

More than this though, it is the IP capabilities of the CM70 range which set Avonic's offerings apart from competitors in the field. The CM70 range enables optimized IP streaming, offers

significant IP advantages by utilizing upgraded encoding engines and by being highly interoperable with third-party applications. Efficiency in the encoding process is also facilitated through the use of balanced audio embedded over SDI, HDMI and IP, so external audio sources can be embedded without the burden of an additional encoder.

The low latency capabilities achieved by IP also serve the benefit of allowing for viewing on screen to occur in the same room as capture, without disorientating or distracting delay. Network efficiency is also facilitated yet further through the use of Unicast TS protocol; key in places such as universities where multicast traffic is often blocked to prevent network overload.

The combination of these components make the CM70 range an excellent addition to complex AV recording environments where there is a need to embed external audio, display images in real-time on screens directly in the recording environment, or coordinate complex network components and interfaces with third-party applications. Combined with 40Mbit bitrate streaming for lower levels of compression artifacts, increased pan and tilt speeds, and discreet tally light, the CM70 range operate perfectly in the full spectrum of education, conferencing, broadcast and general presentation environments.

In addition to the CM44 and CM70 ranges, the Avonic booth will also be demonstrating the CM22 series – with 4K, wide angle PTZ capabilities, and previewing the CM90, with 4K 60fps capture. Both of these products also come with the low latency IP qualities expounded above, as well as the build and design quality, reliability, interoperability and versatile functionality that are the hallmarks of all Avonic product ranges. [\[avonic.eu\]](#)



VUALTO partners with ATEME for automated encoder integration

VUALTO, an expert in cloud-based OTT video delivery and orchestration, has partnered with ATEME, a leader in video delivery solutions for broadcast, cable, DTH, IPTV and OTT, for automated encoder integration within the VUALTO CONTROL HUB (VCH) video orchestration tool, which allows for multiple origins and encoders to be integrated seamlessly. The VCH is vendor agnostic and interoperable with a host of technology partners.

The VCH now has full integration for ATEME's TITAN Live and TITAN Mux encoding solutions, providing:

- Integration with the TITAN Live API to automate live event streaming workflows
- The ability to set specific inputs and outputs dynamically using the VCH channel configuration
- Support for redundant setups
- Capabilities for on-premise and in cloud

The automated integration with VCH makes streaming easier, removing the requirement for manual configuration and risk of error, which can be a particularly cumbersome process when using a redundant setup. The addition of ATEME's TITAN solutions has also facilitated an extension of the VCH plugin set.

This partnership will allow operators and broadcasters to orchestrate live events and channels with ease, with the ability to automatically start, stop and configure TITAN Live encoder services from the VCH interface. The integration provides great benefits to operators and broadcasters who are looking for an efficient and convenient way to deliver their live streams. As well as having cost benefits, this tight knit integration ensures premium video delivery to end users, at all times. ATEME's wealth of experience in encoding premium live sports content makes it a perfect partner for VUALTO. Combining the two technologies provides broadcasters with a premium quality streaming service, which is flexible, agile and entirely suited to their business model and end goals. [ATEME]

Gatesair to unveil Maxiva VHF TX series, 3.0 software

GatesAir will introduce the first Maxiva liquid-cooled transmitter line for VHF television and DAB Radio and several ATSC 3.0 software innovations addressing the IP networking architecture and security requirements of NextGen TV. The new VLX-OP series of Maxiva liquid-cooled transmitters, like the company's ULXTE UHF transmitters, uses liquid cooling pumps that move the heat created by the transmitter to the outside of buildings. Doing so reduces the need for cooling transmitter buildings, thus lowering power

bills, especially for medium and high-power uses, said GatesAir.

The new VHF transmitters also leverages the power density of Maxiva transmitters to cut down on size and weight and their hot-swappable modular design for ease of maintenance. Of particular benefit to ATSC broadcasters, the Maxiva VLX-OP series transmits at the same power level for ATSC 1.0 and 3.0 broadcasts – from 1.8 kW to 43 kW – simplifying and reducing the cost of transitioning to NextGen TV.

GatesAir will also introduce new 3.0 software features for NextGen TV, including STL Security that encrypts the 3.0 content path from the studio to the transmitter, and a secure HTML5 web interface. These advancements will be available for all Maxiva UHF and VHF transmitters. GatesAir will also unveil innovations developed in cooperation with GatesAir Europe, a division recently acquired by the parent company. They include:

- The Maxiva PMTX-1 Pole-Mount Transmitter series, an outdoor pole-mounted 50 W post-filer unit that can be configured to be a transmitter, translator or on-channel gap filler for all UHF and VHF standards as well as DAB Radio;
- The Maxiva IMTX-70 Multi-Transmitter Desktop, which is designed around a compact case that can hold up to six 70 W transmitters and/or translators/transposers; and
- The Maxiva MultiD Multi-Carrier DAB Transmitter, which brings together three DAB transmitters in a compact 1RU chassis. [C+T]

Steinberg launches UR24C audio interface

Steinberg has introduced its new UR24C, the latest model in its line of UR-C USB 3.0 interfaces. The interface itself sports two balanced Neutrik combo inputs, D-PRE microphone preamps, two TRS main outputs, four RCA line outputs, MIDI in and out, and USB Type-C (USB 3.1 Gen 1 SuperSpeed) connectivity, making it compatible with PCs, Macs and iOS devices. It features 32-bit/192 kHz audio resolution, MIDI and numerous DSP effects that can reportedly be used when monitoring audio without latency.

Onboard DSP effects, e.g. REV-X reverb, Channel Strip and Guitar Amp Classics, are accessed by the unit's dspMixFx mixer. Those looking for more effects can pore through the software bundle that comes with the UR24C; the bundle includes Cubase AI music production software; Basic FX Suite, consisting of effects and sound processing tools; native versions of the DSP effects (both VST 3 and AU compatible); and the Cubasis LE music production app for the iPad.



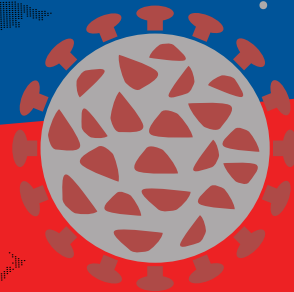
Intended for use by musicians, producers and DJs, the UR24C provides switchable monitor modes for headphones: DAW mode is used for producing music with a DAW, where the signal from Output 1 or Output 2 is chosen as the headphone source while allowing the user to adjust the balance of the signals from the DAW and from the UR24C's inputs. Meanwhile, DJ mode is expected to be used for performances with DJ software and backing tracks, where the signal is split so the mono master sound is output to the right side of the headphones and the mono cue sound to the left, also letting the user adjust the balance of both signals. [RadioWorld]

Kathrein introduces first DAB+ radio model in retail shops

The German group Kathrein has started to offer its first model of digital radio, providing internet and DAB+ service, Teltarif.de reports. The company has also announced its intention to introduce to the market two more models. The first model out is the 'DAB + 1 mini', a table-top set for stationary and mobile use with a built-in loudspeaker. The DAB + 1 mini offers radio reception via FM with RDS, and digital radio via DAB and DAB +. It is equipped with an OLED text display, Bluetooth function, an AUX input, and a rechargeable battery. The DAB + 1 mini costs around EUR 140 in retail shops.

Kathrein has also announced plan to introduce two more models, the 'DAB+ 10 tower' and the 'DAB+ 100 highline'. The DAB+ 10 tower has a Bluetooth speaker box with built-in internet radio, DAB/DAB + and FM reception. It is equipped with 2.4-inch LCD colour display, Bluetooth function, an AUX input, and access to Spotify, Napster and Deezer. Users can manage the radio via the Undok app for Android and iOS.

The DAB+ 100 highline has a 3.2-inch LCD colour screen, a CD player with MP3/WMA and ripping on an SD card, USB input, Bluetooth function, an AUX input, and an audio output (line-out). This model also streams music from Spotify, Napster and Deezer, and can be managed via the Undok app for Android and iOS. Taiwan-based electronics company Sangean manufactures the three models. [WorldDAB] ■



ABU to share COVID-19 content

The ABU is developing a database of content related to COVID-19 to be shared among members and partners.

The aim is to enable members to benefit from the experiences of other countries on reporting on the coronavirus and efforts to prevent its spread.

The ABU is inviting all its broadcast members to contribute any material they have produced – advisories, graphics, interviews, and educational and entertainment content.

“Many of our members have informed us that they have developed and are continuing to develop content that provides information and guidelines on COVID-19, and they are happy to share this content with other members and colleagues if these can be of help in their work,” the ABU Secretary-General, Dr Javad Mottaghi, said.

The ABU has set up the online exchange network and content distribution platform, Asia-Pacific View (APV). The ABU COVID 19 content database will be placed on APV for members’ use and reference.

The link to register for APV is <http://www.abu.org.my/apv> ■



Additional Full Member



The Virtual University of Pakistan

The Virtual University of Pakistan is a public sector university imparting international quality and uniform education through television and internet. The Virtual University is currently running four free-to-air educational television channels; VTV1, VTV2, VTV3 and VTV4. The transmission of our channels is beamed through PAKSAT – 1R and watched in about fifty countries of the region. The VU Television Network is self-sufficient in all aspects from pre-production, production, post-production and broadcast. It has two fully operational television studios with latest digital recording facilities. ■

Associate Member



Global One Belt and One Road TV

Global One Belt and One Road TV (GOBATV) is a Thailand based TV station Thai satellites, audience can watch their TV via set top boxes. The coverage is not only in Thailand but also in Southeast Asia, southwest of China and other regions and is a private company to operate GOBATV.

GOBATV was established on 1 Mar 2018, and they are new in the broadcast television industry. 40% of its programs are produced by the company or commissioned under the editorial control, eg: the interview program "Heroes of the Belt and Road", the talk show "Link Link", the news report program "the View of the Belt and Road". ■

Affiliate Member



The National Association of Electronic Mass Media of Uzbekistan

The National Association of Electronic Mass Media of Uzbekistan (NAEMM), established by the decision of the foundation conference on December 2, 2003, is actively working in the field of implementing projects for the development of non-state electronic mass media, creating conditions and opportunities for their free activity, strengthening their legal, technical base and economic independence.

At this time, NAEMM unites 100 entities: non-governmental electronic mass media, of which there are more than 30 television stations, 12 radio stations and more than 50 cable television studios. ■

RTM 74th Anniversary

Connecting Generations – the theme of RTM's 74th Anniversary. 74 years in the broadcasting industry is indeed a long period. Additional services, advances in technology, changes in trend, the introduction of new platforms – thankfully, RTM is resilient and adapts to developments as a means for survival. The sustainability is due to the fact that it understands the needs of the broadcasting environment and more importantly, its stakeholders, especially the audience.

Operating 5 FTA terrestrial channels, 34 radio stations and new media services, the station stays true to its reason of foundation – as the Strategic Communication Agent for the government. A government public broadcaster with the responsibility to provide information and entertainment to the masses. Active in both local and international scenes, especially with ABU, RTM participates wherever possible, to ensure that the spirit of good sharing and positive competition will push the station to always strive for the best.

The pandemic outbreak of COVID-19 enforces RTM's ability to report, discuss, assure and counsel the people in the importance of responsible messaging and maintaining order for home viewers, providing information and entertainment which are crucial to keep up good morale and spirits.

The theme 'Connecting Generations' signifies RTM's ability to sustain the elder generation while enticing the new generation to be part of its stakeholders. As broadcasting is an ever-growing and ever-challenging industry, RTM will always keep up with current trends in professional and consumer markets, and will provide the best in information and entertainment.

Mr Alex Reza, ABU Liaison Officer, Head, International Relations, Radio Televisyen Malaysia



Radio Televisyen Malaysia's Director General, Ms Nor Yahati Awang (centre), poses with senior colleagues to mark the public broadcaster's 74th anniversary on 1 April 2020. ■

Nepal Television turns 35

Nepal Television, the country's national TV broadcaster, has celebrated its 35th birthday amid plans to extend its services.

NTV reached the milestone on 30 January 2020.

Marking the occasion, the Minister for Communications and Information Technology, Gokul Prasad Baskota, said a new channel, the NTV World English Channel, would be launched within the current fiscal year.

NTV operates five channels at present. It is an active participant in ABU activities.

It has been a member of the ABU's Asiasat news exchange for many years and has hosted several ABU meetings in Kathmandu.

NTV was closely involved in the ABU Media Summit on Climate Action and Disaster Preparedness in Kathmandu in April 2019. ■



Personalities & Posts



Ms Nor Yahati Awang appointed DG of RTM

Ms Nor Yahati Awang is the new Director General of Malaysia's public broadcaster, Radio Televisyen Malaysia (RTM). She took up the post in January 2020.

With many years of public service experience, her entry into the Department of Broadcasting is set to bring fresh changes to the station.

Through more than 25 years in public service, Ms Nor Yahati has been instrumental in planning and executing many national plans in public service management, tourism and education.

Since joining RTM, she has been actively involved in the broadcaster's Transformation Plan, as well as preparing it for the future.

Ms Nor Yahati holds a Bachelor's Degree in Human Resource from Universiti Putra Malaysia (formerly Agricultural University of Malaysia) and a Master's Degree in International Development from the International University of Japan.

She served successful stints at major ministries, including the Department of Public Services; Ministry of Finance; the Ministry of Tourism & Culture; and the Education Service Commission.

She was also chosen to participate in the government-corporate cross-fertilisation exercise for two years, serving at Blue Archipelago Berhad, a subsidiary of Khazanah Malaysia Berhad. ■



Kath Brown leaves Commercial Radio Australia

Kath Brown has left Commercial Radio Australia after working for the industry body for 25 years.

Ms Brown was Digital Radio Project Manager and also served as its ABU Technical Liaison Officer for many years. Commercial Radio Australia is an ABU Associate Member.

She said she was proud to have made a significant contribution to the launch and adoption of DAB+ digital radio in Australia and elsewhere.

She worked internationally with WorldDAB, RadioDNS, the ABU, the EBU and NAB, as well as individual broadcasters, receiver manufacturers, retailers and the automotive sector.

Ms Brown helped develop the DAB+ standard now used in Australia, Europe, Arab states and parts of the Asia-Pacific region. She participated in numerous international DAB+ development activities.

She also represented the radio industry in the Australian government's Communications Sector Group over many years, to raise awareness of the essential role of local radio during emergencies.

Ms Brown plans to continue working in the industry. She extended good wishes to her colleagues in these difficult times. ■



CALL FOR NOMINATIONS



ABU Broadcast Engineering Excellence Award

For outstanding contributions in broadcasting engineering and related disciplines.

ABU Green Broadcast Engineering Award

For outstanding contributions in developing, implementing and/or promoting green technology in the broadcasting industry.

ABU Engineering Industry Excellence Award

For outstanding engineering contributions made by an individual to the broadcasting industry.

ABU Developing Broadcasters' Excellence Award

For contributions of an outstanding nature in broadcast engineering made by an individual in a developing broadcasting organisation.



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- May 2020 Call for Nominations
- 30 June 2020 Deadline to submit your entry
- July 2020 Judging
- 23 October Announcement @ the ABU Technical Committee Meeting, Hanoi

For more information and nomination forms www.abu.org.my/engineering-awards

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