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ABU Technical Bureau Mid-Year Meeting, Colombo, Sri Lanka

3rd ABU Media Summit on Climate Change and Disaster Risk Reduction, Dhaka, Bangladesh

ABU Central Asia Media Forum 2017, Tashkent, Uzbekistan

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Cover:
*ABU Technical Bureau
Mid-Year Meeting,
Colombo, Sri Lanka*



Asia-Pacific Broadcasting Union

TECHNICAL REVIEW

From the Editor's Desk



This edition of the Technical Review reports the ABU mid-year Technical Bureau Meeting, including a number of activities it organised and carried, out together with events it partnered. It describes the Technical Bureau's proposed actions and strategies for digital transformation, safeguarding spectrum for broadcasting in the foreseeable future and capacity building for future broadcasting.

There is an article on the progress of transition to DTT in Asia Pacific, which links to a study carried out by a member of Spectrum Management for Broadcasting group among unions, Dr Amal Punchihewa.

The ABU technical committee schedule, IBB-OTT workshop and Pacific Media partnership conference invitations are published as an invitation for ABU members to participate in those events.

This edition also carries reports on BroadcastAsia-2017, CCDRR and collaborations with our sister union ASBU and EBU.

Another paper is presented on spectrum management which addresses WRC-19 agenda issues.

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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WRC-19 Agenda Items Concerning Broadcasting Service and ABU Spectrum Issues



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Introduction

As land is to the plant, so is spectrum to the wireless service. The plants grow and fruits develop based on sufficient spacious land. Likewise, we should scientifically utilise frequency resources to maintain our legal wireless services efficiently operating without interference from other services. The job of the World Radiocommunication Conferences (WRC) is to review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the satellite orbits. There were 29 WRC-19 Agenda Items recommended by WRC-15. This paper attempts to present the study progress and preliminary views of the related 9 WRC-19 Agenda Items concerning broadcasting service and ABU spectrum issues.

WRC-19 Agenda Item 1.1

The topic of this item is to consider an allocation of the frequency band 50-54 MHz to the amateur service in Region 1, in accordance with Resolution 658 [COM6/6] (WRC 15). ITU-R Working Party 5A is responsible for this item.

In 2016, WP5A had held two meetings, where the work plan for this item was established and the review, of amateur service technical and operational characteristics for the 50-54 MHz frequency band, was completed. In addition, spectrum requirements were determined, for the amateur service and plans for implementation of an amateur service allocation in the 50-54 MHz frequency band. A preliminary draft new Report is in development.

An examination has been made of the switchover from analogue to digital terrestrial television broadcasting and concludes that it is highly unlikely that the band 50-54 MHz will be utilized for digital television broadcasting in the future in Region 1. Nevertheless there remain a large number of operational analogue television transmitters in a small number of countries.

Sharing between analogue television and the amateur service is not new in this frequency band and examples have been provided of how sharing currently exists on an inter-regional basis. Inter-regional sharing between the primary amateur service in Regions 2 and 3 and the primary analogue television broadcasting service in Region 1 seems to have been successful, with minimal or no harmful interference

occurring to the service areas of analogue television stations.

WRC-19 Agenda Item 1.3

The topic of this item is to consider possible upgrading of the secondary allocation to the meteorological-satellite service (space-to-Earth) to primary status and a possible primary allocation to the Earth exploration-satellite service (space-to-Earth) in the frequency band 460-470 MHz, in accordance with Resolution 766 [COM6/8] (WRC-15). ITU-R Working Party 7B is responsible for this item.

Two meetings of WP7B were held in 2016 which preliminary determined and updated the technical and operating characteristics of EESS and MetSat systems and those of FS and MS systems in the band 460-470 MHz as well as conducted preliminary sharing analyses between the EESS (space-to-Earth), the MetSat (space-to-Earth) and systems of the fixed and mobile services in this band. The work plan for this item was approved and two preliminary reports (draft) are in development.

Item 1.3 was jointly proposed by CEPT and CITEL, with NOAA of the United States and French space agency CNES as the main drivers. A number of broadcasting system types are widely used worldwide in the adjacent 470-862 MHz band. More detailed characteristics, parameters and protection criteria of the broadcasting system need to be reviewed and updated. The adjacent band analysis needs to be further studied for the sake of fully protecting the broadcasting system.

WRC-19 Agenda Item 1.4

The topic of this item is to consider the results of studies in accordance with Resolution 557 [COM6/9] (WRC-15), and review, and revise if necessary, the limitations mentioned in Annex 7 to Appendix 30 (Rev.WRC-12), while ensuring the protection of, and without imposing additional constraints on, assignments in the Plan and the List and the future development of the broadcasting-satellite service within the Plan, and existing and planned fixed-satellite service networks. ITU-R Working Party 4A is responsible for this item.

WP4A had two meetings on agenda item 1.4 in 2016 and a work plan to address WRC-19 agenda item 1.4

was also developed at the meeting. One output document was produced as Annex 5 to WP 4A Chairman's Report. The title was consequently revised to a Working Document (WD) ITU-R BO.[AP30.ANNEX7]. The scope of the output document was broadened with a view to perform the work necessary under the WRC-19 agenda item and the structure of the Report was updated so as to include analysis to assess each limitation contained in Annex 7 to RR Appendix 30 (Rev.WRC-12).

The scenario of the orbital position limitation is limited in Region 1 and 2, as well as within the orbital arc of the geostationary-satellite orbit between 37.2°W and 10°E in Region 3. The compatibility studies between BSS assignments subject to RR Appendix 30 within Regions 1 and 3 were discussed in the meeting, so we should follow developments in ITU-R WP 4A in respect of the revision of Annex 7 to AP30 and assess possible impact on BSS in Region 3.

WRC-19 Agenda Item 1.6

The topic of this item is to consider the development of a regulatory framework for non-GSO FSS satellite systems that may operate in the frequency bands 37.5-39.5 GHz (space-to-Earth), 39.5-42.5 GHz (space-to-Earth), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space), in accordance with ITU-R Resolution 159. ITU-R Working Party 4A is responsible for this item.

WP4A had preliminarily studied the technical characteristics of non-GSO FSS satellite systems, technical characteristics of GSO FSS/MSS/BSS satellite networks, protection criteria of GSO FSS/MSS/BSS satellite networks and methodology for sharing between non-GSO systems and GSO FSS/MSS/BSS satellite networks, etc. At the same time, WP4A sent a liaison statement to WP3M to request propagation model for 50/40 GHz bands.

Up to now, there is no any concrete study result given out by WP4A. We should continue following the corresponding developments of study on WRC-19 AI 1.6 conducted in WP4A and pay a close attention to possible impact on broadcasting service in Asia-Pacific Area.

WRC-19 Agenda Item 1.12

The topic of this item is to consider possible global or regional harmonized frequency bands, to the maximum extent possible, for the implementation of evolving Intelligent Transport Systems (ITS) under existing mobile-service allocations, in accordance with Resolution 237 (WRC-15). ITU-R Working Party 5A is responsible for this item.

The work plan for this item was approved in 2016. Two meetings were held in 2016 which determined the draft CPM Text attached to WP5A Chairman's Report. The preliminary draft new Report ITU-R M. [ITS USAGE] is in development. And this report addresses the usages of Intelligent Transport System (ITS) radio communication applications, such as vehicle to infrastructure, vehicle to

vehicle, vehicle to pedestrian communications for traffic safety related and traffic efficiency applications as well as electronic tolling systems and automotive radar for collision avoidance in ITU Member states.

In the Report ITU-R M. [ITS USAGE], only Japan uses the 760 MHz band for Vehicle to Vehicle or Vehicle to Infrastructure communication to carry Safety related information. Since a number of broadcasting systems also applied in this frequency band, we need to track the study results of WP5A.

WRC-19 Agenda Item 1.13

The topic of this item is to consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis, in accordance with Resolution 238 [COM6/20] (WRC-15). ITU-R Study Group 5 has been invited to establish a dedicated Task Group (TG 5/1) to deal with this item.

SG5 formed TG 5/1 at its first meeting on 9 June 2016 and adopted the Terms of Reference as provided in Annex 9 of Administrative Circular CA/226. TG 5/1 is tasked with conducting the sharing and compatibility studies for WRC-19 agenda item (AI) 1.13, and with developing the draft CPM text for this agenda item. The first meeting of ITU-R Task Group (TG) 5/1 was held in Geneva on 23 and 24 June 2016. In the first meeting, TG 5/1 had obtained the agreement for the work structure and management team. TG 5/1 reviewed the results of CPM19-1 and confirmed understanding of the Terms of Reference and that the agenda item concerns IMT-2020 in the frequency range between 24.25 and 86 GHz.

Since it has met only once, there are no any preliminary views to be developed within TG 5/1. Every relevant ITU-R study group was establishing the corresponding system technical parameters to be adopted for the sharing and compatibility studies for WRC-19 AI 1.13.

WRC-19 Agenda Item 7

The topic of this item is to consider possible changes, and other options, in response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC-07), in order to facilitate rational, efficient and economical use of radio frequencies and any associated orbits, including the geostationary-satellite orbit. It is different from the previous WRCs that this item is only under the charge of ITU-R Working Party 4A, due to the cancellation of the Special Committee.

In 2016, WP4A had held two meetings and had established the work plan for this item. According to the input documents, the item for discussion, was divided into 10 issues as follows: Issue A –Non-GSO BIU (bringing into use of non-geostationary systems); Issue B – Modification of

recorded AP 30/30A assignments; Issue C – RR Article 11 and AP30/30A/30B discrepancies; Issue D – Identification of coordination requirements; Issue E – Harmonisation of RR AP30B with AP30/30A; Issue F – Enhancement of AP30B; Issue G – Updating the AP30/30A reference situation; Issue H – Ka-band coordination arc – FSS versus other services; Issue I – Modification on the estimation method of C/I ratios in RR No. 11.32A; Issue J – Treatment of assignments with a bandwidth less than the averaging bandwidth and range of notified technical characteristics.

At present, the study results on this item are not related to the spectrum issue of broadcasting services. We will continue to follow the corresponding developments of study on this item conducted in WP4A and pay attention to possible impact on broadcasting services in Asia-Pacific Area.

WRC-19 Agenda Item 9.1.2

The topic of this item is Compatibility of International Mobile Telecommunications and broadcasting satellite service (sound) in the frequency band 1452-1492 MHz in Regions 1 and 3. both ITU-R Working Party 4A and 5D are responsible for this item.

WP 4A had established the work plan for item 9.1.2 It also developed the preliminary overview of BSS (sound) system technical characteristics. At the same time, rudimentary requirement of high power and terrestrial component for BSS (sound) satellite system had also been put forward by ITU-R WP4A which had been provided for ITU-R WP5D to facilitate the corresponding compatibility studies. The IMT system technical parameter set had been intensively discussed within ITU-R 4A.

WP5D had reviewed the system technical characteristics for both IMT and BSS (sound), studied the interference

scenario between IMT systems and BSS (sound) systems, and had made some analysis of sharing and compatibility studies between IMT systems and BSS (sound) systems in above proposed interference scenario. At the same time, ITU-R WP5D had also held preliminarily discussion on the possible mitigation measures to facilitate compatibility between IMT systems and BSS (sound) systems.

Services deployed in this frequency band will have to apply the coordination procedure under No. 9.19 in order to protect BSS (sound) systems deployed in neighboring countries. And, application of No. 9.11 does not provide long-term stability for the operation of International Mobile Telecommunications (IMT) due to the fact that only the IMT systems that would come into operation within the next three years would be protected if their coordination is agreed, and only for those three years. So, the administrations of planning to deploy IMT system on this frequency band argued that there should set a hard power flux density limits on BSS (sound) system in the ITU-R Radio Regulations.

The administrations of planning to deploy BSS(sound) system on this frequency band had strongly opposed the above position, and considered it should keep the coordination procedure under No. 9.19 in order to protect BSS (sound) systems deployed in neighboring countries.

WRC-19 Agenda Item 10

The topic of this item is to recommend to the Council, items for inclusion in the agenda for the next WRC and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences, in accordance with Article 7 of the Convention. Since CPM19-2, which will be held in 2019, is responsible for this item, there is no updated information.



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DAB+ on the move in Thailand at WorldDAB workshop

At RadioAsia 2017 in Bangkok, over 90 people attended the WorldDAB workshop to hear the latest on DAB+ deployments around the world, commercial radio case studies, updates on DAB+ transmission and receiver equipment, and DAB+ in Thailand. The session welcomed Col. Dr. Natee Sunkonrat, Vice-Chair of the NBTC and Chair of the National Broadcasting Committee, and Ms Orasri Srirasa, Division Director of the Digital Broadcasting Bureau of the NBTC. Other workshop speakers included the ITU, Paneda and Keystone Semiconductor Corp, who showed the first DAB+ receiver with Thai character support.

There has been impressive progress in Thailand since the first DAB+ workshop in 2013. The NBTC/ITU Roadmap for the introduction of digital terrestrial radio services has been published, including sample frequency plans, cost modelling and international benchmarks for DAB+ deployment to reference in the development of regulatory and policy framework for Thailand.

Planning so far has involved Government, all leading sectors of the Thai broadcast industry, infrastructure providers, systems integrators, and vehicle and radio manufacturers. Thailand has got this right, it's crucial to start the conversation with key stakeholders early; keeping them well informed as planning progresses smoothly to a comprehensive trial.

With over 5000 FM services currently on air in Thailand, DAB+ provides an opportunity to eliminate congestion, remove interference with aeronautical bands and plan for an interference-free network of licensed broadcasters. This interference needs to be addressed, as NBTC estimate that radio's penetration has fallen from 38% in 2012 to 16% or around 10m people in 2016.

The time is now for countries to move together towards the rollout of digital radio, with receiver prices continuing to fall to as little as US\$14, car manufacturers fitting DAB as standard, the DSO process now moving forward in some European countries, and politicians working towards increased collaboration on digital radio. There are now over 2000 DAB services on air around the world and DAB+ services can be delivered for around 10% of the cost of FM.



To find out more about WorldDAB and events in the Asia Pacific region visit

www.worlddab.org

Hybrid DTH/DTT Solutions to Boost Digital Migration



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Like many video markets, Asia is undergoing a migration from analogue to digital and from standard definition to high definition TV. At the same time, projects for Ultra HD are beginning to emerge, a progressive evolution of signal quality that will be an important driver of growth in the coming years. Globally, Eutelsat has gained a leading position in digital migration, with over 10 years of pan-regional experience and more than 20 countries served, including France, Greece, Italy and Ireland in Europe, and in Africa, Algeria, Equatorial Guinea, Gabon, Kenya and Zimbabwe, among many others.

Satellite offers a clear advantage when it comes to delivering linear content. When compared to the coverage and capabilities of terrestrial networks, satellite provides cost-effective and immediate access to TV customers virtually anywhere, with consistent signal quality across the coverage, be it directly with Direct-to-Home (DTH) or indirectly by distributing content to other networks, including cable, Digital Terrestrial TV (DTT) and IPTV.

The Challenge in Ensuring Nationwide DTT

The main challenge in deploying nationwide DTT is to ensure the timely switch-over of networks to entire populations, to avoid creating a "Digital Divide". This is particularly the case when countries need to efficiently serve vast geographic regions with mountain ranges and wide-spread islands outside of DTT network footprints, or with interference issues on borderlines to neighbouring countries.

Funding a nationwide DTT network is often underestimated and can delay the switch-over to DTT. As such, particularly in emerging markets, experience has shown that a hybrid approach, with satellite feeding DTT networks and at the same time complementing DTT white-spots via DTH, is the most cost and time efficient solution.

Most terrestrial operators deploy fibre networks or DTT towers based on the potential return on investment; users in more rural or semi-rural areas generally go unserved. As a consequence the exclusive use of terrestrial networks could permanently exclude a significant portion of consumers, leaving them unable to access both linear and non-linear services in areas with no terrestrial coverage.

Also, as picture resolution and screen quality are continually improving, requiring increasing bandwidth resources to

provide audiences with the quality they expect, broadcasters need to ensure sufficient spectrum is available for future HD or Ultra HD services. Terrestrial networks and especially DTT networks may face challenges in terms of future readiness due to a potential lack of spectrum.

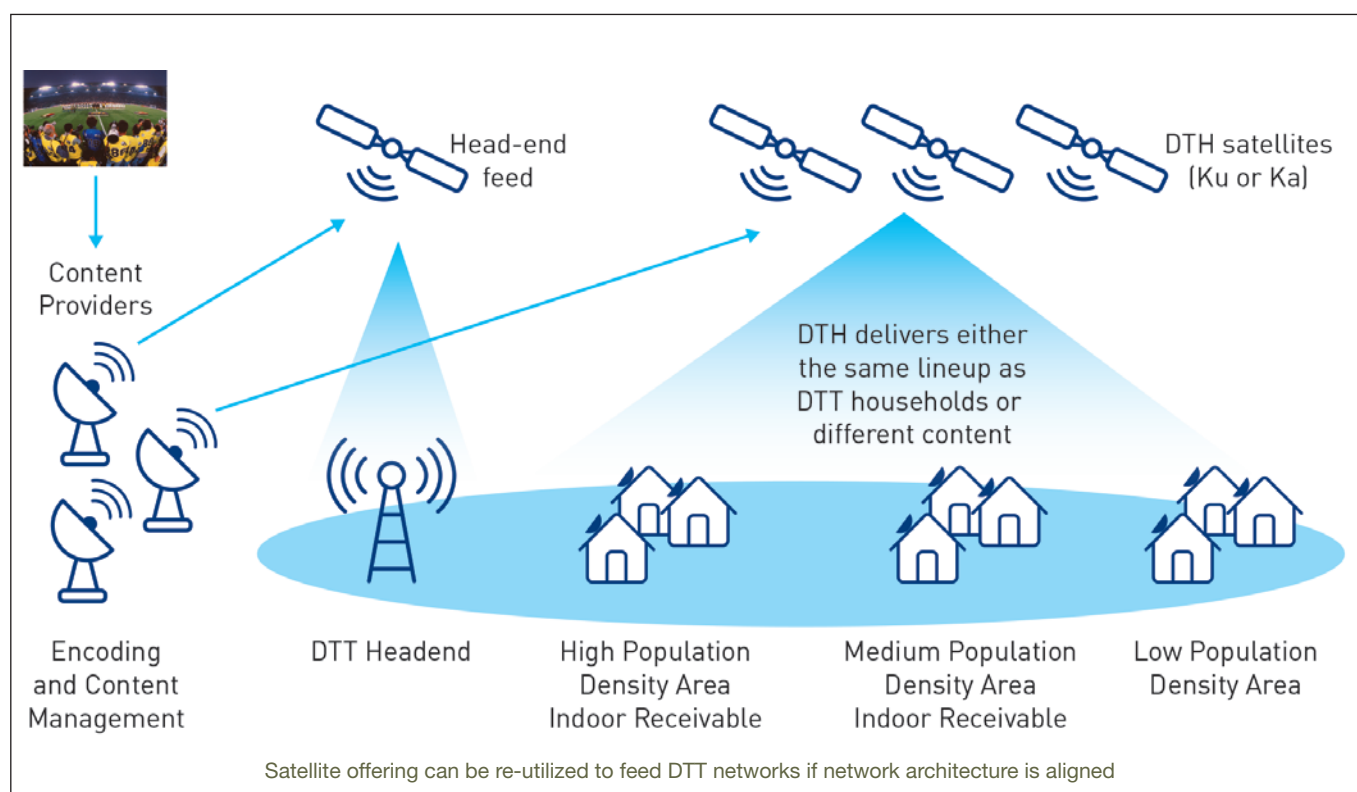
How Can Satellite Help?

Rather than investing in costly nationwide terrestrial infrastructure to extend networks to smaller population bases, many operators have realised that they can reach their last-mile objectives via satellite, where no additional massive investment is required, because the overall region – including rural areas, islands and borderline regions – is already fully covered by the footprint of the satellite. Homes throughout the satellite coverage can receive the DTT channels immediately, without needing to wait for new investment in the terrestrial infrastructure and its deployment across the territory.

France carried out its digital transition between 2005 and 2011 and is a good example. France started DTT roll-out in 2005, covering 35% of the population, with the aim of covering 100% in 3 years. By mid-2008, the installation of new DTT transmission sites extended DTT coverage to 87% of the population, and 95% by end-2011. This left 1.5 million households outside the reach of DTT. Fransat, a satellite delivery service via Eutelsat which has broadcast since 2009, offers a DTH alternative enabling all the population to receive French DTT channels available on the network. By covering 100% of the territory, the platform serves more than 2 million homes equipped for direct reception, efficiently meeting the needs of citizens situated beyond coverage of DTT, cable or ADSL.

Satellite feeds digital signals to many different platforms, whether DTH, terrestrial, cable, IPTV, web or mobile networks. It provides cost-effective distribution to a large nationwide coverage, independent of existing infrastructure and borders, enabling services to be delivered to the end-user irrespective of how challenging the landscape. It can reach an unlimited number of end-users with no additional costs, and handle all formats – digital, HDTV, UHD and IP – today and tomorrow.

By combining DTT and DTH distribution for digital migration, operators can offer a fast, cost-efficient, nationwide service that reaches everybody.



The Benefit of Point-to-multi-point

Most governments that have decided on a DTT solution have found that as digital programming and picture quality expands – and the number of towers needed to serve their audience grows – satellite's point-to-multi-point advantages become obvious. Also, in some cases, the reliability of a terrestrial infrastructure is put into question due to environmental conditions on the ground, or the fact that fibre and other terrestrial infrastructure is vulnerable to theft or vandalism.

Kenya's recent experience is instructive. The company managing digital migration realised that the cost of bringing content from a central hub or from the broadcast studios to more than a dozen towers was actually less expensive via satellite than by fibre distribution.

China's StarTimes uses Eutelsat satellite capacity in Africa to distribute content to terrestrial towers. In order to complete their coverage and reach homes not covered by DTT, they have widened their reach with a DTH offer. Conversely, Canal+ Overseas have complemented their DTH offer with a DTT package for French-speaking homes in Africa, using satellite to feed the towers and capture mass market audiences.

In Asia, for example, the Philippines are a good reference case of how satellite infrastructure can offer clear value to a stand-alone terrestrial solution. The nation already has a thriving DTH market, and as it undergoes the process of analogue to digital migration, it is looking to strengthen its cable and DTT network. Here, Eutelsat can offer a dedicated spot beam to provide international programming to cable and IP distribution points and DTT towers, bringing new international content to the market and enabling

broadcasters to provide audiences with more choice. Many other countries in the APAC region, and globally, face similar challenges, and a combination of DTH and DTT can be the best solution.

Which Bandwidth?

Once the logic of a satellite distribution network becomes apparent, the choice of bandwidth arises. Two solutions are possible:

1. A hybrid solution combining C-band and Ku-band. C-band capacity is used for DTT tower feeding to populated areas, with a DTH complement in Ku-band enabling homes in rural areas to receive the same DTT channels.
2. A Ku-band solution, feeding DTT towers to reach populated areas, and broadcasting the same channels also in Ku-band as a DTH signal to reach rural areas.

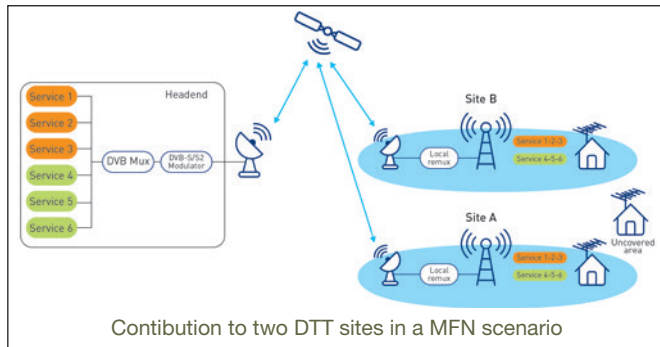
In some cases, countries have opted for a C-band solution to distribute programming direct to terrestrial towers, while using Ku-band for DTH broadcasting. Others such as Zimbabwe, which does not have significant rainfall, operate a total Ku-band solution using Ku-band satellite links to broadcast to terrestrial towers and to provide a comprehensive DTH offering.

C-band has been used in many cases owing to its resistance to rain fade. Depending on local weather, the choice of a C-band satellite might be preferable as it provides a robust transmission. However, Ku-band has historically been the preferred bandwidth for DTH, and it, too, has demonstrated the ability to provide operational service, even in rainy conditions.

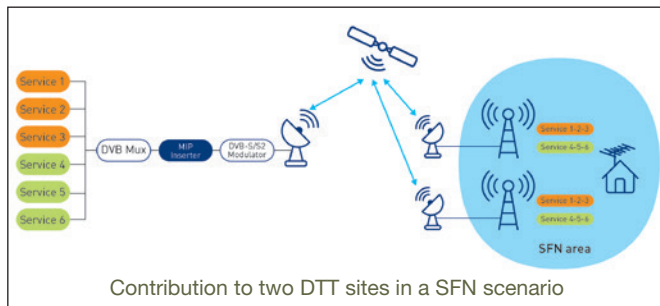
Frequency Management

As terrestrial coverage is not as wide as satellite coverage, more than one terrestrial transmitter may be needed to cover a region. Network configuration must take the frequencies into account, either as a frequency independent Multiple Frequency Network (MFN), or frequency dependent Single Frequency Network (SFN), which reuses frequencies.

The MFN is a classic, simple distribution network, fully compatible with DTH distribution and the DVB-T standard. High-power transmitters cover a wide area, with each transmitter using its own frequency to distribute a multiplex.



The SFN enables efficient use of broadcast frequencies, with the same frequency used over several areas. This means low-power transmitters can be used rather than the powerful transmitters used in MFN mode. However, the main drawback with the SFN is that it is not possible to modify the DTT multiplex once it has been built, either by insertion of the Mega-frame Initialisation Packet (MIP) in the DVB-T network or by the T2-MI construction in the DVB-T2 network. The MIP identifies the start of a mega-frame, which contains the Transport-Stream-packets. In DVB-T, the MIP enables the synchronization of the streams at the DTT sites.



Feeding the Networks

As the difference in bitrates can be quite significant between DTT distribution and DTH broadcast, a dedicated satellite transponder to feed the DTT transmitters with a single DTT multiplex is not efficient. To optimise the use of the satellite capacity, one solution is to broadcast two DTT multiplexes into a satellite transponder. To further improve the efficiency of the system, the DTT network and the DTH households can be fed at the same time. However, a "classic" DTH distribution, which consists of multiplexing two DTT multiplexes cannot be used for DTT distribution as the DTT multiplexes cannot be multiplexed

without breaking the SFN synchronization. Also, with DVB-T2 modulation, a DTT contribution cannot be received in a DTH environment due to the T2-MI structure.

There are three solutions to feed a DTH and DTT network:

1. A DTT network in DVB-T Multiple Frequency Network (MFN) and a local remux at the DTT transmitter to recreate the DTH multiplex
2. Dual illumination with one DTH-compliant contribution and a second contribution for DTT networks
3. Deterministic Multiplexing to bridge the two networks, using a single transmission for the two contributions. Additional temporal information is inserted in the DTH satellite multiplex enabling the DTT multiplex to be rebuilt at the DTT transmitters. The synchronization is respected and is therefore compatible with SFN networks.

What is Deterministic Multiplexing?

A DTH multiplex is created by multiplexing a number of services to fit into the satellite transponder, adding encryption if required and creating the appropriate PSI/SI. Before modulation, a dedicated PID containing an absolute time reference, as well as unreferenced PIDs for the DTT PSI/SI, are inserted into the MPEG-TS. This stream is DTH-compliant and can be received by set-top boxes and CE receivers for DTH purposes.

The DTT transmitters receive the stream, recreate the DTT multiplexes (PID and PSI/SI remapping) with the dedicated PID, and re-stamp the PCR (Program Clock Reference). The Transport Streams at the DTT transmitter output are rebuilt in the same way either in T2-MI format or in MPEG-TS format with MIP packet, guaranteeing the synchronization for SFN sites.

Deterministic multiplexing also enables national services to be replaced with regional or local ones. Regionalisation can also be done by Physical Layer Pipe (PLP) substitution, with national content isolated in a dedicated PLP and replaced with a PLP containing regional content.

There are several advantages to deterministic multiplexing:

- Networks are agnostic so compatible with DVB-S and DVB-S2 modulation
- DVB-T and DVB-T2 Networks can be fed, as can MFN and SFN networks
- It is DTH compliant
- Audio/video codec and format agnostic so compatible with MPEG2, MPEG4, SD, HD...
- CAS agnostic – the DTH feed can be scrambled and the stream descrambled at DTT sites

Complementary Solutions for Universal Coverage

The bottom line is that a combined DTT/satellite solution is, in many cases, more cost-effective than standalone

DTT, notably with governments that have enacted universal service commitments for telecommunications. What's true in Europe and the Americas is also true in Africa and Asia – nations that proclaim universal coverage as a policy goal cannot do it with terrestrial means alone.

Once the problems of cost, reach and speed of deployment have been resolved, the remaining challenges for any country preparing for the digital transition are: managing the service,

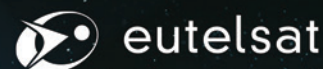
sourcing consumer hardware, distribution of set-top boxes, and sourcing content. By sharing Eutelsat's longstanding technical and commercial experience from working with public and private broadcasters, as well as many regional governments around the world, Eutelsat can provide the most suitable satellite and best-in-class technical solution with the expertise to help drive the digitalisation process and contribute to the growth of a dynamic and durable broadcast sector.

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Executive Vice President
Commercial Development & Strategic Partnerships, Eutelsat

Markus is Executive Vice President of Commercial Development & Strategic Partnerships at Eutelsat. He is responsible for developing breakthrough customer and business relationships, and building and facilitating strategic mid and long-term Go-to-Market and Product Partnerships. The aim of Go-to-Market Partnerships is to increase the number of sales partners and resellers both regionally and globally, improve end-to-end connectivity, and potentially reduce cost of sales and customer service. These partnerships include collaborations with relevant customer and industry associations. The primary focus of Product Partnerships is to build Eutelsat's end-to-end connectivity solutions, working with market leaders across the delivery chain and business vertical ecosystem. Markus also leads Eutelsat's global marketing communications. With over 20 years international experience in various leading positions in the satellite, ICT and consumer electronics industries, he is a leading expert in the global digital broadcasting business and its dynamics. Markus is married. In his free time he collects and restores classic cars and enjoys travelling, cycling and swimming.

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Technical Bureau Mid-Year Meeting of ABU Technical Department Colombo, 4th and 5th April, 2017



The meeting was held on 4th and 5th of April 2017, in Colombo, Sri Lanka. Thirteen bureau members and four ABU Technical Department staff attended the meeting. The meeting was hosted by two ABU members in Sri Lanka, MTV and EBC. The thirteen bureau members were from Indonesia, Iran, Sri Lanka, Japan, China, India, Saudi Arabia and Thailand. During the meeting, technological developments in four areas were discussed extensively. Each ABU technical bureau study area is chaired by a ABU members selected from the technical committee. The meeting also discussed strategic areas for ABU Technical Department (ABU-TD) with a view to enhancing training, workshops, seminars and conferences to educate ABU members in rapidly changing technologies in those strategic areas. It was reiterated that the Technical Review published by ABU-TD is the key medium to disseminate technological advancements and developments for the benefit of ABU members.

The most important item discussed during the mid-year bureau meeting was strategic issues for broadcasters in Asia-Pacific region; as usual considering the complete broadcast chain. The following were the outcomes from the structured brainstorming session.

Strategic Areas and Actions of ABU Technology

Production

Strategy:

- Digitalisation
- IP Production to reduce cost and improve efficiency
- Maintaining quality at lowest cost
- Security and Content Protection
- New methods for content production using new technologies

Action:

- Staff training for new technologies, including IT
- Share case-studies and success stories
- Work on a recommended model for IP Production
- Cooperation between IT and IP experts in broadcasting

Operations and Services

Strategy:

- Centralising operations and media management systems
- Intelligent interaction and automation systems
- Adopting digital technologies to improve efficiency
- Remote production

Action:

- Collaborate with advanced broadcasters
- Share case-studies featuring effective solutions
- Analyse current procedures to find more centralised cost effective solutions
- Use AI and intelligent systems
- IP/file based workflow

Delivery

Strategy:

- Next generation systems and IP delivery
- Quality assurance
- Digitalisation of transmission
- Increasing reach and coverage

Action:

- Staff training and development on new technologies

- Adopt new systems like OTT, IP delivery, VOD, 5G, CDN and Mobile
- Implement Multi-screen and multi-device delivery
- Monitoring and quality improvement

Access

Strategy:

- Intelligent terminals, Operating systems for connected TV, STB and mobiles
- Cost effective ecosystem
- Effective and efficient EWB
- Enhance audience engagement
- Access to all

Action:

- Find solutions for low cost receivers
- Content for multi-screen and multi-device support
- Collaborating with manufacturers
- Educate members on technological requirement to offer accessibility for all
- Studies on subtitling, sign language and audio descriptions
- Consumer data collection and analysis
- IP solutions and intelligent systems
- New methods and support for new devices for EWB

Capacity Building

Strategy:

- Intelligent Operating System
- Skilled staff for New Media and advanced systems and IT integration
- Secure and Safe systems
- Women in broadcasting

Action:

- Share resources among members, knowledge exchange and study visits
- Implement feedback systems and collaboration
- Improve information sharing and knowledge exchange through partnerships
- Training on New Media and advanced systems and IT integration
- Training on systems security and safety
- Engage Women in broadcast engineering



54th ABU
GENERAL ASSEMBLY
& ASSOCIATED MEETINGS
Chengdu, Sichuan, China
30 October - 4 November 2017

ABU TECHNICAL COMMITTEE MEETING SCHEDULE

International Convention and Exhibition Centre
Intercontinental Century City, Chengdu, Sichuan, China

••••••••

31 October – 1 November 2017

Time/Date	Monday, 30 October	Tuesday, 31 October	Wednesday, 1 November
9.00am – 10.30am		<i>Room 3, Crystal Hall, Floor 5</i> OPENING SESSION ABU Engineering Awards & Technical Review Prizes Announcements & Presentation Technological Inspirations: 3 presentations each max 12-15 min Director's Report Bureau Proposals WRC-19 Preparations	<i>Room 3, Crystal Hall, Floor 5</i> Keynote Presentation Technology Debate Summary from Topic Area Chairmen: Production, Transmission, Training & Services and Spectrum New in Study Groups
11.00am – 12.30pm		Strategic Issues 5 presentations each max 16 min	The Host Presents: RTPRC-China New Recommendations & Decisions of the Technical Committee
2.00pm – 3.30pm	<i>Room 3, Crystal Hall, Floor 5</i> Technical Bureau Meeting	Members' Present 7 presentations each max 12 min	Updates from Status reports Useful to know: 1. New members 2. Sister Unions & Intl Organisations (each organisation maximum of 3 minutes) AIBD, ASBU, EBU, WorldDAB, DRM, DVB, IABM, NABA, ITU, etc.
4.00pm – 5.30pm	4.00pm – 6.00pm <i>Restricted to Members of the ABU Technical Bureau</i>	Networking with ABU TLOs	Closing





ABU ENGINEERING AWARDS 2017

ABU Green Broadcast Engineering Award

- Awarded for outstanding contributions in developing, implementing and/or promoting green technology in the broadcasting industry.
- The award comprises a trophy presented at the opening session of the annual ABU Technical Committee meeting.

ABU Engineering Industry Excellence Award

- Awarded for outstanding engineering contribution made by an individual to the broadcasting industry in the Asia-Pacific region.
- The award comprises a citation plaque and a trophy.

ABU Broadcast Engineering Excellence Award

- Awarded for outstanding contributions in broadcast engineering and related disciplines.
- The award consists of a citation plaque and a trophy.

ABU Developing Broadcasters' Excellence Award

- Established in 2013 to recognise innovation and excellence among the ABU's developing broadcasters.
- Awarded for contributions of an outstanding nature in broadcast engineering made by an individual in a developing broadcasting organisation.
- The award comprises a citation plaque and a trophy.

April 2017 – Call for Nominations

31 July 2017 – Deadline

August 2017 – Judging

31 October 2017 – Announcement of Winners **ABU Technical Committee Meeting**
Chengdu, Sichuan, China



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

ABU ENGINEERING EXCELLENCE AWARDS

PANEL OF JUDGES

ABU BROADCAST ENGINEERING EXCELLENCE AWARD ABU DEVELOPING BROADCASTERS' EXCELLENCE AWARD



Panel Chairman

Masakazu Iwaki, Head of Human Interface Research Division, Science and Technology Research Laboratories, Nippon Hoso Kyokai, Japan, appointed as Panel Chairman in April 2011. Mr Iwaki is the Chairman of the ABU Technical Committee.

Tharaka Mohotty, Director, Engineering, MTV Channel (Pvt) Limited and Vice-Chairman, ABU Technical Committee, appointed a member of the panel in June 2015.



Rahadian Gingging, Director of Technology and New Media, Radio Republik Indonesia (RRI-Indonesia), appointed a member of the panel in August 2016.

Naoki Kashimura, Director of the Board, Managing Director, Product Strategy & Marketing Division, Research & Development, Ikegami Tsushinki Co Ltd, Japan, appointed a member of the Panel in 2008.



Simon Lockington, Director of Professional Services - APAC at Imagine Communications, appointed a member of the panel in April 2016.



Sanjay Salil, Managing Director, MediaGuru, appointed a member of the panel in June 2015.



ABU ENGINEERING INDUSTRY EXCELLENCE AWARD ABU GREEN BROADCAST ENGINEERING AWARD



Panel Chairman

Hamid Dehghan Nayeri, Director, International Technical Affairs, Islamic Republic of Iran Broadcasting, appointed as Panel Chairman in June 2015.

Yusuf Yildirim, Head of Studios and Programme Contribution Systems Department, Turkish Radio Television Corporation (TRT-Turkey), appointed to the panel in December 2015.



Doo-Hyung KANG, ABU Technical Liaison Officer, Technology Management, Korean Broadcasting System, appointed a member of the panel in April 2016.



Lim Chin Siang, Principal Consultant, Infocomm Media Development Authority, Singapore, appointed a member of the panel in 2010.

Fintan Mc Kiernan, CEO, Ideal Systems Singapore, appointed a member of the panel in June 2014.



Charles Sevier, CTO (APJ), Isilon Dell EMC, Emerging Technologies Division. Appointed a member of the panel in June 2015.





The 3rd ABU Central Asia Media Forum



The ABU Central Asia Media Forum was held for third time in Tashkent, Uzbekistan from 13-15 April 2017. Themed “Sustained Growth in the Rapidly Changing Broadcast Environment” the forum was organised by the Asia-Pacific Broadcasting Union and hosted by the National Television and Radio Corporation of Uzbekistan (MTRK).

The purpose of the CAMF is to bring together media organisations from Central Asia to network and initiate mutual cooperation and collaboration in the media and broadcast space. The forum serves as a platform to share knowledge and future strategies and to discuss solutions and rapid developments taking place within the media industry in the region and around the globe.

The two-day event aimed to introduce advanced technologies and new media as well as to address some of the main issues in content production that broadcasters are facing

when they want to engage more audience in the new digital age. Fifty seven participants from twenty organisations (including fourteen ABU member organisations) in sixteen countries were away from their offices to take part in the Forum.

The event was opened with one-day pre-conference workshops on Content Production; Evolving Media Content in a Multi-Platform Universe; Test and Monitoring for Broadcast Professionals; HbbTV Technology and Integrated Digital Newsroom System. Presentations addressed a broad range of topics, including:

- How traditional media has changed in recent years to the new genres of media trending today around the world inspired by the intersection of technology and the arts.
- How broadcasters are enhancing their content in the multi-platform universe using transmedia tools and concepts to reach to wider audiences.
- Exploring the realm of transmedia and innovative storytelling with a focus on new ways of telling stories for the internet generation.
- Success stories on digital innovations adopted by broadcasters from around the world and how some are experimenting with unique ways of telling stories for a new era.
- How monitoring can reduce the down time and enhance reduce the loss of revenue.
- Solutions for test & monitoring of DTV infrastructure delivery chain.
- Software-based monitoring solution that bring intelligent





architecture, intuitive display and limitless scalability for analysing all aspects of media service delivery at any point in the distribution chain for terrestrial, cable, satellite or IPTV networks.

- An overview of the Hybrid Broadcast Broadband TV (HbbTV) concept and its applications and an update on standardisation and deployment status.
- How to set up a system to produce news, how it works and how it can be used to win the never ending race that is primetime news.



Day 2 was a full-day of conference sessions, covering various topics on advanced technologies, new media initiatives and security for online content, covering:

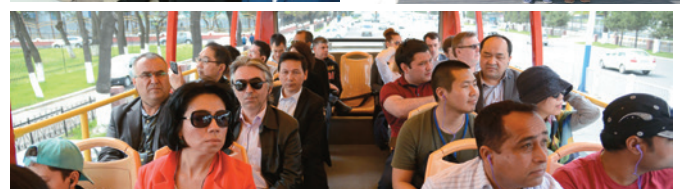
- The situation of DTT in Europe covering the status of the DSO, technology choices and their foreseen evolution in the near future, as well as their technical and economic implications.
- HDTV and UHDTV production & broadcast technology: resolution, frame rate, bit depth, color space and dynamic range; major elements in creating high-quality video images. Choosing appropriate and effective codecs for production, contribution, post-production, and archive.
- Tips and tricks for cyber security within a broadcast infrastructure,



- Case studies on technological development at MTRK Uzbekistan.
- The latest trends in how collaboration between programmers, graphic designers, use of film and user content, is changing the digital and broadcast landscape.
- The attractions of the Japan Prize: the sole international contest which targets only educational content.
- The legal and ethical challenges faced by broadcasters when using social media platforms.
- Major new media initiatives and other activities being undertaken at ABU and AVN.

Participants also experienced an informative visit to the modern Media Centre of MTRK Uzbekistan and an excursion around the beautiful city of Tashkent.

Sixteen expert speakers and experienced media practitioners from ITU, TRT, MTRK, Whiteways Systems, Test-Tree, Qligent, ABU, Bang, Belteleradiocompany and NHK, covered their topics in depth and in an interactive way. Participants had a number of productive discussions with the speakers, who presented and shared their areas of expertise on a wide range of topics related to content creation, distribution, technological innovations and role of media in this fast changing social environment.



3rd ABU Media Summit on Climate Change and Disaster Risk Reduction

Dhaka, Bangladesh, 10-12 May 2017

The third edition of the ABU Media Summit on Climate Change and Disaster Risk Reduction was held from 10-12 May 2017 in Dhaka, Bangladesh. The meetings were hosted by our members Bangladesh Betar and Bangladesh Television.

More than 270 delegates representing broadcasters, media organisations and other stakeholders from the region joined the two-day summit which addressed the theme “Information for All: Media Saving Lives”. The summit also adopted the Dhaka Declaration.

The next summit will take place in Nadi, Fiji, 5 – 7 February 2018 and will be hosted by the Fiji Broadcasting Corporation and Fiji Television.





Save The Dates
5 – 7 February 2018
Nadi, Fiji

4th ABU Media Summit on Climate Change and Disaster Risk Reduction

- Join eminent experts and media practitioners dealing with climate change adaptation
- Support broadcasting organisations to save lives and prepare quality programmes on disaster preparedness

- The ABU Awards will recognise the best Radio and Television programmes on climate change adaptation and disaster preparedness

For more information, contact Ms Natalia Ilieva, Head of SG Office at natalia@abu.org.my

The Progress of Transition to DTT in Asia-Pacific

DTT progress in Asia-Pacific region is alarmingly low. For traditional broadcasters, especially for public broadcasters, this hinders the ability to compete in current media markets. Among 50 Asia-Pacific countries, only five have completed the analogue switch off (ASO). These are Japan, Korea, Australia, New Zealand and Mongolia. Those ASOs happened between 2011 and 2015. It is anticipated by year 2020, a number of other countries in Asia could switch off analogue, including Singapore, Vietnam and Malaysia.

Projected ASO dates, progress & current status of countries since their launches of DTV and digital transmission technology are tabulated here for countries which received ITU assistance in preparation of their DTT road maps

Table 1: For APAC countries

Country	Year Launch	DTTB	ASO	Revised or year of possibility
Cambodia		DVB-T, DVB-T2, DTMB	2020	Ongoing
Mongolia	2014	DVB-T2	05/10/2015	Completed
Fiji	2015	DVB-T2	2018	Ongoing
Indonesia		DVB-T2	2018	Ongoing
Kiribati		ND	2017	
Lao P.D.R.		DVB-T, DTMB	2020	
Maldives		DVB-T2, ISDB-T	2020	
Myanmar	2013	DVB-T2	2020	Ongoing
Micronesia		ND		
Thailand	2011	DVB-T2	2020	Ongoing
Nauru		ND		
Nepal (Republic of)		DVB-T2	2017	
Philippines		ISDB-T	2018	
Papua New Guinea	2014	DVB-T2	2017	Ongoing
Samoa	2014	DVB-T2	2018	Ongoing
Sri Lanka		DVB-T2, ISDB-T	2017	
Timor-Leste		ND	2024	
Tonga	2015	DVB-T2		
Vanuatu	2016	DVB-T2	2017	Ongoing

Issues that Hinder the Progress of DTT roll-out

There are a number of factors hindering the progress of DTT deployment. Let me list some of them first and then describe some of them concisely. Some of the key factors that hinder the transition and notable progress are enormity of the job, funding, lack of commitment from governments, less demand for DTT from audiences due to alternative media access methods and lack of cooperation among stakeholders.

For certain countries with larger areas, uneven terrain and population spread over wide areas, the deployment of the transmission networks are capital intensive. Having a large transmission network, from a few analogue transmitter



sites in some cases to more than a thousand in others, converting them to digital in a reasonable time period is a challenging task. Both the cost of setting up infrastructure for digital transmission and carrying out a simulcast service for a given period of time involve big capital investments, operational cost of simulcast and other resources. While building the delivery infrastructure, it is necessary to make set-top-boxes available to the masses at a reasonable price. Many governments still do not consider the transition to digital terrestrial television a national priority, hence the transition is not fully endorsed or supported by the necessary authorities and with the necessary initiatives. There is no stimulation by national authorities to foster national digital terrestrial transmission. In many countries the transition to DTT is not initiated as a collective effort by all the stakeholders involved. This includes public as well as private broadcasters, regulators and other stakeholders from the broadcast industry at large. This is also partly connected to previous factors influencing government priority areas. The technologies are evolving at a rapid pace. However, digital terrestrial transmission technologies have matured with a number of standards, product manufacturers and solution providers. Despite the availability of over-the-air terrestrial transmission technologies, standards and products, there are certain countries unconvinced about adopting a particular digital transmission technology on the assumption that it is better to wait for the next generation transmission technology or the next standard. Experts in digital transmission technologies have already expressed their views that no major change or upgrade is likely soon as current standards, in current form, are providing performance close to theoretical limits. In some countries they are still debating on which Digital Terrestrial Television Broadcasting (DTTB) standard to select from the options of DVB-T2, ISDB-T, ATSC or DTMB. This means that the benefits of digital dividend cannot be immediately be realised as there is no necessity for broadcasters to vacate spectrum to allow governments to explore the benefits. This leads to a lack of initiative and drive from policy makers and authorities. In addition, in certain countries, Direct to Home (DTH) services from the satellite and cable services are already digital and such services are readily available in main cities and population centres at reasonable cost. These options provide many of the benefits that digital terrestrial offers to viewers, such as high quality signals and choice for programme channels.

Hence, there is diminishing demand for digital terrestrial television services from the public, leading to the utility and value of digital terrestrial propositions being questioned by some stakeholders.

What Actions are Required to Accelerate DTT roll-out

As the transition is taking longer than expected, there are lot that Asia-Pacific broadcasters need to do now in order to speed up the transition. We need to pay special attention and prioritise the transition process. Broadcasters in a given country need to collaborate and start immediately working on a practical plan. Governments need to commit to the digitalisation process of terrestrial broadcasting and enable the process by providing relevant support. The ABU has prepared a digital strategy and has been assisting its members to achieve transition within in a reasonable time. In collaboration with ITU, ABU has conducted workshops and training programmes to educate and share experiences. ABU has jointly worked on projects to document such experiences and made available through the ABU Technical Review and ITU publications. ABU facilitated the review some of the country road maps to reflect the latest developments and this has enabled late adopters to embrace the latest generation of DTT technologies. Now we have reached a critical point in time for those countries who have not yet initiated the DTT transition process to commence it immediately, taking local constraints in to consideration.

We can learn lot from those who have experienced digital migration and adopt some of the lessons learned from the experience of those who have completed the migration successfully. Key factors that help broadcasters to make a successful transition are commitment, cooperation and coordination.

There are number of areas that all stakeholders need to concentrate on. Some of the key aspects are: Digital switchover works well when Governments are strongly committed to the digital migration, it is important to have legislation, regulatory framework and a coordinating body set up to execute and monitor the process and its progress. Close coordination and cooperation with receiver manufacturers/providers is necessary for a smooth ASO process. Without such cooperation it is not possible to ensure that consumers have access to receiver equipment with necessary compliance at the right time and right price. Digital broadcasting enables more programme channels and content, but this is only of use if the content appeals to the audience. There should be appropriate content to attract viewers and for them to experience the benefits of digital. Wider digital terrestrial transmission networks delivering adequate signal strength and adequate funding across the industry are essential requirements for successful transition. This includes capital and operational funding on the broadcasters' part as well as government subsidies to help less wealthy viewers acquire receiving devices, such as set-top-boxes.

Seamless Integration of DTT with Multi-screen Delivery

As we continue to move into a multi-screen world, the switchover to DTT will impact viewing experience in the following manner. Switch over to DTT needs to happen quickly before we lose our existing terrestrial transmission audiences. If we delay access to digital media via DTT, audiences will look for alternative methods to access digital content. When the DTT process is completed, broadcasters can fully enjoy the benefits of DTT married to broadband. Countries which have completed ASO in APAC operate Integrated Broadcast-Broadband (IBB) services that support companion or second screen devices. Audiences can enhance their viewing experience using the seamless navigation that IBB technologies such as HbbTV will offer. ABU Technical Review and APB, the well-known broadcasting publication from Singapore, have reported success stories from Australia, New Zealand and Singapore based on Freeviewplus and red-button services.

Now let's analyse what broadcasters have to do in order to keep abreast of this digital revolution.

Having observed those multi-screen success stories where DTT is the primary access method, other broadcasters should try to make the transition to DTT. Having a companion or second screen as a part of Integrated Broadcast Broadband (IBB), Japan, Korea, Australia, New Zealand and Singapore are already making use of them to thrive in the industry. The public broadcaster in New Zealand, TVNZ, has reported that they have gained market share in the competitive New Zealand television broadcast market which they can attribute to the Freeviewplus service and its content.

These broadcasters can make use of the return path from IBB to understand and profile their audience. The data derived from feedback of audiences can be used to offer content to optimise to audience needs. The data gathered in this way are known as big data and analytics that are derived from them can be used to strategise broadcast operations.

Next Steps for Broadcasters

It is important to identify for countries who have completed the analogue switchover, what should now be the focus. The advice for the broadcasters in these countries is to focus on the following aspects in 2017 and beyond.

Countries who have completed analogue switch off (ASO) can now concentrate on improving the Quality of Experience (QoE) of media that they deliver. As HEVC gains market penetration, it will be more affordable, which can be used to save bandwidth requirements for delivery. HEVC could offer over 30% compression efficiency in practical systems compared with Advanced Video Coding (AVC). As high dynamic range (HDR) gains industry acceptance following the release of production standards in late 2016, broadcasters may explore the possibility of using HDR along with full HD to give a 'wow factor'. Both Korea and Japan are offering

UHD-1 in 2017 and Korean broadcasters will offer UHD-1 services terrestrially using ATSC 3.0.

Another key aspect upon which broadcasters need to concentrate is to improve the production environment. Having initiated some work on embracing IP for live media production, once they deploy IP in live TV productions

they may enjoy some cost benefits, as reported in APB magazine. Globally broadcasters are addressing the issue of interoperability and making open standards for IP connectivity in live studio environments. In 2017 we could observe some broadcasters introducing IP in their infrastructure, co-existing with SDI. Such hybrid operation will mature with the acceptance of open standards in IP live environments.



author

Dr Amal Punchihewa

Director Technology & Innovation of ABU

A Vice-Chair of World Broadcasting Union Technical Committee (WBU-TC)

A member of WBU-TC Ad-hoc Cybersecurity Committee, ITU Expert

Amal graduated with BSc (Eng) Hons specialised in Electronics and Telecommunication Engineering from Sri Lanka, MEng from Technical University of Eindhoven, the Netherlands & PhD from Massey University in New Zealand. He has published over 100 scholarly articles (peer-refereed technical journal and conference articles) in various journals including IEEE and IET digital libraries and transactions. He has held visiting positions at Tokyo University of Science (Japan) as a visiting associate professor and visiting professor. He was a Royal Dutch fellow of Netherlands and honoured by the Japan Society for the Promotion of Science (JSPS of Japan). He has served on technical/programme committees, organising committees and as track/session chairs for many international conferences. He advises on many International conferences including CCBN conference in China, BES in India and BCA in Singapore. Amal is a Senior Member of IEEE, Chartered Professional Engineer-CEng, Fellow of IET (UK) & Fellow of IPENZ (New Zealand).

Amal is currently Director Technology & Innovation at ABU. In that position, Amal drives innovation of media technology in the complete chain of media, starting from acquisition to consumption in the broadcasting industry. He influences the development of media technology in the best interest of ABU members. Leading a team of specialists, he facilitates technical guidelines and standards, and provides expertise related to the convergence of media, and evolving technical needs. He creates, encourages, and manages member communities, and understands and explains the trends that shape the media, to empower Members to continue to take good strategic decisions.

He ensures that the Department continues to be a vital and respected partner for its members and for the media industry. As a member of the ABU Headquarters Management Team, he also plays a major part in shaping ABU strategy.

Amal is active in many of the WBU-TC and ITU broadcast related technical activities. He is a vice chairman of the WBU-TC. He is an advisor to IET Vision and Imaging Professional Network having served as an executive of IET Vision and Imaging Professional Network.

Having started career in computer engineering Amal possess more than 30 years of experience in all three sectors of broadcasting; viz. Academia, Research and Industry in senior broadcasting technology and ICT roles, including research and developments, regional capacity building in media and head of engineering of national TV-Sri Lanka.

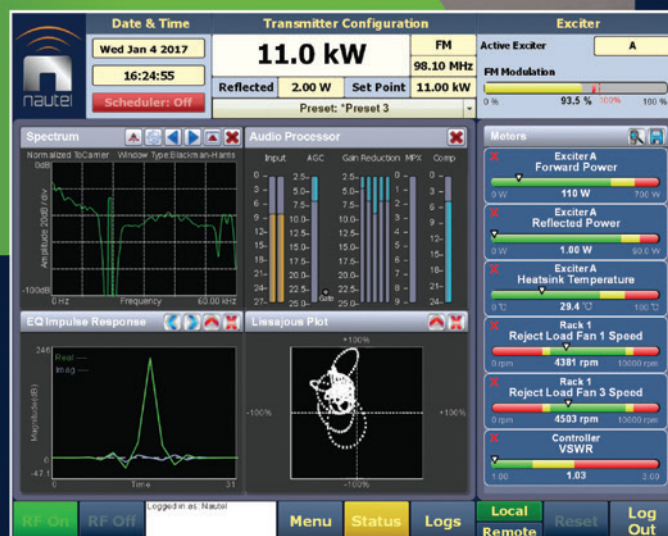


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BroadcastAsia Conference and Inter-Op Lab

Singapore, 23rd to 25th May, 2017

The ABU participated in BCA-2017, held in Singapore from 23rd to 25th May. ABU chaired the Broadcast Technology track of the conference. The Inter-Operability Lab, an activity supported by IABM and successfully carried out in conjunction with APB, gave hands on experience to media personnel, by demonstrating the use of IP in broadcasting.

This year's BCA conference addressed some of the strategic technologies that have talked about for some time. Among them were HDR, UHD and Integrated Broadcast Broadband (IBB) services. Having released a number of ITU standard documents, the industry is now working on how to make best use of HDR to enhance user experience. One of the critical questions that industry needs to debate is the use of HDR in full HD. UHD-1 Phase 2 should have HDR and

future workflows should incorporate it from production to delivery. Full HD with HDR could create a "wow" factor.

Some of the broadcasters who operate analogue-only services offer some content online. A crucial question is how we can monetise investment on new infrastructure to support HDR and ensure user readiness to consume the content on an appropriate device. To optimise return on investment, broadcasters need to offer content on multiple platforms with varying features, resolutions and interactivity to fit each platform. Though only a small percentage, users are accessing content via mobile networks. It was reported that in certain markets unicast could not meet user demand due to lack of capacity, leading to unacceptable user experience.



HDR may not be suitable for all programmes. Among some of the challenges in delivering media content will be identifying content to be produced and delivered with HDR and managing the signalling and data transmission issues for HDR. It would be useful to have a HDR delivery roadmap for the future.

During Day-2 of the conference, a panel discussion session took place, chaired by Thierry Fautier, President & Chair of Ultra HD Forum. The panel discussed deployment and use of HDR and UHD, to combat competition in media landscape.

At a time when a number of broadcasters are still in SD, with analogue terrestrial broadcasting, it is quite challenging to move to UHD infrastructures. Broadcasters who operate DTH services may offer hybrids of SD with up-scaled and native HD. The growth and production infrastructure needs to be supported by affordable receivers in the market. For some broadcasters migrating to UHD is a long road, as some are still in SD and have yet to go fully digital.

Use of HEVC compression in maintaining video quality, with reasonable bit rates for limited bandwidth, is important for UHD services. Since there are no objective methods to evaluate video quality, statistical methods could enable efficient video processing to support Television Everywhere.

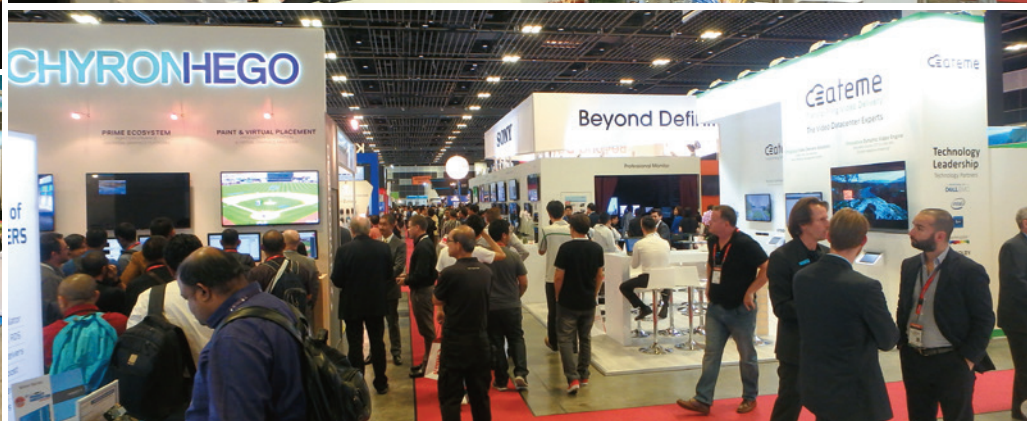
In recent times the cellular industry has been developing solutions and services for the broadcast industry. Cellular networks will influence the complete value chain of broadcasting from creation to delivery. 5G networks claim that they could play a vital role in the future of media networks. Some trials have been carried out in broadcasting sports and special events using LTE in broadcast mode

for locations. 5G could also play a role in remote and distributed production using complex slicing technologies.

In 2016 NHK offered UHD-1 or 4K Live Streaming Services of the Rio Olympic Games, based on the Hybridcast platform. NHK also produced some programmes in 8K, screened as a narrowcast to the public at certain locations. Currently UHD-1 services are operational via satellite too. 4K content is offered multiplatform, including over-the-air using satellite broadcasting and over broadband as live streaming or on-demand. NHK have done the system design to enable compatible 4K encoding for multi-platform in each different type of network.

While Japan is gearing up for the Tokyo Olympics, the plans are to air coverage in UHD-2 and UHD-1. There has been considerable drive in development toward Tokyo 2020. There have been Super High Vision (SHV) or UHD-2 test broadcasts since August 2016, which may lead to regular transmissions by 2018. NHK have outside broadcast (OB) and other production facilities for efficient SHV programmes. UHD-2 with Hybrid Log Gamma (HLG) HDR standard and Wide Colour Gamut (WCG) will enable new forms of expression and an enhanced viewing experience.

Last but not least, a session on HbbTV discussed HbbTV 2.0.1. This session highlighted how to enable new revenue streams, marrying broadcast with broadband. The Broadcast linked to OTT and Interactivity enables user engagement and loyalty creation for a given programme which could lead to enhanced broadcast station promotion. HbbTV is the most widely deployed global hybrid standard. Services with HbbTV could facilitate OTT, richer programme guides, interactive advertising, etc. In fact Australia, New Zealand and Singapore have already deployed HbbTV based integrated broadcast broadband services, which have been operational over the last three years.



Advancing Asia's Digital Strategy and Roadmap at CommunicAsia, EnterpriseIT and BroadcastAsia 2017

CommunicAsia, EnterpriseIT and BroadcastAsia 2017 wrapped up after a three-day exhibition and conference addressing technologies and strategies for smart cities and digital ecosystems driving the digital strategies and transformation roadmaps of governments and enterprises in Asia.

The event drew over 40,000 trade attendees, and more than 1,800 exhibitors showcased innovations featuring the latest in IoT, big data analytics, cloud, artificial intelligence, robotics, cybersecurity, satellite communications, virtual reality, IP broadcasting, OTT and 5G among others in dedicated technology clusters.

"As organisers, we are proud to present an event that aligns to the region's initiatives and push in advancing Asia's digital transformation. Committed to delivering a platform that fosters international collaborations, CommunicAsia, EnterpriseIT and BroadcastAsia are at the forefront of technological evolution with a global showcase of game-changing innovations that our attendees can look forward to discovering every year," said Mr Victor Wong, Project Director of Communications Events at organiser UBM SES.

New Launches and Industry Collaborations

With fast growing digital ecosystems driving the economy and evolution of society, the event saw more than 900 product launches this year.

ST Electronics launched the World of IoT – Sense & eXchange (WISX IoT) platform, an estate service management tool that monitors the performance of common lighting, lifts, rubbish and pest levels, and utilities such as water and electricity.



"ST Electronics is pleased to have participated and showcased its new suite of cutting-edge solutions catered for smart cities globally. I am proud of the depth and breadth of our engineering capabilities, enabling us to address the full spectrum of needs for smart and sustainable cities around the world and manage the rapid rate of urbanisation. Together with our partners, we are well poised to shape and transform the operations of cities – locally and globally," said Mr Ravinder Singh, President, ST Electronics.

A Memorandum of Understanding (MOU) between the Dubai Police Force and OTSAW Digital was signed at CommunicAsia to deploy their new O-R3 security robot as part of the Smart Dubai initiative. Dubai will be the first city in the world to deploy O-R3 robots from end 2017, with a total of 100 robots by 2020 in conjunction with EXPO 2020 to be held in Dubai.



"CommunicAsia has helped OTSAW Digital to reach international clients, gather massive interest and brought us high quality leads, with the MOU signed during the event, after they read about us in the news! This is a true testament to the importance of CommunicAsia to the region in moving the needle in the implementation of Smart City initiatives. A truly fruitful experience!" said Mr Ling Ting Ming, CEO of OTSAW Digital.

As cities and companies become more digitalised, the importance of cybersecurity measures is essential to ensuring the safety of information and data. Secure-IC's newly launched Securyzr solution provides protection against the increasing sophistication of today's cyber threats through ultra-efficient cryptographic acceleration.

Key partnerships were also formed, with Huawei announcing 20 industry collaborations that will further develop the region's cloud and connected enterprise ecosystem.



At BroadcastAsia, one of the key discussions revolved around the broadcasting industry's transition to IP-based systems.

Ooyala launched its new State of the Media Industry 2017 report on day two of the show, which signalled that data-driven video has officially become the beating heart of the digital age.

"The move to IP is inevitable for the broadcast industry as they deal with an explosion of content getting delivered OTT (Over The Top). Production teams within broadcasters are under pressure to get more efficient and to reduce cost. Technologies like Ooyala Flex can help by automating workflows, inserting metadata, and creating a single source of truth for the entire media operation, helping teams identify bottlenecks to reduce production costs, while increasing revenues by getting content to market faster," said BroadcastAsia2017 speaker Mr Steve Davis, Vice President and General Manager, Asia Pacific and Japan, Ooyala.

Commenting on the exhibition, Mr Piyush Gupta, Group Chief Technology Officer, India Today Group said, "There are many exhibitors on OTT, IoT and satellite operations who are relevant to our plans for Digital platforms and HD connectivity. I like that the exhibition has a concise layout grouped by different technologies."

ConnecTechAsia: One Voice, One Brand

At the event, it was revealed that CommunicAsia, BroadcastAsia and the newly launched NXAsia for emerging technologies and enterprise solutions, will fall under the new parent brand, ConnecTechAsia.

ConnecTechAsia 2018 will be a three-day event held from 26 – 28 June at Marina Bay Sands and Suntec Singapore.

BroadcastAsia unveils a brand new look!



ConnecTechAsia



26 – 28 JUNE 2018

MARINA BAY SANDS & SUNTEC SINGAPORE

A fresh new experience awaits, with the launch of ConnecTechAsia in 2018. Encompassing BroadcastAsia, CommunicAsia and the new event NXTAsia, ConnecTechAsia will house the entire spectrum of broadcast & digital multimedia, communication, enterprise technology and services that reflect the pulse of Asia today.

Join us at the redefined and refreshed BroadcastAsia next year. See you there!

EXPERIENCE THE FUTURE

Organised by.



UBM



SES

www.ConnecTechAsia.com

Join in the conversation:



#ConnecTechAsia
#CommunicAsia2018
#NXTAsia2018
#BroadcastAsia2018

A New Approach to the EBU Technology & Innovation Workplan

Simon Fell

Director of Technology & Innovation, EBU

We had the pleasure of visiting the German city of Stuttgart for this year's EBU Technical Assembly in June. The event was kindly hosted by EBU Member SWR in partnership with their Swiss counterparts SRG SSR.

The event featured a very packed programme, with 24 excellent presentations across two days. I came away from Stuttgart convinced that AI – artificial intelligence – and machine learning are set to become increasingly important topics for public service media. It's not simply about making these technologies work for us, although that is of course a huge challenge. There are also many questions around how we implement the new services made possible by these clever technologies. The European Union's General Data Protection Regulation (GDPR) kicks in for our Members next year and was cited many times in Stuttgart as we discussed applications that involve collecting, storing and using data generated by our viewers and listeners. This is a topic that's not going to disappear anytime soon.

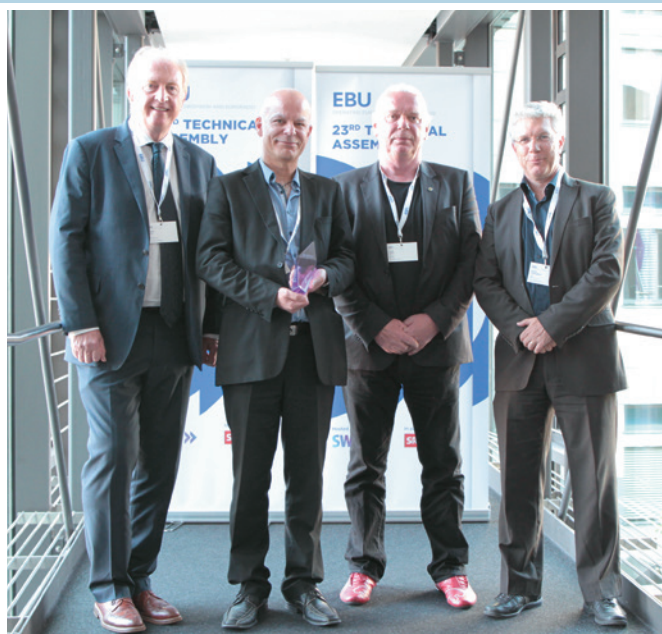
It is fitting, therefore, that data is one of the main themes in our newly endorsed EBU Technology workplan. This document, developed by our Technical Committee in conjunction with our working groups and Technical Liaison Officers, sets out the activities we plan to undertake with and on behalf of our Members over the next two years.

The new workplan represents a break from previous practice. Where we used to divide our work under the headings of "Production" and "Distribution", we have now defined six transversal thematic areas, with our activities aligned under one or more of these.

The six themes are as follows:

User Experience: the focus here is on how our viewers and listeners experience media services, both in terms of content discovery through increased personalization or the formats of the content, be it UHDTV or other emerging immersive formats.

Distribution: here we look at the full range of distribution



(From Left): Simon Fell (EBU), Hasse Wessmann, Lars Hedh (SR) and Egon Verharen (TC Chairman, NPO)

options, from digital television and radio broadcasting through to online and broadband delivery. Our work around spectrum requirements and future 5G standards also falls under this theme.

Multiplatform Production Workflows: changes in how media is consumed are also having an impact on how we produce content, with a requirement for new software and workflows, and often entirely new facilities in which to work.

Data: we have a long history of important work on metadata for media and have also been supporting Members around the use of big data. The increasing role of AI and machine learning will be a key focus for our activities.

Cloud and IP Infrastructures: we will continue to take a leading role in the development of enabling standards for the shift to live IP-based infrastructures and the use of cloud systems in both production and distribution. The virtualization of studio hardware is an important thread here.

Media Cyber Security: I've written before in these pages about our ground-breaking recommendations in this area; we will build on that work, in particular looking at cloud security, and will cooperate with our World Broadcasting Unions colleagues to encourage industry-wide adoption.

I was pleased to note the positive response to our new workplan from our Technical Assembly delegates. These six themes have helped us to shape and define the important work we are doing.

Finally, I also want to take this opportunity to congratulate the winners of the 2017 EBU Technology & Innovation Award. Our Swedish Member Sveriges Radio (SR) received the award in Stuttgart, in recognition of their wonderful NXG Radio House project, that uses a powerful remote control protocol to allow a complete radio show to be made from anywhere with a sufficient network connection. The project is helping SR to reduce the amount of hardware it needs to maintain, while also being able to produce radio more efficiently.

Congratulations, or – as they say in Sweden – Grattis!



An invitation to PMPC-2017

Organised by ABU and Hosted by SIBC

PACIFIC MEDIA PARTNERSHIP CONFERENCE 2017 – Islanders are on Screen



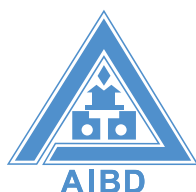
15-17 August • Solomon Kitano Mendana Hotel • Honoria, Solomon Islands



The PMPC-2017 conference in the Solomon Islands will focus on how broadcasters continue to offer broadcast services by augmenting public free-to-air broadcasting. Key session topics have been identified to lead the discussions and deliberations. Those sessions are intended to determine desired policies and identify rationale for programming, business models for both public and private broadcasters, social responsibilities of media, environmental issues; responsibilities and technical quality of public service media services across evolving distribution platforms, such as broadband to ubiquitous devices. The workshops and conference also aim to discuss both technical and non-technical (regulatory, market, business, etc.) strategies to protect Public Service Media-PSM delivery as free-to-air broadcasting.

The venue and accommodation will be located at the Solomon Kitano Mendana Hotel and we will update you on how to make room bookings at a special rate for PMPC-2017.

A majority of countries have visa-on-arrival agreements with Solomon Islands. However it is strongly recommended to check with appropriate authorities and government websites.



PACIFIC MEDIA PARTNERSHIP CONFERENCE 2017

Television: Islanders on Screen

15-17 August 2017, Honiara, Solomon Islands



Programme

PACIFIC MEDIA PARTNERSHIP CONFERENCE

Day 1

15th August 2017

09:00-09:30

OPENING SESSION

Welcome Speeches

Chairperson of PMP

Ms Faiesea Lei Sam-Matafeo

SIBC

Mr Ashley Wickham, CEO, SIBC

ITU welcome

ABU Welcome

Dr Javad Mottaghi, Secretary General of ABU

Guest of Honour Address

Prime Minister of Solomon Islands

Vote of Thanks

Dr Amal Punchihewa, Director Technology and Innovation, ABU

09:40-10:15

KEYNOTE SPEECH

Transition from Analog to Digital Television : Thailand Case Study

Col. Dr. Natee Sukonrat

Vice Chairman of NBTC

National Broadcasting and Telecommunication Commission, Thailand

10:15-10:45

Morning tea break

Day 1

15th August 2017

Digital Switch Over Challenges in Pacific and Beyond

Session moderated by ITU and ABU

ITU-D Study Group Representative Ms Orasri Srirasa, Division Director, Digital Broadcasting Bureau, Office of NBTC, Thailand will share Regional and Global perspectives

Country Reports

- Solomon Islands
- Tonga
- Fiji
- Micronesia
- Samoa
- Vanuatu
- Papua New Guinea
- Kiribati

Interactive Session on WRC-19 and Spectrum Issues

Moderated by Dr AMAL Punchihewa, ABU contact of WBU Spectrum Group

Nexus among Celocs, Telcos and Broadcasters

Mr Prasanna Meemaduma, BDS Project Manager, Radio Frequency Systems, Australia

Day 2

16th August 2017

9:00-17:00

MEDIA IN PACIFIC

Media Development in Solomon Islands, Pacific and beyond

Dr Martin Hadlow, Consultant

Community Broadcasting: Making it Happens in Digital Era

Ms Orasri Srirasa, Division Director, Digital Broadcasting Bureau, Office of NBTC, Thailand

Ms Aterina Samasoni, National Professional Officer

Communications and Information, UNESCO Cluster Office for the Pacific States

Women in Media and Gender Issues

Moderated and presented by Ms Lisa Williams

Development Communication and Content Creation

Presented by a member of UNDP team in Pacific

Environment, Climate Change and Media

Representatives of Ms Nanette Woonton, Head of Communications and Outreach unit
The secretariat of the Pacific regional environment Programme (SPREP) – Samoa

Day 3

17th August 2017

09:00-13:30

Digital Broadcasting Technologies – Media for All

Mr Masakazu Iwaki, Head of Human Interface Research Division
Science and Technology Research Laboratories, NHK (Japan Broadcasting Corporation)

Technology Shaping the Media Creation, Processing and Delivery

Mr Nils Ahrens, Rohde & Schwarz, Australia.

Role of Satellite in Media Delivery for Islanders

Mr Tommy Ng, Asiasat

Panel Session – Steering Public Service Media in Current Media Landscape

Moderator

Dr Martin Hadlow, Consultant

Panel

Dr Javad Mottaghi, Mr Francis Herman, Mr Ashley Wickham,
Ms Faiesea Lei Sam-Matafeo, Mr Masakazu Iwaki-NHK and Mr Nils Ahrens

Announcing PMPC-2018

NOTE: This programme overview can be/is subject to change. Updated on 2017-07-17 (version-9)

ABU Technology Calendar of Events

Date	Event	Venue
2017		
10-14 July	3rd ABU-ASBU-AIBD-WorldDAB workshop and Training	Kuala Lumpur
15-17 Aug	Pacific Media Partnership Conference 2017	Solomon Islands
Jul-Aug	ABU TAS	Myanmar
Aug-Sep	ABU Technology Webinar Festival	
26-28 Sep	5th Regional Workshop on OTT and IBB Technologies and Services for Media: Production to Delivery	Kuala Lumpur
Sep	ABU Technical Review Q3	
Oct-Nov	ABU General Assembly and Associated Meetings	Chengdu
Oct-Nov	ABU TAS TBD	
4-8 Dec	4th Regional Workshop on Media & IT Fundamentals for Broadcast Engineers	Kuala Lumpur
Dec	ABU Technical Review Q4	
2018		
22-26 Jan	A18 global HFCC conference	Kuala Lumpur
Mar	ABU Digital Broadcasting Symposium 2018	Kuala Lumpur
Mar	ABU Technical Review Q1	

New Members

Additional Full Members

Radio Liban

Radio Lebanon was one of the first Arab radio stations. Established under the French mandate in 1938, the station was known back then as "Radio Orient." It was based at the Grand Serail, today the government's headquarters. In April of 1946, the French handed Radio Lebanon to the Lebanese State and it was placed under the administration of the Ministry of News and Tourism (now the Ministry of Tourism) as the only licensed station.

When the civil war erupted in Lebanon in 1975 and tore through its communities for fifteen years, Radio Lebanon rose to the responsibility of uniting all Lebanese, remaining true to its identity as a radio station for all of Lebanon. But the war took its toll on the station as well.

Today, Lebanon has moved past the aching memories of the war and rebuilt itself as the beacon of culture and art it has always been. Radio Lebanon has also risen like a phoenix and rejuvenated itself. Radio is also stepping into the computerised digital world, with plans to stream online and join social media.



Associate Members

CLICK TV PNG

Click Pacific Limited is licensed by NICTA PNG to provide Free and Pay TV along with Internet Services to Papua New Guinea.



The company owns and operates an Intelsat 19 Satellite full transponder lease providing 100% coverage of Papua New Guinea, the Pacific Islands and countries such as East Timor and Philippines.

Click TV beams 24 channels on this platform offering several Pay TV channels along with a channel for SDA Church PNG and its own channel, PNG TV which was launched in January 2017. It broadcasts close to 30 channels into most parts of Port Moresby with two sites and a third being developed for Gerehu. Viewers in NCD require a UHF antenna and set top box. This service also provides free channels.

Click TV is a leading Papua New Guinea based production house. It owns studio and production equipment to provide both live and recorded TV programmes for any client.

New Affiliate Member

Bangladesh Broadcast Systems

BBS – Bangladesh, has achieved significant progress since it started operations in 2015. It is the first systems integration company based in Bangladesh with one office in Singapore.

Its mission is to Value Engineering and Branding and always expresses its willingness to undertake complete responsibility for a project from Concept to Commissioning (C2C).

The services of BBS include: Broadcast Systems Integration, Broadcast and Technical Consultancy, 24/7 Managed Service, Big Screen installations, Channel branding studio design and Infrastructure Planning and design.

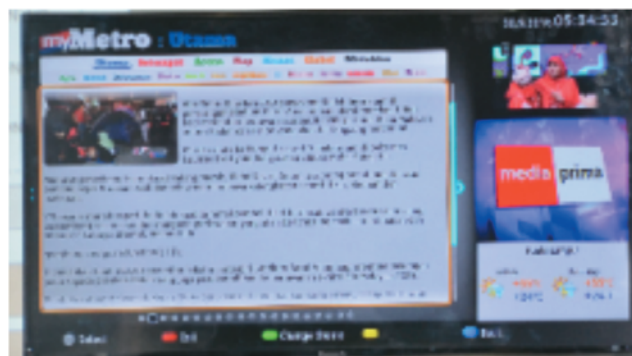




5th REGIONAL WORKSHOP ON OTT AND IBB TECHNOLOGIES AND SERVICES FOR MEDIA PRODUCTION TO DELIVERY

26 – 28 September 2017, Kuala Lumpur

The ABU in collaboration with AIBD will be organising the 5th edition of the Regional Workshop on Over-The-Top (OTT) and Integrated Broadcast Broadband (IBB) technologies and services.



This three-day workshop will introduce IP technologies and address some of the main issues that broadcasters are facing when they want to introduce OTT and IBB production and delivery services within their portfolio. It will not only explore the technology but also look at other value added services and business opportunities that they can introduce to attain a competitive edge in the market place. This year workshop will focus on technological aspects only. Case studies from Asia-Pacific region will be presented with some reference to European implementations too.

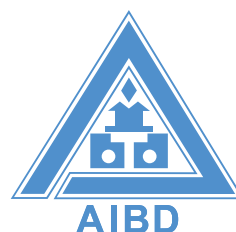


Registration is currently open to all technical colleagues involved in broadcast IT, production technology and operations to participate in this workshop.

Please visit the ABU website for details and to register online, or contact us at hamidah@abu.org.my and further information.

<http://www.abu.org.my/ott/>

For more information you may contact, Dr Amal Punchihewa, Director Technology and Innovation of ABU on amal@abu.org.my



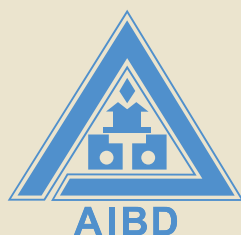
5th REGIONAL WORKSHOP ON OTT and IBB TECHNOLOGIES, STANDARDS & SERVICES for MEDIA: PRODUCTION to DELIVERY

26th September to 28th September 2017 • Capitol Hotel, Kuala Lumpur

WORKSHOP PROGRAMME OUTLINE

Time	Topic	Speaker
Day 1 26th September (Tuesday) - Delivery over IP		
9:00-09:15hrs	Opening Session – Opening and Welcome Remarks	Dr. Amal Punchihewa, <i>Director Technology & Innovation, ABU</i>
9:15-10:30hrs	Integrated Broadcast Broadband System - Hybridcast	Mr. Masaru TAKECHI <i>NHK, Japan</i>
10:30-11:00hrs	Networking Break (Tea & Coffee)	
11:00-12:30hrs	HbbTV Apps Latest Deployment	Ms. Teresa Cheung <i>Managing Director HK Eurofins Digital Testing, Hong Kong Technology Research Laboratories, NHK, Japan</i>
12:30-14:00hrs	Lunch Break	
14:00-15:30hrs	Catch-up VOD service that Japanese commercial broadcasters developed	Mr. Keisuke MIKI <i>Dept. of JNN Technology Strategy Division of TV Technology TBS Television, Inc. (TBS-Japan)</i>
15:30-16:00hrs	Networking Break (Tea & Coffee)	
16:00-16:30hrs	Acceleration of File Transfer	Aspera
16:30-17:00hrs	Immersive Audio Experience in OTT and HbbTV Services	Mr. Jerry Gui, <i>Regional Senior Staff Engineer, Dolby Singapore</i>
17:00-17:30hrs	Closing Remarks by Dr AMAL Punchihewa, Director Technology and Innovation	
Summarising and closing for the day – Dr Amal Punchihewa, Director of Technology & Innovation, ABU		

Time	Topic	Speaker
Day 2 27th September (Wednesday) – IP for Production		
09:00-10:30hrs	System Integration – Live IP production to Delivery	Mr. Dennis Breckenridge <i>CEO at Elevate Broadcast Pte Ltd & Versedmedios Pte Ltd</i>
10:30-11:00hrs	Networking Break (Tea & Coffee)	
11:00-11:45hrs	All-IP Infrastructure for your Media Digital Transformation	Mr. CB Lau <i>VP Sales and Marketing at Caton Technology</i>
11:45-12:30hrs	Evaluation of QoS and QoE for OTT Services	<i>Tektronix</i>
12:30-14:00hrs	Lunch Break	
14:00-14:45hrs	IP based Media Production	Mr. Gregor Erlitz <i>Head of Sales APAC, LAWO</i>
14:45-15:30hrs	Regulatory Aspects in relation to OTT	Ms Seemantani Sharma <i>(Legal & IP Services Officer, ABU) in discussion with Dr AMAL Punchihewa</i>
15:30-16:00hrs	Networking Break (Tea & Coffee)	
16:00-17:15hrs	IBB and OTT services for Smart TV's and Hybrid Set-top Box	Mr. Mika Kanerva <i>COO and Co-Founder, Sofia Digital</i>
17.15-17:45hrs	HbbTV features on the MyFreeView platform	Ms. Ima Imaliana Binti Muzni <i>MediaPrima</i>
Summarising and closing for the day – Dr Amal Punchihewa, Director of Technology & Innovation, ABU		
Day 3 28th September (Thursday) – Devices, Technologies and Case Studies		
09:00-10:30hrs	Multi-CDN for Future Media Operations	Mr. Camille Charaudeau <i>Cedexis, ParisHK, Japan</i>
10:30-11:00hrs	Networking Break (Tea & Coffee)	
11:00-11:45hrs	IBB & OTT: A Receiver Manufacturer's Perspective Preparing your DTT receiving equipment specifications (STBs, TV sets and antennas)	Dr. Leon Mun Wai Yuen, Mr. Steve Cleary, Mr. Muzaffar Fakhruddin, Mr. Gerard Grabuleda Prat <i>Sony EMCS (Malaysia)</i>
11:45-12:30hrs	Online Media Distribution	Mr. Oliver Linow <i>Distribution Systems, Applications and System Operation Deutsche Welle (DW)</i>
12:30-14:00hrs	Lunch Break	
14:00-15:30hrs	EBU-Flow	Mr. Bram Tullemans <i>Project Manager Broadband Technology and Online Services, EBU</i>
15:30-16:00hrs	Networking Break (Tea & Coffee)	
16:00-17:30hrs	Interactive Session/Discussion Are we responding correctly to market signals? Facilitate and moderate by ABU	Facilitate by Dr. Amal Punchihewa, <i>Director of Technology & Innovation, ABU</i>
17.30-17:45hrs	Summary and Concluding remarks by ABU	Dr. Amal Punchihewa, <i>Director of Technology & Innovation, ABU</i>
workshop ends		



AIBD/ABU Regional Workshop on

ENGINEERING FUNDAMENTALS FOR BROADCASTERS

4 to 8 December 2017, Kuala Lumpur, Malaysia

We are pleased to inform you that the ABU in collaboration with Asia-Pacific Institute for Broadcasting Development (AIBD) have organised the 4th Regional Workshop on Engineering Fundamentals For Broadcasters.

PROJECT OUTLINE

Aims

The workshop aims to provide basic engineering fundamentals for broadcast engineers who are beginning their careers and IT staff who are working with production and delivery teams. The workshop will help participants to learn about the latest changes and advancements in broadcast technologies in the media value chain. It will also focus on fundamentals of audio and video systems, techniques, alternative delivery methods and applications.

Objectives

At the end of the workshop the participants will be able to understand:

- Basics of Audio and Video
- Concepts of analogue to digital signal conversion

- Signal processing in the media value chain
- Multiplatform delivery and Quality of Experience
- Converged media-IT-broadcast environment
- Radio and TV transmission concepts, techniques and technologies
- Evolving media workflows and delivery platforms

Profile of Participant

- Broadcast Engineers/IT Engineers, technicians, especially young engineers who have had some exposure to IT, audio and video systems.
- At least five years of experience in broadcasting – radio and television engineering as an essential condition
- IT knowledge is beneficial to understand some new concepts
- Ability to understand, speak and write in English fluently.



Register Now!

Conference 14-18 September 2017

Exhibition 15-19 September 2017

IBC2017

The World's Leading Media, Entertainment & Technology Show

Join over 1,700 exhibitors showcasing the latest technological innovations, 400+ speakers delivering the latest industry insights and 55,000+ attendees providing unlimited networking opportunities at IBC's 50th annual conference and exhibition.

Register at show.ibc.org
#IBCSHOW



IBC2017



IBC is the world's leading media, entertainment and technology show. Bringing together over 55,000 professionals from over 170 countries across broadcasting, cloud, mobile, telecoms, social networking, OTT, AR and VR IBC creates the ideal environment to network and debate the best way to deliver the future of content production, management, delivery and consumption. It also showcases some of the world's latest innovations in media technology.

IBC enables visitors to not only see the latest media technology, but also to touch, test, compare and place orders. It's where business is done. It attracts over 1,700 exhibitors from all around the world and more than 1,000 of the world's top media technology journalists.

The flagship IBC Conference features a curated programme including over 400 of the world's leading industry influencers and experts providing an authoritative and independent view and helping to shape the future of the industry.

IBC is hosted in the heart of Europe's startup technology scene in Amsterdam from 14-19 September.



News

from the ABU Region

Nepal to Switch Off Analogue Signal in Five Major Cities

In Nepal analogue television is living its last days, since it will soon be replaced by digital TV in 5 of the major cities of the country, Kathmandu, Lalitpur, Pokhara, Biratnagar and Birgunj.

The Ministry of Information and Communication (MIC) declared that licences will not be renewed for those who haven't started the digitalisation process. A committee has been formed comprising all the stakeholders, including cable operators, who will play a proactive role in implementing the decision in a gradual manner. The government declared that the transition should be completed around April 2018. Since all operators are not able to switch to the digital network, the Federation of Cable TV Association of Nepal has created the digitalisation drive a process through which small operators will be able to implement the transition. It has been estimated that the country will need around 1 million set-top boxes (STB) in order to perform this digitalisation.

(Nextvnews)

Australian Government Announces Reforms for Media Sector

The Australian Federal Government has announced a comprehensive package of reforms that it says will improve the sustainability of Australia's free-to-air broadcasting sector, support the creation of high quality Australian content and modernise broadcasting and content regulation.

The package provides significant ongoing financial relief, acknowledging that Australia's broadcasters are facing an increasingly competitive commercial environment, with intense competition for audiences and advertising revenue from other media companies, including global online and on-demand operators. The package will abolish free-to-air broadcasting annual licence fees currently estimated to raise around \$130 million on television and radio to improve the ability of broadcasters to operate on a level playing field with other platforms. Licence fees, which are revenue based, were introduced when broadcasters could generate significant profits due to their exclusive access to mass audiences. In today's media environment, licence fees are a relic of a bygone age of regulation.

Under the reforms, broadcasters will pay new annual spectrum fees estimated to raise around \$40 million, a level

that is more reflective of the current media landscape. The financial relief provided by the package gives commercial broadcasters the flexibility to grow and adapt in the changing media landscape, invest in their businesses and in Australian content, and better compete with online providers.

(C+T)

TRT-Turkey Reaches for the Sky

Expanding its television distribution across the UK and Ireland, Turkey's first English language international news platform, TRT World, is now available from the Sky satellite service. TRT World is owned by the Turkish national public broadcaster TRT, and comprises a platform of news outlets that is said to "inspire change within the world" through diverse reporting. It is headquartered in Istanbul, Turkey and has three broadcast centres located in London, Washington DC and Singapore.

In March 2017, TRT World began broadcasting over the Middle East and North Africa (MENA) on Arabsat's Badr-6 satellite at 26°E, following a deal by the channel's worldwide distributor Globecast. The channel is now available to all the pay-TV giant's 11.5 million standard and high definition subscribers, a milestone achievement, said TRT Deputy Director General Ibrahim Eren.

(Rapid TV News)

NHK in 8K Project with the British Museum

NHK will produce a programme examining mysteries of the works of the great Edo period ukiyoe (woodblock print) artist, Katsushika Hokusai jointly with the British Museum utilizing 8K camera. Hokusai's extraordinary skill has long been acclaimed around the world and globally he stands out on his own as by far the most popular Edo period ukiyoe artist. His works have wielded influence across the arts from the paintings of Monet and other Impressionists to the music of Debussy.

The British Museum is keenly interested in the possibilities of 8K, ultra-high definition imaging technology and this coproduction was initiated by an approach from the museum. The 8K camera will film Clear Day with a Southern Breeze (Gaifu Kaisei, also known as the Red Fuji) from the Thirty-six Views of Mount Fuji series and the painting Chinzei Hachiro Tametomo Zu (Warrior hero Tametomo and the inhabitants of Onoshima island), both in the British Museum's own collection, as well as other

Hokusai works held in museums and private collections around the world. A team led by British Museum will provide expert commentary based on the images. 8K has the definition to reveal details invisible to the naked eye, including Hokusai's techniques such as the use of diverse colours and complex over-layering of fine lines, and it is hoped that these images will reveal new aspects to the artist's methods and intentions. The program will be aired from this Autumn.

(advancedtelevision.com)

Media Prima Teams up with Panasonic to Launch Drama Series

Together with Panasonic, Media Prima-Malaysia delivered "Panasonic Ketupat Rendang Brownies Coklat", which aims to connect emotionally with its target audience and brings its viewers whole family together. The series features integration of various Panasonic products to portray the brand as an integral part of Malaysians' lives.

The drama series stars Malaysian artistes such as Rita Rudaini and Rashidi Ishak, alongside veterans Khatijah Tan and Meor Hashim Manaf. It also includes young performers Khayrisyah Kamal and Habeil Lutfillah. To further harness the star appeal of its cast, Panasonic appointed Rita Rudaini and Khatijah Tan as the official ambassadors of its 'Sehati Beraya' promotion that runs until 30 June 2017. In extension to the series, Panasonic is also engaging consumers through branded content across channels. It also includes Panasonic branded light rail transit and engagements through numerous platforms under Media Prima Berhad such as The New Straits Times Press, Big Tree, radio stations and tonton. The company's partnership with the nation's leading integrated media network is aimed at deepening Panasonic's product penetration across the larger Malaysian households.

(marketingmagazine)

MCOT Starts Thai pay-TV Trial

Thailand's state broadcaster MCOT is to embark on a pay-TV service trial using bandwidth in the 2.6GHz spectrum band. The National Broadcasting and Telecommunications Commission (NBTC) has granted what it calls the network code which will enable MCOT to test the service on wireless broadband technology. MCOT is now entering talks with pay-TV marketing partner Playwork on potential collaboration to launch the service.

The broadcaster said it would discuss at a later date whether to hand over part of its 2.5GHz bandwidth to the commission for reallocation by means of auction. If spectrum concessions for state agencies expire, NBTC will reclaim them for reallocation. However, the commission will compensate state agencies if they offer up the spectrum before their right to use it ends.

MCOT, which is based in Bangkok, currently runs free-to-

air terrestrial TV channels and satellite television channels, along with a host of national, provincial and international radio stations.

(telecompaper.com)

SAPPRFT-China to Upgrade Content and Fight Piracy

Security provider Irdeto has received official recognition by ChinaDRM Lab, the official testing organisation of the country's regulator SAPPRFT, for its TraceMark forensic watermarking solution.

Irdeto says that the certification recognises the robustness of the solution and will enable operators in China to monetise over-the-top (OTT) offerings and build a 360° anti-piracy strategy around their ecosystem of content offerings, giving operators in China the confidence to launch high value content services and fight piracy. The digital rights management (DRM) solution is compliant with the standards set by Hollywood studios for premium Ultra HD and early release content.

(globaltimes.cn)

All India Radio Highlights DRM Capabilities

India is getting the whole nine yards on just what DRM digital radio can do, as All India Radio is beginning to demonstrate the full set of services that make up the DRM standard. As AIR moves into phase two of its DRM introduction to the country, the full features/services of the 37 DRM transmitters that were installed during phase one are being rolled out. The finalization of phase two will see the full-featured DRM services available to listeners with a public information campaign just launched to inform people of the DRM radio platform and its benefits.

DRM transmission from New Delhi/Nangli is reportedly already upgraded, with audio provided that is based on the xHE-AAC audio codec adopted by DRM. It also includes DRM text messages and Journaline, an advanced text service. AIR reports that currently 21 DRM transmitters are now operating in pure DRM for one hour everyday. AIR is also planning to boost DRM services in Chennai, Pune and Bangalore.

(audiostream.net)

Mediacorp Upgrades Media Centre Equipment

Mediacorp's new creative epicentre for broadcast and news production has recently been equipped with an IHSE Draco tera KVM matrix switch system for KVM control and access of remotely located broadcast servers. Three separate systems were required in the news, studio and media and radio operations areas to ensure instant and flexible access to equipment, whenever and wherever operators needed it.

Qvest Media, responsible for the entire operational project

planning and integration, teamed up with IHSE APAC's local system integration partner Broadcast Engineering Services to design and deliver an efficient and robust KVM switching system for the media campus. In the news area, a fully redundant Draco tera enterprise KVM switching system provides totally reliable and secure connectivity to a wide range of broadcast equipment.

In the studio and radio areas, a similar, smaller setup was created around Draco tera compact switches. The instant, delay-free operation of the Draco tera KVM system allows vision mixers and editors, producers and playout controllers to manage their operations without any distractions or interruptions.

(Qvestmedia)

Channel NewsAsia Revamps App and Website

Following Channel NewsAsia's relocation to its state-of-the-art newsroom at Mediacorp Campus, Mediacorp says it is taking Singapore's leading news brand to the next level by launching the first phase of its all-new website and apps for tablet and mobile devices.

Channel NewsAsia developed the refreshed site and apps over 12 months with extensive input from readers, viewers, listeners and advertisers. New features are being introduced in phases, with this first phase delivering a contemporary and intuitive design that makes it easier to find interesting content, a compacted view with fewer images for faster and low-data browsing and a brand new Asian Voices section featuring opinions from local and regional thought leaders and commentators about the most important issues facing Asia. The improvements are a response to the needs of Channel NewsAsia's fast-growing audience. In the last 12 months, Channel NewsAsia's website and apps attracted nearly four million unique visitors each month from Singapore, and nearly 2.5 million from around the world. It now has the largest social media following of any Singapore news brand, with over 2.5 million Facebook and Twitter followers, who generate over 12 million video views each month.

(Channelnewsasia.com)

SBS On Demand Now supports Chromecast for iOS

SBS On Demand (Australia) has launched Chromecast functionality for iOS devices, allowing users to cast programmes from SBS On Demand's international and multilingual library to their TV screens to enjoy anytime, anywhere, and for free.

Already available on Android, the Chromecast upgrade comes at the same time as the streaming service announces the exclusive Australian premiere of the highly anticipated adaptation of Margaret Atwood's award-winning novel *The Handmaid's Tale* – available to stream in full from Thursday the 6th of July. Last year, SBS On Demand rolled out a complete user interface upgrade to enhance user experience,

including a brand new video player, smoother navigation, improved search functionality, ability to add shows to a favourites list, and playback resumption.

SBS On Demand is a world of inspired entertainment – a curated selection of over 6,000 hours of world class-drama, documentaries and movies from across the globe.

(SBS)

SBS Australia Interactive Animation Wins 2017 Webby Award

SBS Australia's interactive animation *My Grandmother's Lingo* has been awarded a 2017 Webby Award for Best Use of Interactive Video. With 13,000 entries from all 50 U.S. states and over 70 countries, and 3.5 million votes cast in The Webby People's Voice Awards, the Webby Awards are coveted international accolades with winners representing excellence on the internet.

My Grandmother's Lingo, which also won a 2016 Walkley Award for Multimedia Storytelling and a 2017 SXSW Interactive Innovation Award for Responsive Design, tells the personal story of Angelina Joshua, a young Aboriginal woman dedicated to preserving her endangered indigenous language. It features voice-activated gaming technology and unique animations to unlock the chapters in Angelina's story, and simultaneously raises awareness of Australia's Indigenous languages – specifically Marra, a language now spoken by only three people in the remote East Arnhem Land community of Ngukurr where Angelina lives.

Joining Angelina in creating *My Grandmother's Lingo* are two other young indigenous talents: animator and illustrator Jake Duczynski (Gamilaroi) and DJ and musician Kuren (Curtis Kennedy, Wiradjuri).

(Mediaweek.com.au)

SBS Korea to Develop Social Experiment Format

Extending its reach into Asia, US production house MY Entertainment is teaming with Seoul Broadcasting System (SBS) in South Korea and Critical Density Media to co-develop a social-experiment format, *The Power*, for international availability.

Terrestrial television broadcaster SBS claims the largest national network in South Korea and has been delivering a variety of programmes, from SBS News, TV Series, entertainment shows to documentaries and social reality programmes for the last 26 years. The new format focuses on society's relationship with money, class, social status and power. SBS aired a pilot in July 2016, claiming critical acclaim and top ratings in its time slot. The series is slated to air in Korea in early 2018 and MY Entertainment has partnered with the Korean broadcaster to further develop the format for Korea, the US and Western markets.

(Rapidtvnews)

Digital Broadcasting Update

Guidelines on How to Transition Broadcast Facilities to IP



White Paper Titled 'AIMS Guidelines to Preparing Broadcast Facilities for IP-Based Live TV Production' Outlines Protocols and Considerations

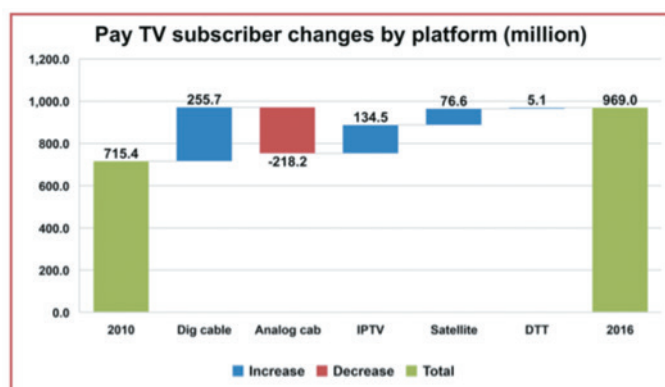
The Alliance for IP Media Solutions (AIMS) has announced it has released a white paper aimed at helping broadcasters transition to IP with minimal disruption. The paper, titled "AIMS Guidelines to Preparing Broadcast Facilities for IP-Based Live TV Production," presents basic methods broadcasters can follow to make the shift from SDI to IP as trouble-free as possible, with confidence that products incorporating AIMS-endorsed protocols can be mixed and matched to fit their requirements. The white paper is available for download at aimsalliance.org.

The white paper highlights the many things broadcasters must take into account when designing IP-based production infrastructures and addresses factors related to a wide range of facilities, from the smallest studios to the most complex multi-location environments. The good news for producers, directors, engineers, and their staffs is that, even though implementing IP in a broadcast plant is a massive technical shift, the basic workflows long followed in live TV production remain unchanged. Careful consideration of points made in the document should help designers choose approaches that will serve any given facility's immediate needs while smoothing the way for ongoing migration from SDI- to IP-based production.

(*aimsalliance*)

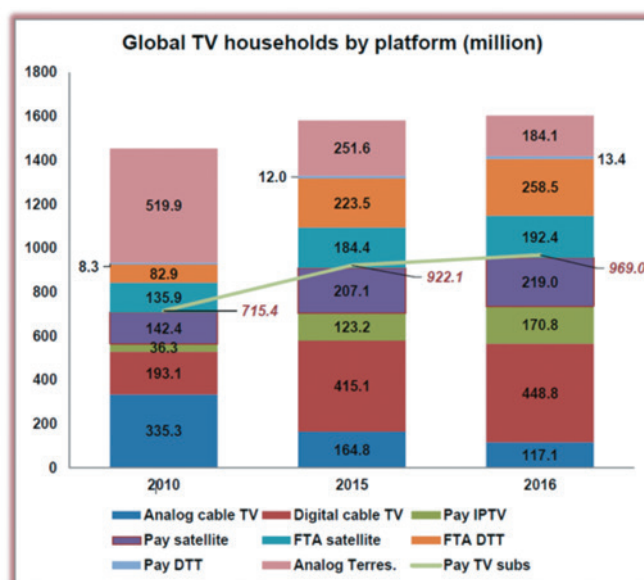
Global Pay TV Subscribers Reach 969 Million

Based on 138 countries, Digital TV Research estimated 254 million additional pay TV subscribers (up by 35%) between 2010 and 2016 to take the global total to 969 million.



According to the Global Pay TV Subscriber Databook, digital cable TV created the most additions by platform – at 256 million between 2010 and 2016. However, analogue cable TV lost 218 million subscribers; dampening overall cable gains. There were 76 million extra subs for IPTV to nearly quintuple its total. Satellite TV added 77 million and pay DTT 5 million.

Excluding analogue cable TV, digital pay TV rocketed from 380 million subscribers in 2010 onto 852 million at end-2016.



Asia-Pacific is the world's largest pay TV subscriber region; contributing 60% to the global total. China supplies about a third of the world's pay TV subscribers, with 313 million by end-2016.

Pay TV subscriber counts doubled in 53 countries between 2010 and 2016. However, pay TV subscriber numbers fell in nine countries, with the US down by 4.4 million and Italy by 2.3 million.

(*digitaltvresearch*)

Next-Gen Compression Platform

Imagine Communications has introduced Selenio™ One XC, a software-only addition to the company's next-generation multipurpose compression platform, which offers media companies a single platform for performing a range of encoding, transcoding and related processing operations. Selenio One XC, optimised for both primary and secondary distribution, enables content owners and video service providers to improve operational efficiencies by delivering more channels over existing distribution infrastructures.

The solution, which is powered by Zenium™, the pure microservices-based technology from Imagine that enables the development of flexible and modular platforms, can be deployed with an optional stat mux to enable media companies to maximise video quality and bandwidth efficiency. The software-only, cloud-native nature of Selenio One XC also provides media companies with the ability to support both premises- and cloud-based deployment modules – or a mixture of the two – as well as take advantage of steady increases in the computational capabilities of commercial off-the-shelf (COTS) computing platforms.

The new Selenio One XC is initially targeted at providing video service providers with high video quality, highly efficient linear transcoding capabilities. It can run in Linux-based virtual machines, making it deployable in a variety of datacenter and cloud settings. It supports H.264/MPEG-2 to H.264/MPEG-2 IP-based transcoding and can be paired with an optional multiplexer to provide bandwidth-conserving statistical multiplexing of expensive or bandwidth-constrained distribution channels. The product is scheduled to support adaptive bitrate (ABR) technology for Over-the-Top (OTT) distribution operations in the summer.

(Imagine Communications)

Live Television with Personalised Advertising

Adobe has announced the launch of Adobe Advertising Cloud TV, the most widely used solution in the industry for automated, data-driven planning and buying of television advertising. The solution builds on recently-acquired TubeMogul's PTV (Programmatic TV), an industry-leading solution first launched in 2014. The platform enables buying of TV ads in all of its forms – including live linear TV, addressable TV, connected TV, VOD and OTT.

These new Advertising Cloud capabilities include an integration with Adobe Analytics Cloud to enable brands to use first-party audience data – a brand's own audience segments gleaned from marketing and advertising efforts – to better target linear TV ads. Marketers can also plan and buy TV ads against audiences that have already demonstrated intent through online searches. Finally, additional datasets from pay TV providers, MRI and TV manufacturers boost marketers' ability to plan, target, buy and measure discrete audiences.

New Study Reveals OTT Video Streaming Quality Linked to Viewer Loyalty

Akamai Technologies, Inc., has released new research demonstrating how quality of video resolution and playback affects viewers' engagement with, and loyalty, to over-the-top (OTT) video streaming services. Conveyed through advanced biometric measurement tools including facial coding and skin conductance, the findings underscore the importance of delivering consistent, high-quality video across any OTT business model.

According to the study conducted by third-party research firm Sensum, viewers disengage with emotive storylines and react negatively to low-quality streaming incidents like buffering regardless of the brand or interest in the content. The research shows negative emotions increase 16 percent while engagement decreases nearly 20 percent as a result

of these poor experiences. The survey also demonstrates that 76 percent of participants say they would stop using a service if issues such as buffering occurred several times.

The research also found:

- Subscription video-on-demand (SVOD) brands lose the most engagement due to buffering while transactional video-on-demand (TVOD) models suffer the most negative impact to brand loyalty if delivering low-quality experiences.
- High-resolution video content with emotive storylines improve viewer engagement by more than 10 percent
- When buffering begins: happiness drops 14 percent; negative emotions (disgust and sadness) increase by an average of 8 percent; viewers' feeling of surprise increases 27 percent; attention drops by 3 percent and focus decreases by 8 percent.

The study, one of the most comprehensive of its nature ever conducted, used a variety of testing procedures including sensory, implicit and explicit responses from more than 1,200 participants. All tests carried out adhered to the Video Quality Experts Group (VQEG) standards to ensure results could not be contaminated. Akamai also created fictitious brands to remove any previous emotional association with the business models and used the same content across all the brands to nullify the impact of content type on the respondents.

(svgeurope)

Spatially Adaptive Digital TV Broadcast System Saves Power, Cuts Carbon Emissions

Engineers at the University of Bristol have delivered a proof of concept showing how a spatially adaptive broadcast system can realise reductions in digital broadcast power of up to 35 percent, which in turn can cut carbon emissions and overall broadcasting costs.

Unlike analogue broadcasting, digital TV broadcast must operate above a hard threshold point to transmit signals; if the power falls below that limit, then no picture can be seen by the viewer at all. Because the actual power received tends to fluctuate above or below the threshold, the network engineer assumes the worst-case scenario and tries to set the broadcast power above the threshold. However, increasing the power above the limit will not benefit the user further, and entails more costs for the broadcaster.

Nevertheless, if the engineer could tap into a feedback system consisting of Internet-enabled TV devices from the viewer's premises, then he could optimise the signal strength and direction of the transmission in real time, according to viewing conditions.

This spatially adaptive broadcast system could result in significant energy savings, according to Bagot and colleagues, who utilised a channel emulator to physically model array gain and fading conditions, and created feedback nodes to manipulate broadcast powers based on user feedback. Testing was performed at the University's Communication Systems and Networks (CSN) Group that runs a state-of-the-art hardware and measurement facility.

(Jof Enriquez)

Equipment Trends

Video Production Center



The new GV Korona K-Frame V-series systems are specifically designed for low- and mid-range broadcast and media applications, where compromising on performance is not an option. GV Korona K-Frame V-series systems are available in two system packages, starting at 16x8 with 1 or 2 M/Es and a complement of licenses, for exceptional value and incredible power.

The small footprint of the GV Korona K-Frame V-series is ideal for smaller stations, sub-studios, mobile environments, corporate, sports venues, educational, government and houses of worship production facilities. With its modular design for simple scalability and serviceability to its handling SD/HD and the ability to produce in 3G/1080p with no loss of functionality and 4K UHD with a simple license upgrade, it is ready for anything.

K-Frame V-series

- Supports 3G-SDI without compromising any other features
- VPEs offer four full function keyers, resizers and a mixer for all the keying power you will ever need
- Using K-FRM-IO-CONV-V, every path supports frame sync and up/down/crossconversion without compromising other features
- Modular design, buy only what you need today and reconfigure/upgrade as your needs change
- IP IO option protects your investment (future)
- MediaPorts for non-SDI production signal types
- Optional iDPM for added 3DDVE capabilities
- Optional KSP GUI control software can be used instead of, or in conjunction with, hardware panels

GV Korona Panel

- Fully integrated multitouch menu system and innovative touchscreen in transition area
- Same familiar user interface and power as Karrera, but in a smaller form factor
- Compatibility with all K-Frame series frames – can be deployed as a second control panel for large events
- Just like any K-Frame switcher, the ability to load shows from Kayenne or Karrera show files

- No compromises on enterprise features, even with such a competitively priced product
- Training costs can be spread across the entire GV production switcher range – learn one panel, learn them all!
- Made by Grass Valley – a company with a proven and reliable pedigree in production switchers

(Grassvalley)

High-end Analog RF and Microwave Signal Generator



Rohde & Schwarz has introduced high-end analogue RF and microwave signal generator with industry-leading phase noise performance and highest output power.

The R&S SMA100B with a frequency range up to 20 GHz is the most powerful analogue signal generator on the market. It delivers signals with the lowest possible phase noise and the highest output power with extremely low harmonics. Engineers no longer need to compromise between output power and a spurious free dynamic range. The R&S SMA100B is designed for the RF semiconductor, wireless communications and aerospace and defense industries.

The R&S SMA100B provides purest signals with the lowest possible phase noise at all offset frequencies (1 GHz, –152 dBc/Hz, 20 kHz offset). A 6 GHz instrument generates up to 38 dBm RF output power, and a 20 GHz instrument generates up to 32 dBm in the microwave frequency range. Harmonics are extremely low across the entire frequency range; above 6 GHz they are even significantly lower than 70 dBc at 18 dBm output power. Nonharmonics are below 110 dBc at an output signal of 1 GHz.

The R&S SMA100B is included in the R&S Legacy Pro program and can easily replace obsolete signal generators from Rohde & Schwarz and other manufacturers in automated test environments without the need to modify test software. The R&S SMA100B RF and microwave signal generator is now available from Rohde & Schwarz

(Rohde & Schwarz)

Digital Audio Processor



OPTIMOD-FM 8700i is Orban's flagship processor. Featuring versatile five-band and two-band processing for both analog FM transmission and digital media, the 8700i provides the industry's most consistent sound, track-to-track and source-to-source. This consistency allows you to create a sonic signature for your station with the assurance that your signature will stay locked in, uniquely branding your sound.

- **Xponential Loudness™** brings hyper-compressed music back to life, revealing detail and increasing impact while reducing listening fatigue and distortion.
- **Xponential Loudness™** restores material that has passed through lossy compression, like MP3, making it sound more like the original.
- Built-in streaming server allows you to monitor the 8700i-processed FM and HD audio wherever there is a LAN or Internet connection.
- Exclusive "Multipath Mitigator" phase corrector reduces multipath distortion without compromising stereo separation.
- Subharmonic synthesizer adds modern-sounding bass punch to older recordings.
- Dante Audio-Over-IP now with AES67 support coming fall of 2017 via an easy software upgrade.
- Ultra low-latency headphone output with dedicated processing chain including FM clipper.

(Orban)

Extended Life Solid State Drives for Professional Video Recorders



Sony is expanding its professional media lineup with the introduction of two new G Series Professional Solid State Drives in 960GB (SV-GS96) and 480GB (SV-GS48) capacities. These SSDs were designed to meet the growing need for reliable, external video recording devices docked to camcorders or high-performance DSLRs. For content creators looking for more efficient, stable and flexible hi-bitrate recording in often unpredictable environments, Sony's G Series SSDs deliver optimal performance for several popular professional video recording devices, while offering a far longer lifetime.

Building on the reliability synonymous with Sony's Professional Media products, the new SSDs are a solid option for respective video recorders, offering videographers stable high-speed capabilities, a sense of security and lower cost of ownership due to their longer life. Using Sony's Error Correction Code technology, the 960GB G Series SSD achieves up to 2400 TBW (terabytes written), while the 460GB drive can reach 1200 TBW, resulting in less frequent replacement and increased ROI. 2400 TBW translates to about 10 years of use for the SV-GS96, if data is fully written to the drive an average of five times per week.

The drives are also designed for ultra-fast, stable data writing. While other SSDs have a tendency for data write speeds to suddenly drop after repeated re-write cycles, Sony G Series SSDs feature built-in technology preventing sudden speed decreases, while ensuring stable recording of high bitrate 4K video without frame dropping. For example, used with an ATOMOS Shogun Inferno, G series SSD is able to record video at 4K 60p (ProRes 422 HQ) mode stably.

When paired with the necessary connection cables, the new G Series drives can be effortlessly removed from a recorder and connected to a computer for file downloading, making editing easier and faster with read speeds up to 550MB/s.

G Series SSDs also offer data protection technology that keeps content secure and intact, even if a sudden power failure occurs. To add to the drive's stability, it features a durable connector which withstands extreme repeated insertion and removal up to 3000 times – or 6 times more tolerance than standard SATA connectors – even in harsh conditions.

(Sony)

SDI/HDMI to H.264 Encoder for Live Streaming & Recording



LYNX Technik AG has announced a new yellobrik, an SDI/HDMI to H.264 encoder for live streaming & recording.

The PEC 1864 H.264 encoder provides a solution for users to simultaneously stream content while recording it, an ideal solution for delivering, streaming and archiving content efficiently and affordably. The module houses two independent encoders; a stream encoder and a record encoder. Users can stream content with simultaneous recording, stream-only, or record-only. The independent encoders support different quality settings for the streamer and the recorder. For example: a user may wish to simultaneously stream content directly to the web in lower quality due to limited bandwidth, and record at a higher master quality for further editing or archiving.

[continued to page 44]

Personalities & Posts

NEW ABU TECHNICAL LIAISON OFFICERS



Mr Akira Negishi

Mr Akira Negishi

Senior Manager, NHK WORLD Department at NHK (Japan Broadcasting Corporation)

Mr Akira Negishi, Senior Manager, NHK WORLD Department at NHK (Japan Broadcasting Corporation), has taken over from Mr Toshiaki Hara as the ABU Technical Liaison Officer.

Mr Negishi joined NHK in 1995 and has been engaged in the field of HDTV transmission, both domestically and internationally.

In 2011, he joined JIB (Japan International Broadcasting) and was in charge of expanding the distribution market of NHK's international television channel, NHK World TV. He rejoined NHK in 2015.

We welcome Mr Negishi as the new TLO for NHK.

We take this opportunity to thank Mr Toshiaki Hara for his outstanding support to the ABU in his role as the ABU Technical Liaison Officer and wish him the very best in his new position.



Mr Toshiaki Hara



Mr Zainal Zakaria

Mr Zainal Zakaria

Assistant Director, Facility Development Department, Broadcast Operation Department, Radio Televisyen Malaysia

Mr Zainal Zakaria, Assistant Director, Facility Development Department Division, Broadcast Operation Department at Radio Televisyen Malaysia, has taken over from Mr Hj. Zulkifli bin Abdul Rahim as the ABU Technical Liaison Officer in February 2017.

Mr Zainal joined RTM in 1994 as a Broadcast Engineer and has been engaged in the Radio Studios Operation and Transmission Engineering including MW, FM and DAB+.

In 2015, he joined Facilities Development Division as a team member of Digital Radio Development for RTM.

Mr Zainal Zakaria is no stranger to the ABU having attended the ABU Admin Council meeting in Istanbul, Turkey in 2015 and meetings of the ABU Technical Bureau.

We welcome Mr Zainal Zakaria as the new TLO for RTM and take this opportunity to thank Mr Hj Zulkifli for his remarkable support for the activities of the ABU Technology Department for the past several years.



Mr Hj. Zulkifli bin Abdul Rahim

[continued from page 43]
Equipment Trends

The yellobrik accepts either an SDI or an HDMI input supporting up to 3G (1080p @60 Hz) and compresses it using the H.264 encoding standard. It supports a variety of popular streaming outputs including RTMP for streaming to Content Delivery Networks. Using this streaming format, a user enters their CDN log-in credentials into the yellobrik's web-browser based GUI, and streams the content live on their CDN Channel; e.g. Wowza, YouTube, Facebook.

The PEC 1864 also supports RTP/RTSP streaming, TS over UDP and TS over RTP. These three streaming formats can be configured as unicast or multicast. A forward error correction (FEC) can be activated for the TS over RTP

stream. In addition, the PEC 1864 supports the HLS (HTTP Live) streaming protocol.

The module records to a micro SD memory card or USB stick as a .mp4 or .ts.

Two channels of audio are deembedded from the incoming video signal, which can then be embedded into the streamed and/or recorded video signal. An alternative audio source is provided via the stereo audio input.

(LYNX Technik)

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THE BEST WAY TO PREDICT THE FUTURE IS TO CREATE IT. PETER F. DRUCKER



Why are we watching the global Television shipment data ?

Because the size, format and brightness of the television sets being sold have a direct influence on viewer behaviour. That, in turn directly affects the system design of current or future television channels (and transmission head ends). Larger screens, UHD TV, smart TV in more homes will change viewing habits irrevocably. Broadcasters need to make sure that they are leading the change.

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