



Asia-Pacific
Broadcasting
Union

Technical *Review*

No.253 January-March 2013



**ABU Digital
Broadcasting
Symposium 2013:
Full Report Inside**



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Asia-Pacific Broadcasting Union

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Cover:
*ABU Digital Broadcasting
Symposium 2013:
Full Report Inside*

This edition leads with a report on the ABU Digital Broadcasting Symposium 2013. Beyond expectations, the annual event attracted the largest number of delegates and industry players since it started in 2005. The event involved conferences, parallel workshops, exhibitions and webinars.

Technical articles for this edition have been contributed by Radio Television Hong Kong (RTHK) and the Society of Motion Picture and Television Engineers (SMPTE).

The RTHK article highlights the need for planning and development in the new digital environment, also the techno-economics aspect of the future media world.

The SMPTE article describes the Unique Material Identifier (UMID) application, its potential to be the core of media IT infrastructure and the project conducted by a SMPTE study group to adopt the standardisation of UMID within the industry.

The current issue also includes a report on the 9th Global Coordination Conference held in Tunisia.

In addition, there are our regular features, news from the region, updates on digital broadcasting and new broadcasting equipment.

ABU Technology

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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Emerging Media Technologies: Planning and Techno-economics

by John Yip
RTHK

Introduction

Since the publication in late 2005 of an ABU Technical Review paper entitled “Planning and Development in the New Digital Age” by the author, when the broadcasting skyline was largely clear, it has become quite unpredictable and increasingly “cloudy”. The multi-platform development has confounded both the broadcasters and consumers. There have been major advances in digital media technologies, broadcast technologies and consumer electronics. Single one-atom transistors are now in the laboratory. New content delivery methods and consumer behaviors are continually evolving. Traditional broadcasters are being ushered by new consumer habits into unknown waters. As the consumers are leaning forward instead of sitting back in the lounge room, the broadcasters have to re-assess their business strategies.

In order to help the broadcasters understand the myriad of techno-social/economic factors linking the various media technologies and the consumers and to enable them to be better prepared for the challenges, an analytical model called RPMO was postulated; examples of its application have been described in recent years in ABU digital broadcast symposiums and on the web.

The Future Media World

The future media world will be multi-platform based. It will be more immersive, exciting, wide-ranging, accessible and sophisticated for the consumers. Businesses are looking for opportunities but will face escalated investment risks. From traditional movies, terrestrial/cable/satellite TV, operators are moving into an environment characterised by high mobility, multi-platforms, frequent mergers and acquisitions, the consumer moving from the passenger’s to the driver’s seat, strong growth of internet-based services and of mobile devices, and rapid increases in daily internet-video consumption. The emerging/ new media world will be full of surprises, exciting for the consumers but not always so for the unwary investors. On the horizon, the broadcasters are expected to fully embrace 3D-TV, OTT, UHDTV and Social TV, whilst HDTV, IPTV, Mobile TV and DAB+ will continue to grow.

The future media world presents challenges, opportunities and risks to the traditional broadcasters. It is a world of Davids and Goliaths where David is a young, innovative, fast-growing, agile and sharp-eyed emerging media company and Goliath is a big, often slow, traditional media operator

who has to learn to be more agile. Should Goliath play the game of David and learn how to throw stones? It depends, but nevertheless it should learn how to survive in the competition.

There are at least two fundamental issues for the broadcasters to remember. Firstly, the consumers must be happy with any new services; they are constantly seeking a higher value for money and a higher quality of experience (QoE). They will invariably ask two questions: how much (ie affordability) and whether it is worth it (ie on considering the opportunity cost). Secondly, consumer viewing/listening habits do not change rapidly and will evolve gradually, thus offering sufficient time for the operators to implement appropriate market-entry strategies.

RPMO: An Analytical Model

The model was initially hypothesised in order to encapsulate the whole range of influencing factors (technological, economic, social, etc.) lying between a consumer media technology and the consumer, for a particular economy. It does not stand for revenue-per-month, but it is ultimately related to it.

It is a simple, first-order analytical model applicable to a single technology platform eg IPTV, for a particular economy (region, country or city). It can be extended to multi-platform analyses by evaluating the differences eg IPTV vs. OTT. Furthermore, it can be applied to the analysis of a service-only platform eg LBS (Location-Based Service), by changing one of the sub-factors O3 (ie from Device Attributes to Service Attributes), as explained later.

The model is best understood by referring to Figure 1 (Conceptual Diagram) and to Figure 2 (Generic Equation). The “soft factors” ie R, P, M, O are more controllable than the “hard factors” ie g (geo-physical) and G (macro-economic). Please note that the O factor (where O stands for “Other”) in turn comprises four sub-factors (O1 to O4).

The hard factors are the critical ones for the operator to consider during a start-up; these factors are also used for comparing technological growths (in terms of TVH penetration per annum) in different economies, for a selected media technology eg Mobile TV. Technology per se is not explicitly stated in the equation; the consumer does not actually care about what a media technology is called by the manufacturers or broadcasters; the names tend to be changing in the market. The “triangle” of Pricing, Device

Attributes and Quality (ie video/ audio/ QoE) implicitly define a class of consumer media technology eg Hybrid TV; thus the equation is applicable to the past, present and future. It is intended to be Produce-once and Use-many (times), not unlike the broadcasters' multi-platform strategy.

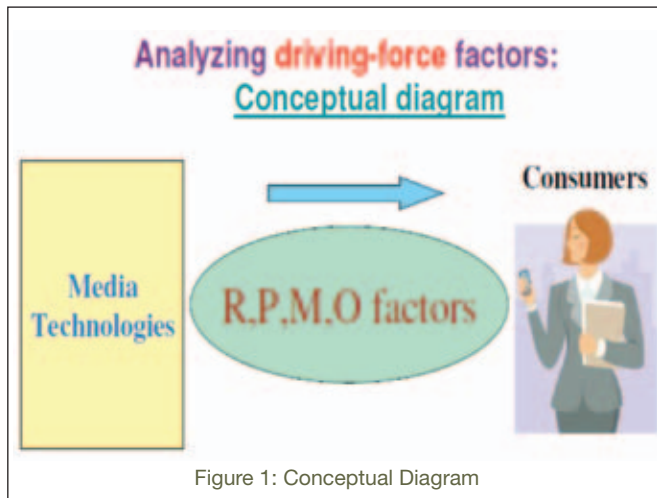


Figure 1: Conceptual Diagram

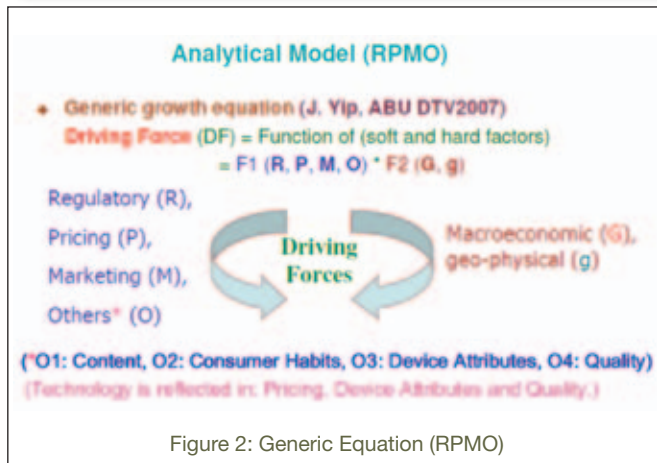


Figure 2: Generic Equation (RPMO)

To simplify the explanation, Figure 3 (the RPMO Delivery Wagon) is provided to depict the soft factors and hard factors. The R (regulatory) factor is the controlling one, P (pricing) and M (marketing/ promotion) being the primary drivers, O1 (content)/ O2 (device attributes)/ O4 (quality) being the deliverables, g (geo-physical factor) and G (economic factor) being the resistances and finally O2 (consumer habits) being what the consumer likes to do. Then, where is the money? Clearly the money is in the consumer's pocket.

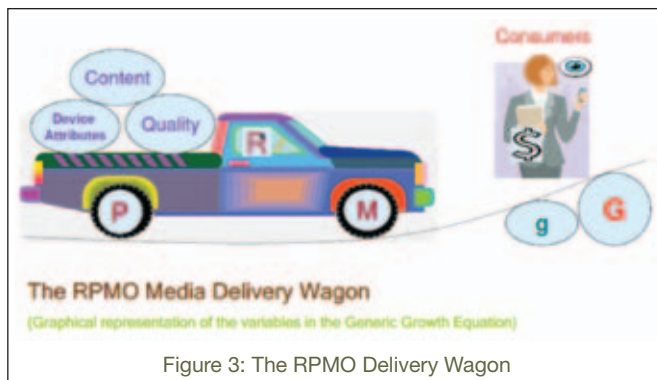


Figure 3: The RPMO Delivery Wagon

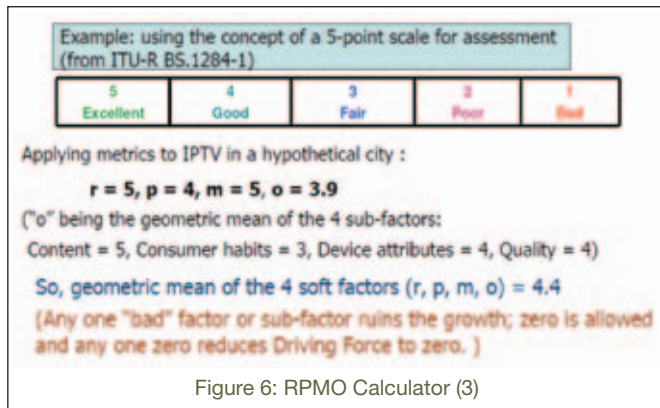
Using the RPMO Calculator

Since the model is a conceptual one and the equation is not a precise mathematical formula, due to the need to bridge between the hard sciences of technologies and the social sciences such as consumer habits, application of the model requires automation and a rating (weighting) system. The RPMO calculator in Excel format can be downloaded from the bottom of the following webpage: rthk.hk/mediadigest/20090415_76_122226.html

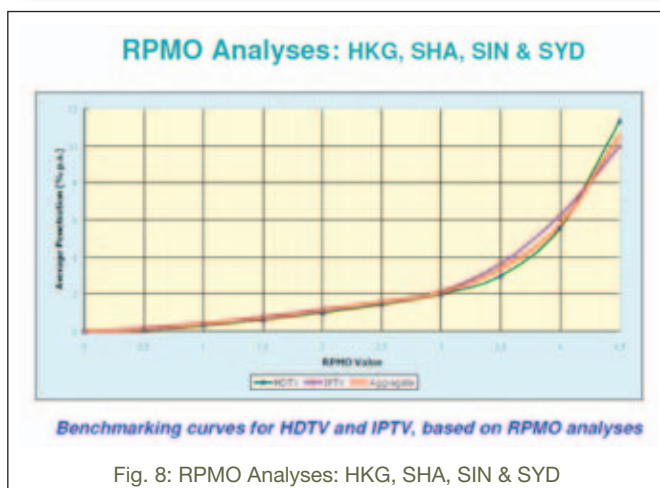
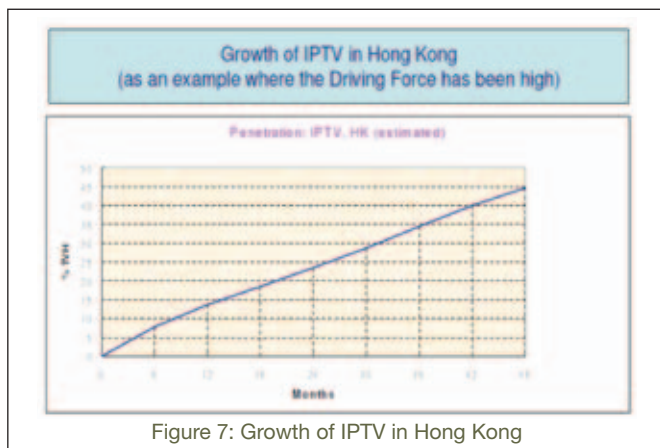
The calculator is illustrated in Figure 4 to 6. There are 7 data-entry boxes ie for R, P, M, O (O1–O4). For each, the user enters the major issues. Such issues have been listed previously for IPTV, Mobile TV, etc. and only copying-and-pasting is required. For each issue (within a factor), the user enters a weight (0/1/2/3) and a mark (5.0 to 0.0, corresponding to Excellent, Good, Fair, Poor, Bad, No-go respectively). Within each factor, arithmetic-mean applies as the issues are correlated. To derive a single RPMO value, geometric-mean applies as the factors are essentially un-correlated. Please note that any one zero produces an overall RPMO value of zero, like the breaking of the weakest link of a chain. A zero RPMO value means a predictable business collapse.

Figure 4: RPMO Calculator (1)

Figure 5: RPMO Calculator (2)



In making the assessments, the operator has to be as objective as possible. Although the assessment is subjective to some extent, which is inevitable in addressing social science issues, having a panel of assessors who are familiar with what happens in the concerned economy ensures consistency in evaluation. The model is most useful when there is knowledge of prior and similar technological developments in other economies, eg DAB/DAB+ developments in UK and in Australia. The premise is that under similar conditions, consumer behaviors will be similar, although one has to take into account cultural differences under sub-factor O2 (Consumer Habits). Fig. 7 to 8 exemplifies some applications, for IPTV in Hong Kong and for HDTV/ IPTV in four major cities. Further details can be found on the internet: rthk.hk/mediadigest/class/index_tech.html

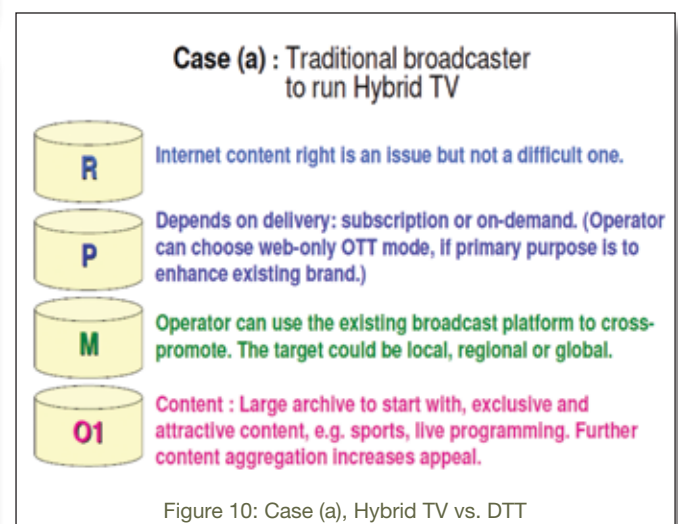
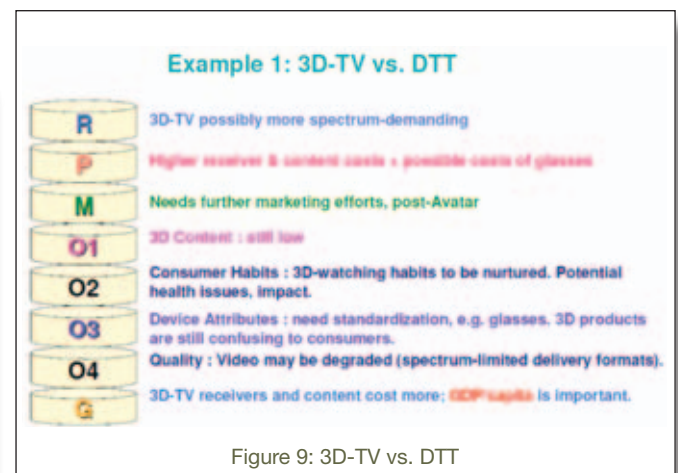


Similarly, the RPMO model can be applied also to cross-platform analyses. In a 2-platform analysis, a comparison can be made for each RPMO factor. A relative mark (+++, +, n, -, --, 0, with "n" being "neutral") is assigned and then converted to 5, 4, 3, 2, 1, 0 respectively. A geometric mean is then taken, providing a single value for decision-making, eg 4 = good and 0 = no-go.

Application to Emerging New Media Technologies

Fig. 9 shows the issues to be considered for 3D-TV, in comparison with conventional DTT. As data on 3D-TV development is still limited, no RPMO curve could be provided at this stage.

Two further examples are provided to show the various issues involved, ie case (a) for Hybrid TV vs. DTT (Fig. 10 – 11) and case (b) for IPTV vs. OTT (Fig. 12 – 13). Case (a) refers to the situation where a traditional DTT broadcaster has a large volume of content. Hybrid TV startup by a new operator with limited resources may face major difficulties in securing exclusive content and in securing a high quality of service (QoS) for video delivery on the internet.



Case (a) : Traditional broadcaster

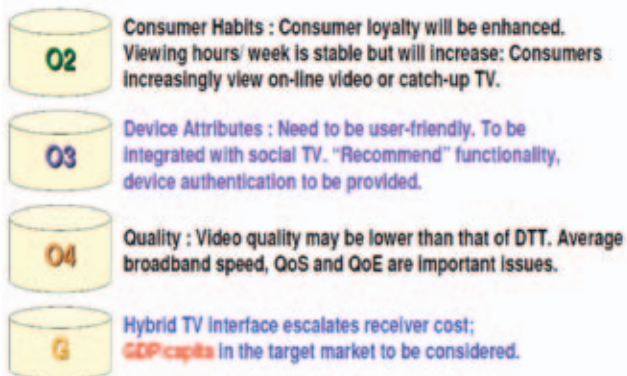


Figure 11: Case (a), Hybrid TV vs. DTT

Case (b) : IPTV vs. OTT

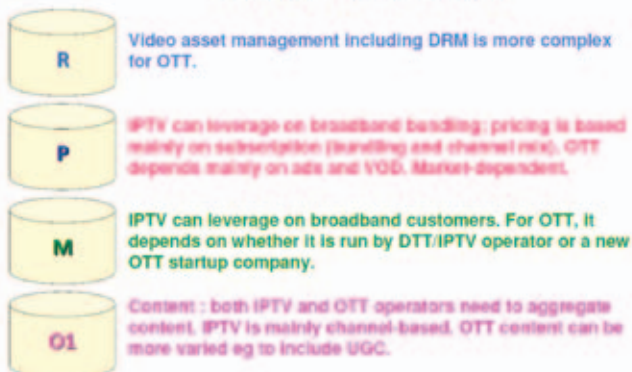


Figure 12: Case (b), IPTV vs. OTT

Case (b) : IPTV vs. OTT



Figure 13: Case (b), IPTV vs. OTT

For clarification, Internet-based TV could mean: (a) IPTV (with a telco box), or (b) OTT (with no telco box, ie bypassing the telcos' walled garden). Furthermore, OTT could be: (i) web-only (with no specific interface), (ii) with built-in hardware/ firmware interface, or (iii) with an external STB eg Apple TV. "Hybrid TV" refers to an integration of (ii), or (iii), with DTT, offering the consumers a seamless viewing experience (and, requiring only one integrated hand-held remote-control).

Positioning for Opportunities

Fig. 14–16 summarises a desirable three-step approach, for positioning for opportunities, ie firstly taking aim properly, secondly performing business analytics (including techno-economics) and thirdly deploying resources whilst future-proofing the capital investments.

Positioning for Revenue Opportunities

Planning 1 : Taking Aim

- To clearly define strategic direction e.g. defend/ enhance established brand (e.g. PSB: trusted news).
- To detect viewers' wants, enrich their experience and engage them anytime, anywhere.
- To take a broader view.
- To consider global economics and competitors (now and future). GDP/capita. Market focus.
- Catch technologies only when necessary, but avoid being too slow and becoming irrelevant in future.



Figure 14: Taking Aim

Positioning for Revenue Opportunities

Planning 2 : Business Analytics

- Analyze core competencies, ROI, TCO, RPMO (consumer habits and changing behaviour), competition, business risks/ externalities.
- Infrastructural and consumer device costs.
- Sources of revenue : digital ads e.g. pre-rolls/ banners/ targeted advertising, subscription, pay-per-view, sponsorship. Business planning.
- Growth (market penetration) & ARPU maximization.
- Content aggregation/ production and costs.



Figure 15: Performing Business Analytics

Positioning for Revenue Opportunities

Planning 3 : Deploying resources + future-proofing your capital investments

- Trials at affordable costs.
- Phasing capital investments, to slow functional obsolescence.
- Flexible/ scalable systems. Cloud services.
- Cost (capex & opex) minimization.
- Generate new content, tapeless workflow.
- Green broadcasting, energy-efficient systems.
- Cater for future growth and technological changes.



Fig. 16: Deploying Resources + Future-proofing capital Investments

Summary

In the rapidly changing multi-media environment, traditional broadcasters must learn to be more adaptive and to embrace the various new digital media technologies. A major technological adoption has to be assessed beforehand, this requiring setting the appropriate direction of technological development, performing extensive business analyses and deploying resources in a careful manner, whilst future-

proofing the investments. Experimentation is inevitable but a well-planned implementation will minimise the potential risks.

The RPMO analytical model, together with an Excel calculator and examples of application, have been described, aimed

at providing the broadcasters with a tool in evaluating their chance of success in adopting an emerging new media technology.

author



John Yip
RTHK

John Yip, Chief Engineer of RTHK (till end Nov. 2012), has held various engineering and project management positions in Singapore, Australia and Hong Kong, ie Broadcast Engineer in Radio TV Singapore, TV Design Engineer in Aust., Communications Engineer in OTC(Aust.), now Telstra, Section Head, Systems Development, in National Acoustics Laboratory (Aust.), Assistant Director of Engineering in Special Broadcasting Service (Aust.), Assistant Federal Head of TV Engineering in ABC-TV (Aust.), Director of Engineering in NBC(Asia) and launched CNBC in Asia, Project Manager, Digital STAR-World, in STAR-TV, and Project Manager in TVB, for the mega TVB City (TKO) project. He has been the chairman of the Technical Committee of the DAB Consortium in Hong Kong. He is now Project Consultant, TVB.

He was a part-time lecturer in the Chinese University of Hong Kong, teaching M.Sc. classes in media technologies and economics. He was previously ABU coordinator in digital video compression and participated in the Apstar-2 international technology consortium.



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- Establishment of TV studio for IGNC, Edusat setup for Delhi Technical University and Sangeet Natak Academy.

- Manpower outsourcing for specialised service to Doordarshan and AIR News Unit Delhi, RNUs and EMMC.
- Establishment of Main Press Centre of Commonwealth Games 2010 for PIB.
- Designed and created broadcast compounds & facilities for Prasar Bharati, the host Broad-caster of Commonwealth Games 2010.
- Supply & installation of studios production equipment for Bangladesh TV for an amount of US \$ 2.1 Million.

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DIGITAL BROADCAST SYMPOSIUM 2013

“Next-Gen Media Space and the Connected World”

The 2013 ABU Digital Broadcast Symposium was held from 5-8 March 2013 at the Hotel Istana, Kuala Lumpur. The ninth instance of this annual event, organised by ABU Technology, carried the forward-looking theme, ‘Next-Gen Media Space and the Connected World’. The event comprised focused workshop sessions, an exhibition and a three day conference.

The symposium attracted over a thousand participants from 48 countries, representing all disciplines of the broadcasting industry, from regulators, manufacturers, policy makers, service operators and other industry players. With over 105 speakers from around the globe the conference and workshop sessions provided the latest information on broadcasting technology and its applications as well as updates on developments taking place within the industry.

The Opening and Ministerial Session

In his address, the Deputy Minister of Information, Communications and Culture of Malaysia, Datuk Joseph Salang, said the Malaysian Government has already made the decision that the infrastructure for Digital Terrestrial Television roll out will be implemented by a private sector entity which will operate as a single common infrastructure provider to provide access to the broadcasters on the digital TV platform. Malaysia has also decided to adopt the second-generation technology for Digital Video Broadcasting, or DVB-T2, as the mandatory standard for Digital Terrestrial Television services for the country. He noted that the ABU’s Digital Broadcasting Symposium provides a platform for the broadcasters and other

industry players to discuss and exchange their views on new technologies and developments in the industry.

Addressing the opening session Dr Javad Mottaghi, Secretary-General, ABU remarked that the dynamic changes in technology have empowered new platforms that promote consumer participation and audience content creation, adding a new dimension to the media landscape. He commented that content delivery on all platforms has become the first imperative of the broadcasters who have to serve multiple screens.

The Industry Keynote was delivered by Ruxandra Obreja, representing the principal sponsor of the Symposium, the DRM Consortium. She cited that the radio sits at the heart of a connected new media space. Mobiles and radio go hand in hand, today with new and attractive features on digital radio devices and with the rapid growth in numbers of cars on the road, with an associated increase in radio listeners. What will now drive this industry is creative content to utilise the capabilities of the technology. Only good content will sell receivers and make digital radio a reality.



Smart Applications and New Content Distribution Networks

The session looked alternate content delivery platforms starting with a look at the NOTTV mobile service in Japan, which is a subscription-based, nation-wide Mobile Multimedia Broadcasting service for smart phones and tablet devices. It is based on the ISDB-Tmm system and offers live, original content such as sports, music, entertainment, and drama; providing 3 channels, including a 24 hours news channel with on-demand content.

Looking at the broadcaster’s role in the new media landscape it was highlighted that traditional broadcast still has a long



way to go. However, broadcasters need to provide their content on all three media delivery systems, namely the linear, non-linear on-demand platforms and the multimedia and social platforms to satisfy the audience needs and to keep up with the competition. Value-added and hybrid services will continue to grow and play a very important role in delivery as well as the new business models of the future. Over-

Developing System Standards – New and Enhancements

The session looked at the various system standards and highlighted recent enhancements and developments taking place in the industry. UHDTV already made an impact during the Olympics with its large cinematic screens and much higher resolution of 4K & 8K compared to the 1080 lines of HDTV. However, the bitrate required for transmission is high and MPEG 4/H.264 is not efficient enough for the purpose. It was suggested that the answer could possibly found in the new High Efficiency Video Coding (HEVC) standard, which provides a compression efficiency 50% better than H.264. Technical work on better satellite transmission standards DVB-S2 evolution or DVB-S3 is already underway. As for terrestrial transmission, NHK has developed ISDB-Tn, comprising an FEC subsystem with BCH/LDPC codes, Ultra Multilevel OFDM up to 64K FFT, carrier modulation of 4096 QAM and MIMO with a single dual polarised antenna.

An effort to consolidate global TV standards has been made by the Future of Broadcast TV or FOBTv, which was established in 2011. The goals of FOBTv include having a single standard for UHDTV, an opportunity that should not to be missed considering that present HDTV standards do not conform to a single uniform transmission standard.



An update from China advised that the Digital Terrestrial Multimedia Broadcast, or DTMB, has been enhanced with 256 APSK and 32k FFT to support higher transmission bitrates. This second generation DTMB is compatible with existing DTMB receivers.

The session was chaired by Lieven Vermaele of EBU and the panellists were John Famin of ATEME, Philip Laven of EBU, Masayuki Takada of NHK STRL, Matthias Stoll of DRM, Lindsay Cornell of BBC, Toni Fielder of Fraunhofer IIS and Dr Li Lei of SARFT-China.

the-top content (OTT) means on-line delivery of video and audio via the Internet without the ISP/Telco being involved in the control or distribution of the content itself. Contrary to popular myth, Internet piracy can be controlled by putting in place measures that combat copyright infringements and other violations of intellectual property laws. Among these anti-piracy measures are legislation, enforcement, Conditional Access (CA) and Digital Rights Management (DRM). The session was summed up with a presentation on the role of broadcast management systems in enabling efficient content delivery to multiple devices, highlighting the increased operational efficiency, improved revenue management and opportunities provided by such a system.

The session was chaired by Philip Laven of DVB and the panellists were Kanako Takeguchi of NHK, Lieven Vermaele of EBU, Shin Tonooka of MMBI-Japan, Nonie Llanes of Conax and Stephen Kyefulumya of Pilat Media.

New Enhancements in Content Delivery – Towards Higher Capacity

The first presentation looked at the high-capacity, decentralised, purpose-built media transport network implemented by Kordia in New Zealand. A combination of Fibre, digital microwave and satellite links the network provides uncompressed HD and SD video, with multicast capability, transport of Ethernet services and other formats at very high quality. The network provides flexible distribution of signals throughout New Zealand with complete control, monitoring and management capability. Looking at higher

capacity UHDTV delivery over satellite it was stated that UHDTV requires 120Mbps delivery via satellite. While the 12GHz band requires a high efficiency modulation method or a wideband transponder, the 21 GHz band is wideband but suffers from rain attenuation, especially in this region. Also presented were results and parameters from a few recent trials.



Looking at new technologies in satellite broadcasting, the session highlighted current challenges, such as limited power and bandwidth of satellites, in-orbit satellites getting closer giving rise to more interference issues which are also a major hurdle in using smaller antennae as well as the need for higher capacity for applications like 3DTV and UHDTV. The results of trials were shared, with newer modulation schemes like 64APSK which can provide up to 209Mbps capacity. The presentation on Audio for HDTV looked at the importance of audio especially in high quality HD video, which in many instances is not given due attention. A few case studies were shared and lessons learnt from them.

On the DVB scene, DVB-T2 can be used for UHDTV transmissions and trials are planned or underway in Korea, USA and Spain. DVB-T2 Lite has been developed to allow simpler receiver implementations for lower capacity applications such as mobile broadcasting. This has a

maximum bitrate of 4Mb/s, lower time interleaver memory size and a reduction in permitted mode combinations.

The session was chaired by Richard Redmond of Harris and the panellists were Mark Johnston of Kordia, Dr Kazuyoshi Shogen of B-Sat, Abdul Rahman Khan of AsiaSat, Mathias Bendull of Dolby and Bernard Pichot of Enensys.

Creative Radio Content for Multiple Platforms

Broadcasters are already reaching listeners and driving behaviour on mobile phones using apps. The Internet however cannot perform in exactly the same way as radio broadcasting. The more listeners there are to an Internet radio service, the more the bandwidth required. In contrast a whole city can listen to a radio broadcast without incurring extra bandwidth. In spite of this fact, Internet and streaming are part of the future of radio. Another area where radio is getting more attention is that of social media circles, this again is a growing industry and provides a new avenue for a revenue stream.

DRM and DAB+ are capable of providing multimedia services and surround sound. Among the most important services are Dynamic Label – programme accompanying snippets; Journaline – a text based information service that triggers interactivity and geo-awareness; MOT Slideshow – programme accompanying images; EPG – Electronic Program Guide and TPEG-Traffic Information. 5.1 Audio Enhancement for Digital

Radio is available using MPEG Surround-sound technology. It uses very low bandwidth in the audio channel and is compatible with mono/stereo receivers.



The session was chaired by Steve Ahren of Ahern Media & Training and the panellists were Joan Warner of CRA and Alex Zink of Fraunhofer IIS.

Terrestrial Broadcasting for the Future – Digital Migration, Enhanced Platforms and Green Technology

Green technologies impact the environment, operating costs, and the bottom line. Total Cost of Ownership (TCO) is a good way to evaluate the impact of such technologies. In such evaluations one should consider the acquisition, maintenance, operating and training costs of all required systems in transmission facility including cooling and floor space. Transmitter Efficiency can be improved by using LDMOS power amplifier technology, advanced Real

The HDTV Paradigm: Is Your Market Ready?

Consumer demand is growing for live content and viewers want to get more involved. There is a need to have proper integration and response to audience feedback. Thus production needs are more complex with distribution conducted across multiple platforms. This requires an integrated collaborative system, which not only brings huge efficiencies but also powers multiplatform distribution, providing new revenue streams. Non-Linear production is a new way to produce live content that can be used for linear broadcast programmes as well as for direct publishing to the Web.

HDTV Deployment has to take into account several key considerations, namely business, technical and operational. The business considerations are the content mix, target audience and budget. HD and SD content have to co-exist and this situation calls for problems dealing with different quality and aspect ratios. Budget is another constraint as sources of funding are needed. Availability of budget can influence the choice of a major upgrade or a series of small changes. Looking at technical considerations, there are the choice of transmission format, codec selection of MPEG 2 or MPEG 4 and non-linear workflow. Operational considerations include workflow using baseband or IP,

choice of new building or side by side HD/SD operation and comprehensive training.

The presentation on emerging broadcasters focused on how smaller broadcasters can leapfrog into HD and how to capture the market. The key is to study the market and the requirements of the viewers. Most established and bigger broadcasters don't go down to the niche audiences for specific programming needs. These are areas that can be tapped into and also consideration of the new delivery platforms and opportunities in online delivery. With careful research you can capture a huge audience with very little cost.

The session was chaired by Dato' Haji Abu Bakar Ab Rahim of RTM and the panellists were Peter Bruce of Grass Valley, Chan Tuck Kay of Rohde & Schwarz, David Mitchinson of Appare TV, Ray Sanders of Gencom and Russell Isaac of Sports Media Services.



Keep the magic going, keep your business growing

What happens when content and audience connect is an everyday magic. More than 350 digital TV operators in over 85 countries rely on us to sustain that magic by protecting their content and revenue. Conax technology is proven, flexible and secure.

At Conax we work hard to innovate so that consumers can experience everyday magic on any device, at anytime, anywhere. So let the magic begin.

sustaining magic





Time Adaptive Correction (RTAC), advanced Crest Factor Reduction, variable speed cooling system and sharing liquid cooling across multiple transmitters. Liquid cooling system have higher initial purchase costs but requires less overall operating power and hence a less TCO.

Transmitter efficiency can be categorised into energy, bandwidth, space and operational aspects. Reducing the energy requirement during operation is the best approach to reduce the carbon footprint. Energy costs can be controlled by using modern & more efficient transmitter technologies such as Doherty Amplification & Crest Factor Reduction. Bandwidth and spectrum efficiency can be increased by utilising advanced technologies like DVB-T2 and more efficient compression coding technologies such as HEVC.

The presentation on Megasolar highlighted the implementation and operation of a mega solar power system to power one of the radio transmitting stations of NHK and how much saving in terms of costs it generates. A similar implementation and operational experience was shared by Bangladesh Betar, which has developed a hybrid power system combining solar, wind, diesel generator and a battery bank to power their FM station. Details of cost savings achieved with the new system were also shared.

The session also was presented with a Hybrid TV implementation in Germany based on the HbbTV platform. The hybrid platform provides a solution combining the OTT linear and non-linear content. The system is widely deployed and is growing fast. Another important area that was addressed in the session was the new mobile LTE systems interference on DTT signals. Highlighting the technicalities of both systems it was stated that the interference caused by the unwanted signals from mobile base stations and handsets in close proximity, having a combined effect of blocking or overloading the DTT receiver. The presentation shared simulations of some of the studies carried out in Germany stating that coexistence of LTE and DTT will become a norm in the near future and that this kind of interference cannot be easily detected.

Enhancements in Imaging and Content Creation

4K video is considered the next big thing which will hit the TV industry soon. 4K has twice the horizontal lines as those of current HDTV and is considered a version of UHD TV. Two types of 4K standards have been defined; one recommended for TV and the other for digital cinema applications. If considered in terms of picture elements this is a 20 times increase in resolution compared to SD, and 4 times compared to HD. XAVC is a new format developed by SONY for 4K production applications. The encoding system can downconvert the 4K video to HD and SD and some models can even perform simultaneous 4K and HD recording at acquisition. 4K imaging and production equipment is now available in the market.

Current RGB cameras have difficulty in obtaining the true colours sensed by the human eye. The RGB system currently in use was devised in the early 1930s. High-fidelity colour is achieved when colours of objects in the original scene are matched by those of the camera image. However, the spectral characteristics of RGB cameras cannot realise a wide colour gamut in practice, as part of the response has negative values. Hence a colour shift occurs and the colour gamut range is narrowed. The new XYZ colour matching function solves this problem by incorporating the negative response through a special transformation to represent the entire RGB colour

gamut. Applications of the XYZ system include UHD TV, digital archives, medical applications and colour inspection.

The presentation on UHD production discussed the world's first 4K terrestrial broadcast trial by KBS at the CES2013 Exhibition. The trial used 4K at 30p and the reaction from the viewers was very positive. The presentation described the setup used for capture and post production and highlighted some of the challenges faced in 4K transmission, such as the bandwidth limitations of systems available today. It looked at HEVC format as a more efficient compression solution, which was also employed in this trial. The session also witnessed a presentation on the workflow of the digital radio production facilities at KBS. The limitations of the current digital workflow for incorporating new media services and lack of support for multiple file formats was explained. The proposed new system will overcome current shortcomings while providing easy integration with other IT systems and easy expansion possibilities, which will support the multimedia services scheduled for launch in 2014.

The Chairperson was Chris Grey, Sony and the panellists included Norihiko Noguchi, Sony; Tomohiro Kamiyanagi, Ikegami; Yong-Seoh Nam, Korea and Kim Jin Sun, KBS.



The Connected World

The session looked at OTT and the various implementation aspects of Hybrid TV including piracy and standardisation. OTT technologies and economies of scale are improving relative to broadcast, but incremental cost per household and per service hour overwhelmingly favour broadcast, as universal high bandwidth Internet delivery is beyond the capacity of many current infrastructures.

Hybrid TV is the convergence of broadcasting and communication and represents a change in media consumption style. The basic concept of Hybrid TV is where the Digital TV network delivers the content whilst the broadband network acts mainly as an interactive channel. Among the standards discussed were the OHTV (Open Hybrid TV) in Korea and HbbTV (Hybrid broadcast broadband TV) in Europe.



Hybrid broadcast broadband TV (HbbTV) is the Pan-European standard for Connected TV services such as Catch-up & VOD, Super Teletext, EPG, News, quizzes, T-shopping, T-government. It is a broadcasters & manufacturers initiative and a move to Pay TV. HbbTV uses a business neutral technology platform that is open and available with set-top boxes & connected TV sets from major manufacturers.

The session was chaired by Masakazu Iwaki of NHK STRL and the panellists were Laurence Peak of Verimatrix, Jean-Christophe Jubin of HTTV, Dong Jun Lee of KBS and Laurent Le Morvan of STMicroelectronics.

Industry Looks to Next-Gen Services

The Industry Debate panel stressed unequivocally that the industry, particularly the broadcasters, need to go for the next generation media services and also become stakeholders in the connected media sector. The panel comprised eminent experts from all sections of the broadcasting industry.



Inviting views from the panel, the question on the table was to identify next-gen services and how the broadcasters should prioritise and prepare to take up these services.

Andrew Yeo, Publisher and Director, Asia-Pacific Broadcasting, said that audiences have new expectations and the broadcasters should meet those expectations using the next-gen services. The broadcasters should engage the audiences on as many platforms as possible.

Russell Isaac, Managing Director, Sports Media Services, laid emphasis on getting the eyeballs and targeting the audiences with the new services. He said that broadcasters need to use audience catalysts particularly on the social media platforms.

Asaad Bagharib, Senior Vice President, MediaCorp Technologies, wants to make the next-gen services affordable, widely accessible and available by using all the platforms by using OTT and Mobile. He said the industry needs to be future proof, deliver services everywhere and reorganise their businesses to meet these challenges.

Dr Kazuyoshi Shogen, Senior Associate Director, B-SAT, identified Ultra HDTV and Hybrid-cast as the new services that need to be popularised. He said that services for people needing assistance and the Emergency Warning Broadcasting Service were important from the public point of view.

Chris Grey, General Manager, Sony, Hong Kong, pointed out that a wide variety of equipment is available to take up the

next-gen services by broadcasters. This could be done either at the end of life cycle of the facilities or with a jumpstart. The real answer is in the return on the investment and that needs to be studied.

Nils Ahrens, Regional Sales Manager, Broadcast, Rohde & Schwarz, said a priority is to create a brand and a target group. To put out the next-gen services a new infrastructure would have to be added to the current broadcasting facilities.

Jorn Jensen, President, WorldDMB said that digital radio offers many next-gen services and audience attention is to be focused around those. Radio broadcasters need to access audiences on all platforms including radio on mobile phones.

Ghulam Mujaddid – PBC, said that broadcasters have to be stakeholders in the new media and for that purpose necessary regulations need to be set up. He pointed out that new services could also be put out on the Internet and using smart apps and social media platforms. He said that his organisation has amply demonstrated this.

The panel then debated a second question regarding the connected world and several related issues, including impact on traditional broadcast content consumption.

Among the messages that emerged, were that the connected world was both a threat and an opportunity; though the content fascinated viewers, the TV device need to be protected against malware; and that the connected TV will facilitate audiences in choosing good content. It also emerged that currently digital radio is quite well connected and caters to the need of the mobile society both via radio sets and mobile phones.

There were several interventions from the floor with some of the ABU members indicating their interest in 3DTV broadcasting, IPTV and 4K-HDTV. There was a comment that the transition from SD to HD in the Asia-Pacific was pretty slow and that the broadcasters should be user-centric in putting out new services.

Wrapping up the debate, Sharad Sadhu, who moderated the session, said that industry leaders were decidedly in favour of the industry putting out next-gen services and going ahead to play their role in the connected media environment.



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- New revenue opportunities
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- Secure valuable spectrum for radio broadcasters
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How WorldDMB supports you

WorldDMB offers tailored solutions on the switch from analogue to digital radio covering:-

- regulation
- technical trials
- marketing
- licensing
- network build out
- production of new digital radio content

Solutions are delivered through industry events and tailored workshops and via the WorldDMB website and member's information portal.

DAB+ is: green • spectrum efficient • cost effective

About WorldDMB

WorldDMB is the global industry forum for digital radio, facilitating the implementation of digital broadcast radio based on DAB+ and DMB. Its global membership includes stakeholders from across the industry and from around the world and includes public and commercial broadcasters, network providers, car, receiver, chip and equipment manufacturers.

www.worlddab.org

The final presentation of the session looked at the use of DVB-T2 gateways to improve protection and reliability of the DVB-T2 signal in a distribution network. Loss of signal to the modulators and transmitters will cause loss of signal to consumers and increased downtime means loss of customers. The DVB-T2 Gateway plays a very important and crucial role, especially with SFN distribution where a single transmitter failing could impact the network. The T2 gateway provides functionality to maintain up-time with reliable security and monitoring of the DVB-T2 networks.

The session was chaired by Alan Turner of Kordia and the panellists were Richard Redmond of Harris, Masaki Ishihara of NHK, Nils Ahren of Rohde & Schwarz, Md Muzibur Rahman of Bangladesh Betar, Daniel Kleinbauer of Media Broadcast, Milos Pavlovic of LS Telcom and Espen Myhre of Nevion.

Media Management – Workflow Technologies for Improving Efficiency



A new future-proof media solution for archiving can be accomplished with optical disc cartridges. Current offline shelf archive systems with professional discs do not have enough capacity. An online robotic archive library with data tape (LTO) needs frequent copy migration. Optical disc cartridge on the other hand provides both offline and online solutions and has several benefits including generational compatibility, more tolerance to temperature changes and random access, leading to it being more video friendly with the ability to preview the content. The technology is also more energy efficient compared to current tape and disk technologies, providing a lower Total Cost of Ownership.

On media cloud building practicalities it was said that Content Storage Management (CSM) solutions have been available for more than a decade. Current cloud solutions introduce new challenges as they are not primarily geared at managing audiovisual content. There is increasing demand in particular for Disaster Recovery and requirements such as universal file formats, media content awareness, security, controlled access and distribution mechanisms. A media cloud should address these issues and should support unique features related audiovisual content.

The presentation on MAM systems and improving efficiency noted that the main advantage of such a centralised media management systems is to provide connectivity and sharing possibility to everyone involved. The system should also support multiple functionality from ingest all the way to broadcast and achieve. It should be flexible enough to support multiple media types and formats.

The traditional approach to Quality Control of file-based video was visual inspection, which was effective when reviewing relatively small volumes of video content and subject to human error. Automatic Quality Control not only saves time, resources and provides consistent results but also detects “inside” the file, such as syntax errors, encoding parameters, and structural metadata.

The session was chaired by Asaad Sameer Bagharib of MediaCorp and the panellists were Noboru Yanagita of Sony, Marc Wharmby of Front Porch Digital, Yoann Poizeau of Dalet, Roger Heath of Evertz and Andrew Scott of Tektronix.

Multimedia Business Solutions in Emerging Markets

The final session looked at business models and solutions. The first one, sharing lessons learnt from various DRM+ trials in the region, mentioned that several trials have been completed in countries including Korea, India, Brazil, Sri Lanka and others, all proving the quality and versatility of the system. The largest DRM initiative is currently in India where 72 MF transmitters have been replaced with DRM30 Transmitters. When completed, 70% of the country will be covered by DRM30. The world's first 1MW HF Transmitter is currently in operation in India, catering for international broadcasting.

Convergence of technologies is leading to a dramatic change in climate within the broadcast landscape. Broadcasters can navigate the changes impacting the industry by charting consumers' new viewing habits & develop ways to engage them. The consumer wants the content to follow him everywhere on any of his mobile devices. Broadcasters must engage the viewers by citizen journalism, blogs and User Generated Content (UGC). It is a meaningful way of winning hearts and loyalty to the channel.

The session also shared experiences in implementation of NOTTV, a subscription based mobile multimedia broadcasting system in Japan based on the ISDB-Tmm system. The presentation also described the launch and implementation of a successful DTT system. It looked at the elements that need to be considered in planning, implementation and roll-out of such a DTT network. Now with the launch of LTE services one needs to be very careful with the interference these may cause to broadcast signals, another aspect that needs to be considered when planning for services.

The session was chaired by Vanessa Ching of Snell and the panellists were John Abdnour of Nautel, Andrew Yeo of Asia Pacific Broadcasting, Shin Tonooka of mmmbi-Japan and Tatjana Medic of Funke Antennen.



Seminar on Copyright Issues

There is a whole new paradigm on the horizon that reflects the changing dynamics of the media landscape in this digital age. The Legal Department of the ABU organised a half day seminar entitled, "Content and Copyright Related Issues", to address the many concerns and to prepare broadcasters to be able to take progressive action in curbing the challenges arising out of piracy and rights infringement issues when moving on to the new digital media delivery and distribution platforms. The sessions were focused on giving an overview of the challenges faced in the digital age, to understand how we can curb infringement and to discuss the necessary steps that broadcasters have to take towards a piracy free industry.



Ms Zuraidah Mohd Yatim, of Media Prima elaborated on the challenges that copyright practitioners are facing in the digital era and highlighted the need for awareness and education on piracy problems, self-regulated approaches by broadcasters, implementation of IP policy within organisations, extending licensing schemes, and regulating orphan works as a way forward. She stated that, with the multiple platforms available for content, the rights owners, rights holders and broadcasters could maximize their business and income and therefore it was important that broadcasters adapt to the changes and work towards protecting their content.

Datuk Sudra Rajoo, Director of Kuala Lumpur Regional Centre for

Arbitration (KLIRCA), addressed the advantages of alternate dispute resolution, especially in today's growing broadcasting industry where, "More cross border relations are forged, for example through multi-national distributorship contracts, copyright and intellectual property agreements". Datuk elaborated the different mechanisms available to resolve disputes without resorting to the courts, including mediation, conciliation, expert determination, adjudication and arbitration.

Mr Sharad Sadhu, Director ABU technology, spoke about the multiple services offered by broadcasters today. He elaborated on the hybrid broadcast platforms and identified the piracy problems, challenges such as content domination, content piracy, depiction of ads, undesirable material and responsibility. He also explained the guidelines for hybrid TV and questioned what the policy makers and legal professionals sought from technical departments to support the common fight against piracy.

Mr Stephen Lee, Sales Executive, Conax, informed the members of the latest technology that is available and provided by the company to curb piracy. He stated that they have successfully secured 350+ DTV operations in 80 countries elaborating in detail the advantages and techniques of subscription, pairing, pay-per-view, on demand, messaging, fingerprinting, DRM Control, Centralised CAS and redundancy.

In conclusion the Legal department of ABU briefly explained the history leading up to the Broadcasters Treaty, the importance of broadcasting laws being updated and the need for members to negotiate with their respective national delegations to voice their support for the Treaty at the WIPO SCCR Meetings.

IPPTAR-ABU Workshop on HDTV Studio Operations

The workshop, jointly organised by the Tun Abdul Razak Broadcast & Information Institute (IPPTAR) and the ABU Technology covered both the technical and production aspects of HDTV Studio Operations. The differences and the similarities between HD Camera signal processing system and SD system were also explained.

In the morning session Aaron Hee and Norihiko Noguchi from Sony made presentations on the history of development HD Camera systems and explained the important aspects of moving from SD to HD. John Anthony, Broadcasting Trainer highlighted fundamentals, such as HDTV format, compression, MPEG and aspect ratio. Andrew Scott from Tektronix explained measurements for HDTV production. V. Jeewa, Deputy Director of IPPTAR made a presentation on HDTV camera signal processing, shading and gamma corrections.

In the afternoon session, Ms Beatriz Alonso Martinez from Grass Valley talked about SD to HD File-based Workflows and introduced new file-based systems. Toni Fiedler of Fraunhofer explained multichannel audio for HDTV and clarified some of

the misunderstandings about multichannel audio. He also stressed the usage of the HE-AAC format in HDTV. Zhigang Shi from RTPRC-China shared his experiences of HD shooting during the Olympic Games in China and outlined the unique techniques of HD live production. Russell Isaac of Sports Media Services talked about the realities of HD OB and shared some videos on the tricks and important points when shooting live HD.

The workshop, attended by 40 local and overseas participants, was a good opportunity to share the experiences of both the technical and production side of High Definition.



ITU-ABU-AIBD Workshop on Digital Broadcasting Implementation

The two-day workshop on “Digital Broadcasting Implementation” jointly organised by the ITU, ABU and AIBD, provided expert knowledge and information on the road to digitalisation, focusing on the main issues like frequency planning, spectrum management, digital broadcast technologies and alternative delivery methods as well as sharing some of the case studies and experiences of digital migration and efforts from within the region.

The Workshop

The workshop began with a brief introduction to the digital migration process, highlighting the important role played by the ITU through its digital migration guidelines and projects already completed in many countries in the region. The brief presentation explained the digital migration process and how important each step is towards achieving the required goal, stressing on the importance of having all stakeholders on-board and working closely together to achieve the benefits of moving to digital.



The keynote address at the workshop was delivered by Dato' Mohd Ali Hanafiah Mohd Yunus, the Chief Officer of Industry Development and Resource Planning at MCMC, the Malaysian regulatory body. He highlighted that Malaysia has taken the necessary steps and is currently on the verge of selecting the network operator for digital implementation.

Following presentations of case studies from different countries discussions took place on the experience and outcomes of digital implementation in the countries like Sri Lanka, Hong

Kong, Philippines, Laos, Vietnam, Myanmar, Malaysia and Indonesia. Also major challenges in digital broadcasting like licensing models, frequency planning, sharing of common infrastructure, selection of standards, transmission network design and availability of receiver sets were debated.

Relevant terrestrial broadcast networks and frequency ranges in Europe with the current status and considerations on terrestrial platforms with case studies and future plans were discussed. A specific session was presented on digital radio and TV standards and the developments taking place in that arena, looking at the different digital TV and radio broadcast technologies, such as DVB-T2, ISDB-T, DTMB, DAB+ and DRM+, and the countries adopting those technologies.

A look at life after ASO was presented by Japan, discussing how the Japanese planned for the use of spectrum after the ASO and what frequencies were allocated to what services. Japan, using ISDB technology, has been broadcasting to both TV and mobile handsets. One of the vacated frequency bands has been allocated to mobile multimedia broadcasting, which was launched last year and is very popular among users.

Coverage planning remains an important issue for broadcasters. The modern tools used for the planning of SFN and MFN implementation were also presented. The analysis of population and coverage was also included in the discussions, which looked at few case studies from different countries. The final session looked at the setting up of digital broadcasting trials and how to go about them. It highlighted why digital trials are useful to confirm the theoretical studies to some extent, although sometimes not necessary, as current technology and tools are able to simulate practical scenarios very accurately, it helps in many cases to work specific details. The session also shared experiences of digital trials carried out recently in the region and what the findings from these trials represented.

Over 20 experts addressed the sessions and the workshop was attended by over 180 participants from over 30 countries, representing regulators, broadcasters, telecom operators, service providers and others involved within the industry including.

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Saving Lives

ABU-UNESCAP Disaster Risk Reduction Project

The ABU/UNESCAP Disaster Risk Reduction Broadcast Media Initiative kicked-off with a two-day workshop during the ABU Digital Broadcasting Symposium. Broadcast media and government officials from seven of the regional initiative's ten target countries participated in the workshop and project induction meeting on 8 and 9 March at the DBS2013.

The primary objectives of the initiative are to strengthen the ties and improve the technical linkages between the broadcast



media and early warning authorities in order to be able to transmit warning alerts through the broadcast media in a more timely, efficient, and accurate manner. The first day saw presentations by the Japan Meteorological Agency, the Maldives National Disaster Management Centre, the Malaysian Meteorological Office and the Disaster Risk Reduction Network of the Philippines. Topical presentations included Emergency Warning and DRR for the disabled and elderly, messaging to the public prior and during an emergency and during response, relief, and recovery, and the Radio-in-a-Box technology. The second day's discussion focused on the Standard Operating Procedures (SOP) between broadcast media and government authorities authorised to issue emergency alerts, and the development of country specific action plans for the Initiative.

The current project is continuation of the work that the ABU started after the 2004 Indian Ocean tsunami. Since then the ABU has emerged as a regional leader in early warnings and disaster preparedness through the media. Working with more than 50 of its members, the Union is spearheading a wide ranging campaign not only to use media for population disaster preparedness but also to make national broadcasters in its 61 member countries an integral part of their national disaster management systems and ultimately save lives.

Exhibition

The ABU DBS 2013 recorded its highest number of exhibitors with Grass Valley, WorldDMB, Harris, Playbox Technology, Rohde & Schwarz, Conax, Nevion, Ideal, Measat, Miranda, Tektronix, Asia-Pacific Broadcasting, Net Insight, Nautel, Front Porch Digital, Kathrein, LS telcom, Stagetec, Enensys, Radio Television Malaysia, Radio Frequency Systems, Exir Broadcasting, Lemo, Gencom, MediaCorp, SONY, Mahajak, STMicroelectronics, Asia Media and NERA.

Coming on board for the first time were DB Broadcast, Light Way Electronics, SM CNS, Appeal TV, Mobile Viewpoint, ELTI, EMS Test Measurement, LYNX Technik AG, VSN and Orban.

The exhibition, which spread over three halls, displayed the advances in technology and solutions from leading manufacturers, system integrators and service providers. The exhibition was attended by over 1000 professionals representing broadcasters, regulators, Telcos, media faculty students and other industry players. This was a great opportunity for the visitors and manufacturers to meet, share their experiences and interact each other.

The key products on display were broadcast transmitters, cable and antenna systems, multimedia software solutions,



measuring and monitoring devices, file processing equipment, digital radio devices, network and frequency planning solutions, advanced cameras, latest audio systems, workflow solutions, multimedia content production, advanced DVB-T2 systems and OTT distribution over internet. Also, well-known media providers were present in the exhibition and provided a different perspective to the event.

DBS Workshops

Building a Reliable DVB-T2 Network – Theory and Experience

This workshop, presented by Nevion, discussed issues related to implementation of DVB-T2 networks. It explained the process of spectrum and coverage planning for DVB-T2 implementations and shared experiences from planning to practical implementation. It outlined that it is essential to identify the state of current infrastructure; costs involved in the setup of the new systems and the importance of using qualified suppliers and system providers. Deploying digital is a complicated process and needs the cooperation of all stakeholders involved, from regulators, infrastructure providers, operators, broadcasters to receiver manufacturers. The session also looked at the advanced features of DVB-T2, which provide whole lot flexibility when it comes to implementing services. Features like SFN, use of multiple PLP and rotated constellation provide added robustness to the signal. The workshop looked at the importance of using a T2 Gateway in an SFN deployment which provides easy insertion of regional content, generates the necessary timing information and other useful features. The session was presented by Alan Turner of Kordia, Ray Sanders of Gencom and Espen Myhre of Nevion.



Digital TV Fundamentals: MPEG, QAM & C-OFDM



The workshop by Rohde&Schwarz explained the fundamentals of Digital TV starting with the different stages in the transmission chain and discussing details of MPEG2 transport streams multiplex, compression standards and its effect on picture quality, video data rates, channel coding, modulation methods and FEC subsystems.

This was followed by discussion of the need for Digital TV trials to compare and demonstrate various standards, check coverage area, compare different modes and fine tune parameters to meet the requirements. Sharing some of the experiences on trials in different countries it also highlighted the advantages of SFN, single and multi PLP networks and advantage of digital networks over analogue in terms of interference. The session was presented by Hock Leong Tan of Rohde&Schwarz.

Maximizing FM Coverage – Advances in Technology and SFN Network Design

Richard Redmond of Harris looked at the limitations of FM coverage and advanced SFN networks as a solution. He introduced the MaxxCasting system that combines radio and cellular technology to enable FM broadcasters using boosters to enhance their signals by reducing multipath interference between the main and booster



transmissions through the use of a cluster of boosters. With the use of Sychrocast frequency and modulation are synchronised with the primary transmitter providing clean coverage in prime areas and moving remaining interference to the unpopulated areas and equalizing the delay on STL paths using GPS satellites. Sharing his experience Mr Redmond stated that new advancements in network design and research have provided such benefits and Harris is able to provide a complete and integrated solution with its advanced transmitter designs and planning tools.

Effective Workflow Innovations – From Acquisition to Archive



Nori Noguchi and Noboru Yanagita of Sony made presentations on effective workflows, XDCAM technologies and archive solutions. They explained the XDCAM technology fundamentals, codecs used, cost-effectiveness and other advantages. They also highlighted the long recording time with the help of MPEG2 Long GOP and the ultra-high reading speed for ingesting. With media available as disc and memory card flexibility is provided for different applications. Looking at the XDCAM workflow and archiving applications, it was stated that XDCAM provides a complete workflow from acquisition to archive. Also presented were some unique ENG features of XDCAM camcorders, use of Wi-Fi remote control, field viewers, professional disc decks and the use of XDCAM station for archiving of tape onto professional XDCAM disc media.

The World of DTT: Developments, Technology and the Future of Terrestrial Broadcasting

The workshop looked at need for digital terrestrial broadcasting highlighting that broadband delivery is really not a substitute for that. It covered, the continuous need for broadcasting and spectrum in the future and the challenges between broadband and broadcast. Aiming to advance and safeguard the development of digital terrestrial television in Europe and around the world and bringing all stakeholders together involved in the implementation of DTT platforms. DigiTAG, it was said, raises awareness about the importance of terrestrial broadcasting for the future. The session also looked at DTT roll-out and migration to T2, comparing the features and benefits of DVB, ATSC, ISDB and DTMB technologies, pointing to the strong growth of terrestrial delivery compare to satellite and cable broadcasting in Europe and worldwide. It is now sensible to “leapfrog” from analogue to DVB-T2 as has been the case with many countries in Asia and Africa. Also highlighted were some case studies and best practices for roll-out of end-to-end services. The workshop also looked at the importance of receiver conformance testing to safeguard consumers and to providing them with receivers that provide all the benefits of the service being offered.



Bringing Stereo Broadcast Productions into the Multichannel Realm

This workshop, presented by Dolby, explained the importance of providing a high definition digital surround sound experience to the viewers and the opportunities to utilise the multichannel capabilities of latest audio technologies. It focused on the fundamentals of Dolby technologies conveyance of mono through 5.1 channel Surround Sound through content creation, distribution, transmission and presentation in the consumer's home. The system comprises bitrate reduction codecs and matrix encoding, metadata to provide a controllable, predictable and enjoyable listening experience in a variety of listening and monitoring environments, loudness measurement and tools for proper use of key metadata parameters. The session also included a demonstration of tools and techniques and their application in providing a unique experience in different environments.



DAB+ Killer Apps with Energy Saving



DAB+ can broadcast across platforms, including to mobile devices. It is a powerful spectrum efficient technology where broadcasters can keep analogue spectrum. DAB+ transmitters support green operation and the energy savings that can be achieved are comparable to operating 28 traditional analogue FM transmitters. The DAB core standard is now free from royalties as patents have now expired. The DAB family of technologies greatly enhance experience through many unique features. Like DAB+ services you can run slide shows, EPGs, categorisation and some support short videos. The session also looked at the take up of DAB+ around the world. It has now been adopted by over 40 countries, with receivers available in a wide variety at different price ranges to suite the desired usage. There are a lot of apps available for mobile devices with very exciting and unique feature for receiving and enhancing the experience of DAB+, some of these were also displayed at the session. The workshop was presented by Jørn Jensen of WorldDMB, Joan Warner of CRA, Lindsay Cornell of BBC, Richard Redmond of Harris, Kathryn Brown and Les Sabel of CRA.

DVB-T2 Implementation – Optimising Satellite Capacity for Regional and DTH Distribution

Bernard Pichot and Colin Prior of Enensys explained their solutions for distribution of regional content over DVB-T2 and satellite DTH, through DVB-S/S2, combined networks. In the case of DTH architecture, the A/V content from the DVB-T2 service are multiplexed into a Multiple Program Transport Stream (MPTS) which is broadcast over satellite networks. The end user DTH receivers are able to render an A/V service from the received MPTS. For DVB-T2 distribution architecture in a SFN, the A/V content are multiplexed into a MPTS which is encapsulated into T2-MI protocol (DVB-T2 distribution protocol) which is then broadcast over satellite networks. The transmitter sites receive the T2-MI stream and broadcast it on the DVB-T2 network. The end user DTH

receivers are not able to read the T2-MI stream, however, this problem can be solved with a DVB-T2 local adapter, 'T2Edge' at transmitter sites. This method optimises the satellite, there being no duplication of content. It is DTH compliant, preserve SFN parameters and is single and multiple PLP compliant.

DVB-T2 Implementation



Philip Laven of DVB, Shimizu Kazuhiro of Sony, Alex Ng from Harris and Colin Prior of Enensys made presentations on DVB-T2 Implementation issues. The new profiles of DVB-T and DVB-T2 Lite were introduced targeting mobile broadcasting with increased flexibility and the simultaneous use of robust FFT size as T2-base utilising new robust low code rates and low power consumption. The new DVB-NGH (Next Generation Handheld) was described as having key techniques such as Time Frequency Slicing (TFS), MIMO, non-uniform constellations, rotated constellations (2-D and 4-D) and improved LDPC codes. The maximum data rate for DVB-NGH is 12Mbit/s. The session also discussed DVB-T2 transmitter requirements, available transmitter technologies and implementation issues. The workshop also included a demonstration of DVB-T2.

Quality Assurance and Monitoring in Broadcast Chain



Tektronix explained the aspects of quality assurance in a broadcast chain. The move to file-based systems has its benefits and now it is possible to monitor the data streams to maintain and ensure the required quality is maintained. During ingest and production, the technical parameters are examined include video levels, gamut, black/frozen frames and audio levels, QA is very important as the broadcaster should comply with regulations laid down by the individual regulators regarding subtitling and closed captioning etc. Also not maintaining required quality could result in loss of revenue and credibility from advertisers and general audience. The session also ran hands-on demo of the monitoring and measurement equipment, showcasing how each parameter is controlled and what results are reported from the device. The session was presented by C B Law and Andrew Scott of Tektronix.

Some Alternatives for TV Production in the Challenging Environment

Hyung Jun Kim of KBS presented some alternatives for TV production. The broadcast production environment has many challenges including weakening



distribution power, shrinking revenue and technology and trends changing too fast. The broadcast can take countermeasures by tapping new and niche audiences through new channels like YouTube, on-demand content and other alternate delivery platforms. Through the use of these channels a new competitive financial strategy can be designed such as expanding content to multiple platforms, including mobile and even collaboration with cinemas and 3D production.

Best practices to select and Implement a MAM System

Yoann Poizeau from Dalet shared his experience in implementing a Media Asset Management System and selecting one that is appropriate for your requirements. Providing a step-by-step guideline he stated that the most important reason for implementing a MAM system is to increase productivity and efficiency within the workflow. This is achieved by sharing content and gathering valuable metadata about each clip you have and then integrating all into one system. The best way forward is to use open platform and IT standards, also one that provides scalability and high availability, facilitate change management and one that can evolve with the client. Another important feature that is now required is generating content for multiple platforms.



Media Production Hub: Setting-up an Open Infrastructure, and DVB-T2 – from Studio to Transmitters



Walter Tan of Rohde&Schwarz compared the open architecture of the media production hub with proprietary architecture. He described how a proprietary or dedicated solution is usually deployed first with innovation focused on one specific challenge such as video servers or replacing a tradition VTR operation. Once deployed the broadcaster is locked to the supplier and the required flexibility and scalability is not achieved. Open solutions are deployed once the technology becomes more mature and offers higher latest technology and efficient workflow. These are more resource or service centric than product centric and are based on wide adopted industry standards. The session was also presented with the R&S's fully integrated and highly compact DVB head-end highlighting its features, functionality and implementation examples.

What Does ITU Do?

Istvan Bozsoki of the International Telecommunication Union explained that the ITU plays a very important role in the broadcasting world especially during this period of analogue to digital transition. The ABU works closely with the ITU on spectrum issues and other matters pertaining to digital migration. Spectrum issues are debated



within the ABU before being presented at the World Radio Conference and this allows the views of all members to be taken into account and considered. The workshop examined the organisation and workflow of the different sectors of the ITU and its various study groups. It also highlighted the areas where ABU work very closely with the ITU as one of its sector members.

Elements of Technology to Maximise Throughput

This workshop, presented by Newtec, focused mainly on DVB-S2 extensions and related efficiency gains. Among the parameters that were modified include lower roll off factors, higher modulation and FEC granularity, and advanced pre-distortion to name a few. It was stated that, through the use of DVB-S2 extension and the new HEVC compression, UHDTV transmission using a single transponder has now become a practical proposition. Also shared were the results of an industry survey that was carried out related to the new standard. Some suggestions were also provided on ways to migrate to the new system.



DVB-T2 Network Deployment & New Business Models



Thomson Broadcast presented this workshop on DVB-T2 Network deployment. DVB-T2 provides improved performance compared to DVB-T by various techniques including higher modulation order up to 256QAM and a more robust FEC subsystem of BCH/ LDPC coding LDPC that enables it to perform close to theoretical Shannon limit operation. Rotated constellation improves robustness for portable and indoor reception. The higher guard interval allows a larger SFN cell size. Multiple PLP operation is a technique that broadcasters should utilise and future equipment purchases must take into account. Insights were also provided into some case studies conducted in France.

Webinar Session: Elements of Modern Frequency and Network Planning

This special Webinar session was presented by Markus Morgen of LS Telcom from Germany. He shared his experiences on frequency and network planning and exemplary planning procedure for DVB-T2. He introduced the Geographic Information System (GIS) for the Single Frequency Network planning and coordination of terrestrial broadcasting services. He also highlighted systems to preserve the already existing services. It was stated that one of the most important this is to finalise your requirements so that the tools can be setup to provide you with the results that address your requirements.





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Facilitating Development of the Industry

The broadcasting industry is changing very fast, regarding the services it provides and the type of technology it employs. Infusion of digital technology in the broadcasting industry has accelerated this change and has changed the entire media landscape.

The initial digital technology developments were observed by the ABU Technology Department (TD) in early 1990s. Since then conscious efforts have been made to keep ABU members and industry partners informed about technology developments, initiating several measures to study and evaluate the changes in technology.

Towards this end, the ABU Digital Radio Forum (DRF) was set up by the Technical Committee (TC) in 1996. The same year, the Committee set up the ABU High Frequency Coordination process (ABU-HFC). This spurred a global movement and helped in stabilising the channel frequencies used for shortwave broadcasting and improving shortwave radio reception.

Along the way, the ABU Developing Broadcasters Forum (DBF) was set up to provide a platform for such ABU members to articulate their views and their challenges.

When the IT technology and ICTs emerged, the ABU ICT Forum was set up in 2003 to help ABU members understand IT Technologies and integrate those with their mainstream technologies.

With the advent of HDTV, the ABU HDTV Advisory Group was set up to study and focus on the entire gamut of issues pertaining to the introduction of HDTV, from technologies to audiences and HDTV sets. As the introduction of HDTV became more common, this group was converted into a production-oriented group looking into the production of HDTV content.

To help the members in resolving the issues pertaining to implementation of digital and compression technologies, we set up an Asia-Pacific Broadcasters-Industry Forum so that the broadcasters could directly liaise with the industry partners.

More recently, to kick start formation of an outline metadata schema for international programme exchange in the ABU region, a Metadata Task Group was set up, as was a Pacific Media Partnership, an on-line network to facilitate communication among our members and other broadcasters in the Pacific.

The TC has always encouraged innovation and development among the staff of its members and to recognize this, the Committee set up four excellence awards over the years. The latest to be set up is the ABU Developing Broadcasters Excellence Award.

From Sharad, Nadeem, Bahadir, Kyaw Zaw, Nam, Geraldine, Hamidah and Ramlah

Additional Full Members

ADMINISTRATION COMPANY "KAZMEDIA ORTALYGY" LLP, REPUBLIC OF KAZAKHSTAN

"Administration Company "Kazmedia Ortalygy" is located in the Sayarka District of the Republic of Kazakhstan and was established on 29 May 2012.

RIMAKMUR SDN BHD, MALAYSIA

Rimakmur FM Sdn Bhd is a private limited liability company incorporated in Kuala Lumpur, Malaysia on 21 February 2005 and commenced its first radio transmission on 26 December 2005, nationwide.

Associate Members

ROMANIAN RADIO BROADCASTING CORPORATION, ROMANIA

The first programme of the Radio-Telephonic Broadcasting Society was broadcast on 1 November 1928, as was denominated the public radio Broadcasting Service on its official creation deed. Radio Romania has three national channels: Radio Romania News, Radio Romania Culture and the Villages' Antenna.

STAR RFM SDN BHD, MALAYSIA

Star RFM Sdn Bhd is a private limited liability company incorporated in Kuala Lumpur, Malaysia, on 6 February 1995 and commenced its first radio transmission on 8 May 1996.

Associate Members

BANG SINGAPORE PTE. LTD., SINGAPORE

Bang Singapore Pte. Ltd., a private limited company was established on 5 September 2002 in Singapore, with offices in Korea and Japan.

BANGLADESH NGOS NETWORK FOR RADIO AND COMMUNICATION, BANGLADESH

Bangladesh NGOs Network for Radio and Communication (BNNRC) is an NGO organization, emerged in 2000 in Dhaka, Bangladesh, to promote the advocacy of community radio and TV in collaboration with the government and other organisations.

MIT ACADEMY OF ENGINEERING, INDIA

Maharashtra Academy of Engineering (MAE Pune) is located in Pune, India, established on 21 June 1983 and is a private registered non-profit charitable Trust engaged in spreading education in India.

NATIONAL INFORMATIONAL & COMMUNICATIONS TECHNOLOGY AUTHORITY, PAPUA NEW GUINEA

National Informational & Communications Technology Authority (NICTA) is a Regulatory Agency of ICTs that also regulates national broadcasting services in the country for the Government of Papua New Guinea, established on 24 November 2009.

RU TV (THE OFFICE OF EDUCATIONAL TECHNOLOGY), THAILAND

The Office of Educational Technology (OET) was established in Bangkok, Thailand on 14 April 1986 and is a Ramkhamhaeng University (RU) agency, a center for coordinating the production, development, and provision of services to the university in the area of educational technology.

SEKOLAH TINGGI TEKNIK MALANG (STTM), INDONESIA

Sekolah Tinggi Teknik Malang (STTM) is a technical high school or higher education project set-up by RRI (Radio Republik Indonesia) registered on 18 September 2012 in Malang, Indonesia.

ESSEL SHYAM TECHNOLOGIES LTD., INDIA

Essel Shyam Technologies Ltd. was incorporated on 26 September 2001 in New Delhi, India and commenced business on the same day as a satellite service provider and system integrator.

PTFI MEDIA, AUSTRALIA

PTFI Media offers broadcast and media consultancy services to Organising Committees, Government, Sport Governing Organisations and Federations and Broadcasting Organisations.

SM CNS CORPORATION, KOREA

SM CNS Corporation was established on 14 May 2004 in Seoul, Korea providing distribution and system integration of broadcasting systems, software, RF equipment for broadcasting and IPTV products.

YOU CHANNEL NETWORK SDN BHD, MALAYSIA

YOU Channel Network Sdn Bhd is a private limited liability company incorporated in Kuala Lumpur, Malaysia, on 19 August 2010 making production of serials, movies and documentaries in both Chinese and Malay language, recording, distribution and trading of entertainment media.



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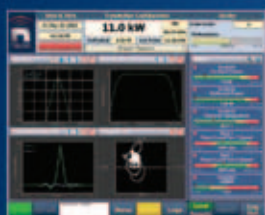


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Latest Status of UMID and its Applications in File-based Workflow

by Yoshiaki Shibata

Chair, SMPTE TC-30MR SG UMID Applications

Introduction

The UMID (Unique Material Identifier) is a globally unique AV (audiovisual) material identifier standardized by SMPTE (Society of Motion Picture and Television Engineers) as SMPTE ST 330 and RP 205. More than a decade has passed since its initial standardization in 2000 and its presence in AV products using the MXF (Material Exchange Format), files containing the UMID as its mandatory component have been widely spread throughout the industry. But, its originally intended use as a unique material identifier to link AV material to its metadata has seldom been seen in practice.

In addition, although AV material management using a unique identifier is a common practice observed in variety of products, a problem with the material identifier often occurs when such products are combined to form a media production system. The UMID, as an industry common AV material identifier, is expected to address this sort of problem. In reality, however, most products have their own proprietary material identification schemes with little or no interoperability between them. Furthermore, although certain products have adopted the UMID for their material identifier, they have no capability to communicate with other products via the UMID, resulting in failure of their integration into a system.

Recently, we have revealed that the issue is mainly due to lack of industry common rules for the UMID applications and, in order to address the UMID application issue, a new project has just begun in the SMPTE SC (Standard Community).

In this article, the goal of UMID and its applications are discussed, together with the needs of industry common UMID application rules to achieve it, followed by possible UMID applications specifically for MXF. Then the UMID application project recently approved by the SMPTE SC is introduced to call for your participation.

Goal of UMID Applications

Figure 1 shows the structure of UMID format. The UMID is inherently a single 32-byte entity that takes the form of well-known KLV (Key-Length-Value) structure. The first 12-byte Key field, called the SMPTE UL (Universal Label),

indicates that this is the UMID. The 1-byte Length field specifies the length of byte string that follows, which is fixed to 13h. The Value field is divided into two components: the 3-byte Instance Number (Inst.#) to signal its originality that is usually set to zero, and the 16-byte Material Number (Mat.#) to accommodate a globally unique value that makes the UMID as a globally unique identifier.

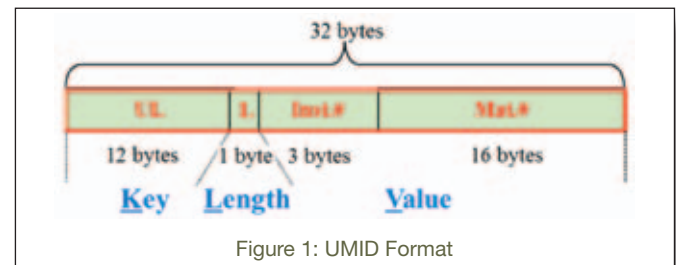


Figure 1: UMID Format

The primary use of UMID is as a globally unique AV material identifier. Because the UMID is usually attached to the AV material that needs to be globally uniquely identified with a UMID, metadata can be unambiguously associated with the AV material by specifying the reference to it via the UMID. This leads to a typical UMID application called the UMID based AV material search (Figure 2).

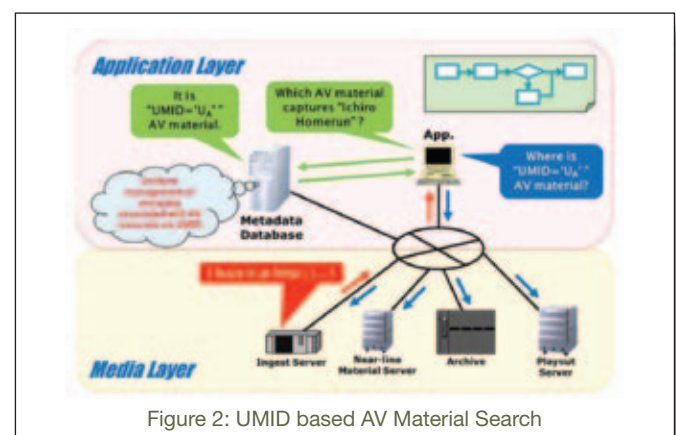


Figure 2: UMID based AV Material Search

In Figure 2, AV materials are stored in various kinds of material servers and a section of descriptive metadata associated with an AV material via its UMID are collected and separately stored altogether in a Metadata database. When an application (App.), such as video editing, wants to obtain an AV material that captures the "Ichiro Homerun" scene for example, it gives the request to the Metadata database accordingly. The Metadata database then replies to the application the requested AV material via its UMID.

Because the UMID by itself does not tell where to access the desired AV material, the application needs to resolve the UMID; i.e., to dynamically associate the UMID with its corresponding URL. In this example, when the application distributes a query such as “Do you have an AV material with this UMID value?”, the Ingest server replies “Yes I have!” and provides the URL of the requested AV material, which can then be used by the application to access the material.

While this scenario demonstrates the principle of material search and access, it may be generalized by dividing a media production system into two layers: the Application layer for various applications including workflow management, and the Media layer for media devices such as material servers and media processors.

In the upper Application layer, light weight data such as workflow information and/or material metadata, typically represented in XML (eXtensible Markup Language), need to be handled in a flexible way, while the heavy weight media data, need to be intensively processed in the lower Media layer. Then, it is the UMID and its connection via the URL which loosely couples those two layers, resulting in much higher flexibility for the media device reinforcement and/or replacement in the system compared with the conventional way using static URLs. Note that this is consequently the best fit to a SOA (Service Oriented Architecture) based media production system such as the FIMS (Framework for Interoperable Media Service).

To realize this scenario, however, a set of UMID application rules need to be established. First, it is obvious that each material server, even when supplied from a different vendor, needs to appropriately respond with the URL for a given UMID to an external application based on a defined UMID resolution protocol. Furthermore, in order for the UMID to be used as a common material identifier in the industry, it must be always *valid*.

But, what is a valid UMID? The UMID Application Principles are introduced to answer the question, i.e., they are the most fundamental rules that every product must strictly follow in order to maintain the valid UMID. While the detailed principle statements are still under study, the following statements are possible candidates:

Principle 1: UMID Integrity

Different AV material shall always be identified by different UMID value,

Principle 2: UMID Identification

The UMID identifies the Essence representation at its playout.

The Principle 1 should be obvious, i.e., different AV materials must not share the same UMID value. The Principle 2 might be controversial, but it is crucial to provide a clear boundary between *identical* and *different* AV materials. According to the proposed Principle 2, two AV materials may be said identical (and thus share the same UMID) when their A/V essence is identical at their playout and any differences occur only in their descriptive metadata such as a title or description.

Note that because the UMID Application Principles should be defined by common industry rules, they will be specified

as normative part of the relevant industry standards. But because such principles are usually too abstract to be implemented into products as they state, a concept called UMID Managed Domain is introduced as an embodiment of the UMID Application Principles.

The UMID Managed Domain is defined as a logical space composed of appropriately managed AV materials via their valid UMIDs. This is implemented by introducing a material manager that manages the AV materials with their UMIDs and corresponding URLs in the Domain. To maintain the UMIDs validity, the material manager plays a crucial role in any AV material manipulation in the Domain.

For example, when AV material having its own UMID in some non-standard location is imported into the Domain, the material manager should replace its original UMID with a newly created value. This is because there is no guarantee that the original UMID is globally unique. When the material manager creates a new UMID according to the standard (SMPTE ST 330), the global uniqueness of the UMID is always guaranteed.

Another example is given for AV material modification. When an AV material containing its UMID in it is duplicated and a part of the Essence in one of the AV materials is modified by overwriting, the material manager also needs to replace its contained UMID with a newly created value in order to avoid those two AV materials of different Essence sharing the same UMID.

It should be mentioned that the material manager is also responsible for an appropriate maintenance of the UMID and its corresponding URL for each AV material, because it is in the position to know both of them. As a result, it is the material manager that must take the active role in the aforementioned UMID resolution protocol.

An interesting property of the UMID Managed Domain is that if an AV material having its own UMID is imported from another UMID Managed Domain, the material manager does not have to replace the original UMID because its global uniqueness is already guaranteed. Consequently, identical AV materials can co-exist in the source and the destination UMID Managed Domains. Effectively those two Domains are merged to form a single UMID Managed Domain.

This property of the UMID Managed Domain can be extended also in a system level, i.e., if all products participating in a media production system are correctly supporting the UMID Managed Domain, the Domains may be merged to cover an entire system, resulting in the UMID based media production system (Figure 3). Note that, in this system, the UMID is used as a common material identifier over the system even when multiple MAM (Media Asset Management) products from different vendors are involved. It should be also noted that the same protocol as used between the application and a material server in Figure 2 can be also used among products in Figure 3.

Furthermore, because of the global uniqueness of the UMID, the above scenario may be further extended in a global sense. According to the UMID Application Principle 2, two

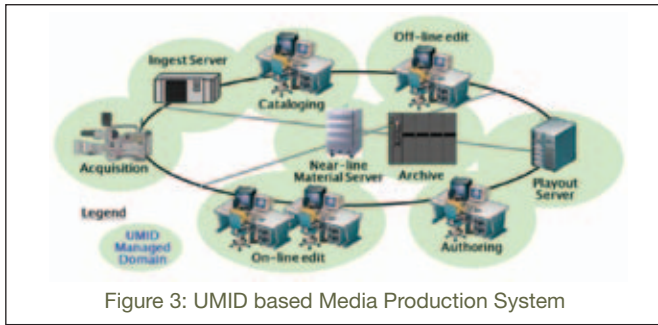


Figure 3: UMID based Media Production System

AV materials sharing the same UMID are said identical even when they are located in geographically different sites. Their descriptive metadata may be different (due to cultural difference) and/or they may use different management information (due to different material management systems). This implies that UMID plays a crucial role in establishing a globally distributed AV material management system that enables “Manage locally, Search globally”.

UMID Applications in MXF

The MXF is a SMPTE standard container format that can contain any kinds and any forms of AV Essences. MXF also carries metadata, which is associated with the whole, and/or particular points of the Essence it contains.

Among other valuable characteristics of MXF, its dual structure is one of the most unique characteristics of MXF. In short, what is to be played out is not always the same as what is actually contained in a file (Figure 4). This is realized by introducing the structural metadata called the File Package (FP) and the Material Package (MP). As demonstrated in Figure 4, the File Package is used to describe the temporal information of the Essence contained in a file together with its technical properties such as codec, frame size, and so on, while the Material Package is used for presentation of the Essence at its playout. All packages in MXF are identified by their own UMID under the names File Package UID (FpUmid) and Material Package UID (MpUmid), respectively.

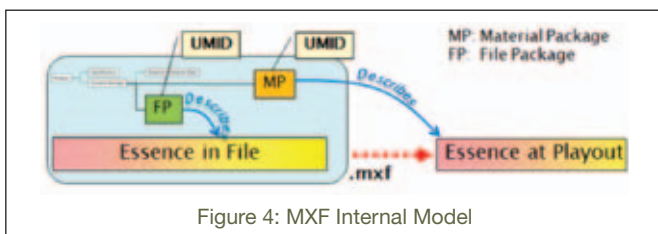


Figure 4: MXF Internal Model

Because the Material Package represents the Essence at the playout of a MXF file, the MpUmid of a MXF file is the unique material identifier that globally uniquely identifies the MXF file according to the UMID Application Principle 2, which needs to be carefully managed to constitute the UMID Managed Domain.

The FpUmid, on the other hand, must also be unique. But because it is not used by the UMID Managed Domain, the scope of its uniqueness may be only to within a file or relevant files. This enables a new secondary MXF file

to be associated with its original via the UMID, while both the original and the secondary created MXF files are independently managed via their MpUmid. Figure 5 demonstrates this sort of UMID application in MXF when a secondary MXF file is created as a result of a partial retrieval of the original MXF file.

In Figure 5, the resulting MXF file “Result.mxf” is obtained by partially retrieving an original MXF file “Source.mxf” with its In/Out points as illustrated. Because “Result.mxf” is a newly created MXF file, its MpUmid must be a newly created UMID value with a zero Instance Number (Inst.#) according to SMPTE ST330. But because the FpUmid in “Result.mxf” is permitted not to be globally unique, it can be used as a linking tool to the original MXF file. Specifically, because the Essence contained in “Result.mxf” is created from the output of “Source.mxf”, it is reasonable for the value of FpUmid in “Result.mxf” to be also created from the value of MpUmid in “Source.mxf” by the Material Number (Mat.#) of the FpUmid in “Result.mxf” being inherited from that of the MpUmid in “Source.mxf”, while its Instance Number being replaced with a non-zero value to indicate that it is not original.

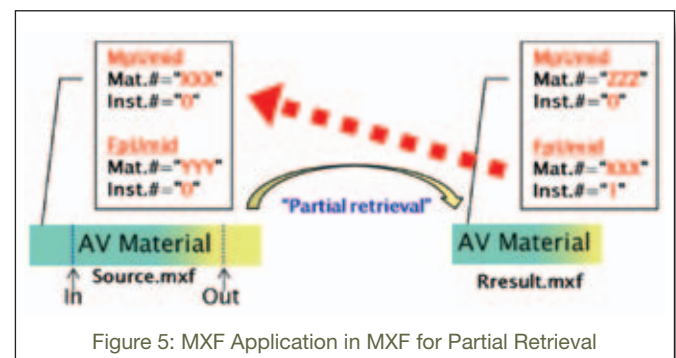


Figure 5: MXF Application in MXF for Partial Retrieval

It should be noted that when the FpUmid in “Result.mxf” is resolved to a URL after zero-masking the Instance Number, the URL will resolve to “Source.mxf”. In other words, a link can be made back to the original material. This is one of the most frequently desired operations in a media production system, and can be easily implemented using the MXF technology together with the UMID resolution protocol.

UMID Applications Project in SMPTE

As is demonstrated so far, it is the lack of industry common rules for UMID applications which has prevented the UMID from being widely used in the industry as originally intended. To address this issue, a new project has just started in SMPTE.

The SMPTE TC-30MR SG UMID Application, chaired by the author, has been set up since April 2012, with its scope:

1. To explore the best practices of UMID application,
2. To identify typical UMID Application Principles,
3. To identify relevant technologies needed to be additionally standardized.

Regarding item 1, because more than a decade has passed since the initial introduction of UMID to the industry, there exist various trials of UMID applications so far. Current uses of the UMID have been limited only within a particular products and/or a systems despite its original intention. But many of the lessons learned from such trials still should be applicable even to use of the UMID as a globally unique material identifier. Therefore, we propose to collect existing UMID application practices used so far by the industry and explore the best practices through analysis of the responses.

Regarding item 2, analysis of existing practices also leads to the identification and collation of UMID Application Principles, i.e., the candidate statements for the principles will be carefully tested against the existing practices in order to refine them.

Regarding item 3, identification of relevant technologies that needs to be standardized to enhance UMID applications is an important task of this project. While plausible technologies already identified include the UMID resolution protocol and basic rules for the UMID application in MXF, some aspects of the UMID Managed Domain need to be further examined to identify those parts that need to be standardized to achieve interoperability.

While the most well-known use of a UMID is as a linking tool between the AV material identified by the UMID and its metadata referencing to the material via the UMID, using the UMID as an industry common globally unique AV material identifier in practice is also relevant to the following topics:

- As a common material identifier that goes through multiple MAM systems from different vendors, resulting in their seamless integration,
- As a common material identifier for a distributed AV material management system, enabling to achieve “Manage locally, Search globally”,
- As a dynamic linking tool between the upper Application layer and the lower Media layer (See Figure 2), realizing their loose coupling.

Finally, it should be noted that this project was initially started as a study group. This does not conduct any standardization process itself but submits one or more reports to the parent Technology Committee (TC-30MR) with any recommendations for standardizations. The work of the study group is due to be concluded by March 2013.

The actual standardization activities can then start based on the outcome of the study group reports.

Conclusions

In this article, the UMID and its applications are discussed based on the observation that it has not been used so much as originally intended because of a lack of supplementary rules for the UMID application. The provision of such rules will significantly enhance the usefulness of UMID within our industry. In particular, because the UMID has been adopted as a core component of MXF, the UMID has the potential to be the core of a media IT infrastructure for the future file-based media production system.

To address the UMID application issue, a new project called SMPTE TC-30MR SG UMID Application has just started within SMPTE. The project has initially been set up as a study group, whose guidance will lead to the relevant standardization activities in the near future.

Because this project has just started, it is a good time for those involved in AV material management, based on the UMID or any other unique material identifier, to join the project. Furthermore, even though the UMID was designed specifically for AV material identification, those having knowledge and/or experience of unique identifier based entity management are also welcome to join because their expertise could be also applicable to UMID based AV material management.

At the time of writing, there are more than thirty participants in the project. But, unfortunately, none of them is from the Asia-Pacific region (except Japan). Therefore, experts from this region are especially welcome to join the project and to contribute their expertise to the future-proof activity. Historically, most of standardizations for the file-based workflow have been led by the US and EU experts. But now, this is your turn to take part in developing the future file-based media production system!

For more information, please don't hesitate to contact the author at info@metafrontier.jp

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Yoshiaki Shibata is the President and Chief Consultant of metaFrontier.jp, LLC. He started his career at Sony in 1991. In 1998, Shibata joined the MPEG-7 standardization activity, in charge of the MPEG-7 schema design. Since 2001, he started working in the M&E industry, where his initial contributions include successful implementations of UMID and EssenceMark™ for professional VTRs. In 2002, he joined the XDCAM™ project, played a crucial role in the metadata part of the product development, including applying for more than forty patents on metadata related technology. In 2011, Shibata has left Sony to be the Japan's first independent consultant for the media and metadata technology, and founded metaFrontier.jp, LLC in 2012. He is an active member of SMPTE, FIMS, AMWA, EBU Technical, ITE and IPSJ.



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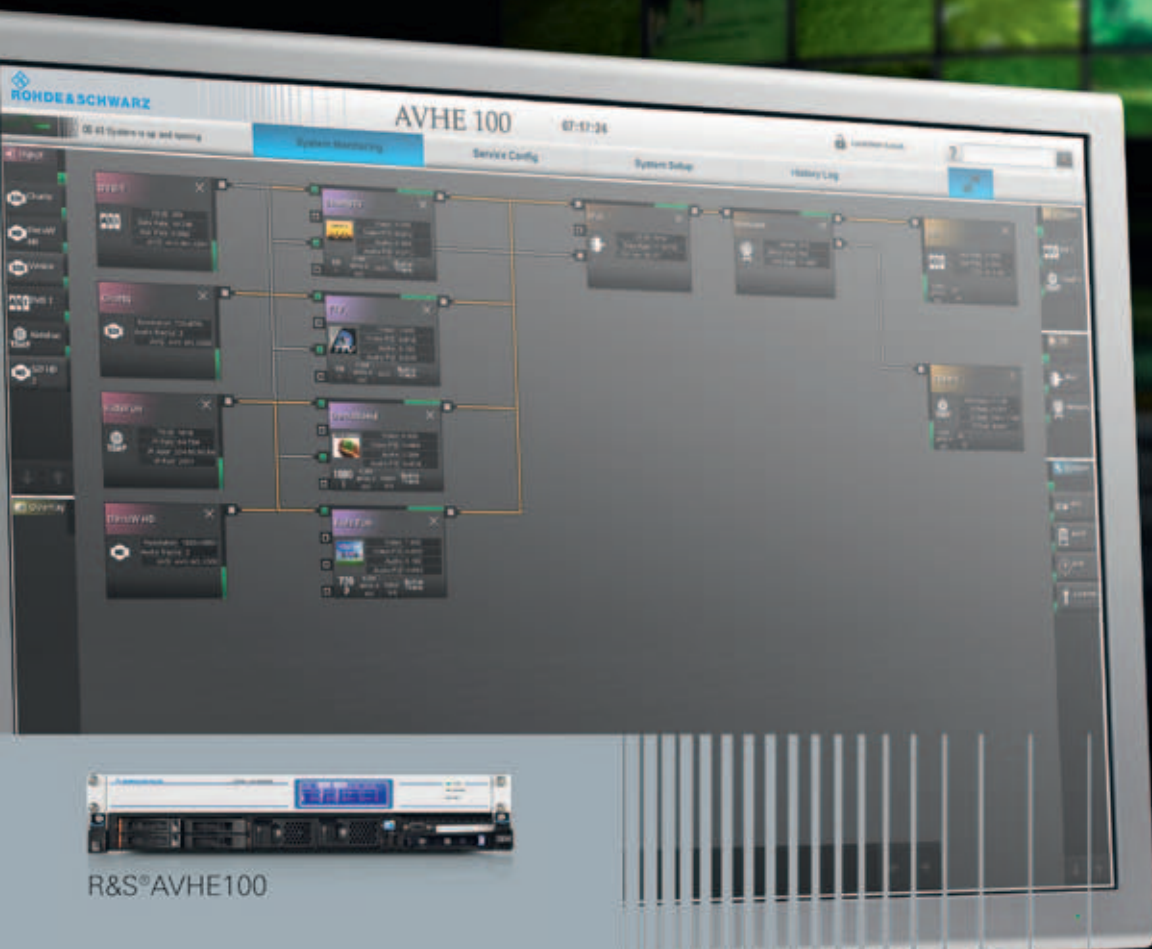
14-16 May	Regional Workshop on Satellite Broadcasting	Colombo
2-4 July	HBf-ABU Preparatory Seminar on WRC-15	Kuala Lumpur
9-11 July	Workshop of Radio Studio Automation	Bangkok
15-16 July	In-country Workshop in Kiribati	Kiribati
5-9 August	ABU-HFC E-mail Coordination for B13 Season	Kuala Lumpur
6-8 August	ABU Workshop on HDTV Studio Planning	Hanoi
20-22 August	Regional Workshop on OTT and HBB Technology for Broadcasters	Kuala Lumpur
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9th Global Shortwave Coordination Conference

Reported by Oldrich Cip
HFCC



The 9th Global Shortwave Coordination Conference was held from January 28th to February 1st 2013 in Tunis, Tunisia. The Conference was held just prior to World Radio Day, celebrated on February 13th, and international radio broadcasting had been placed on its agenda by UNESCO. The global community comprising shortwave frequency coordinators from the HFCC, ASBU and ABU-HFC regional groups were invited to contribute to the Radio Day project. Almost 100 frequency managers, representing 52 broadcasters, transmission providers and organisations from different countries, active in international radio, attended the conference. The joint global conference dealt again with the reduction of interference affecting frequency channels used for nearly 5000 daily shortwave radio transmissions put out by broadcasters.

The regional co-ordination groups had taken up the partnership in World Radio Day in an effort to show that synergy rather than competition is needed between the new distribution platforms and traditional shortwave transmissions. Contributions to the UNESCO's World Radio Day websites also tried to show that multi-platform content distribution is even more evident in international broadcasting and that the presence of broadcasters across all distribution technologies makes radio the most effective platform.

It has become obvious that debate on the future distribution of media content and on the use of new – mainly digital – technologies is very much needed and that a global conference is a suitable forum for such debate.

One of the highlights related to the World Radio Day project that was high on the agenda of the Tunis Conference was the setting up of a public World Wide Shortwave Schedule employing an online database of all regional co-ordination groups that is being constantly updated and which can be accessed here: <http://www.hfcc.org/schedule/>.

It has been agreed to devote all possible publicity to the World Wide Schedule, which is capable of providing fresh schedule information to listeners. However, major concerns have

been expressed over the presence of inactive transmissions, inaccurate entries and mis-formatted language information. Such data submitted to the HFCC database by some frequency management organisations have an extremely negative impact and could make the global schedule, accessible from the UNESCO website, completely useless to the public.

A meeting of regional co-ordination groups with the ITU representative agreed that there would be a link from the Broadcasting Services part of the ITU website to the World Wide Shortwave Schedule on the HFCC website.

The Tunis Conference acknowledged with satisfaction that the UN-lead agency has devoted attention to the humanitarian aspects of international radio in disaster relief and mitigation. A special project called International Radio for Disaster Relief (IRDR) – a comprehensive system previously missing in the world community, is being developed by the HFCC in co-operation with members in the Arab states and Asia-Pacific broadcasting unions.

It was reported that the ITU Working Party 6A (WP6A) had received a liaison statement about the establishment of a Focus Group on Disaster Relief Systems and Network Resilience and Recovery. As this Focus Group appeared not to have taken into account the role of international short wave broadcasting, WP6A decided that it would inform the Focus Group about the International Radio for Disaster Relief project. A relevant document was then sent to the Focus Group. This matter is also on the agenda of the Group of Experts. Input for the WP6A will be also prepared as Recommendation ITU-R P.842 "Computation of reliability and compatibility of HF radio systems".

The Steering Board of the HFCC/ASBU association has expressed appreciation that more ABU-HFC representatives have shown interest in becoming members of the HFCC. This could make up for some HFCC members who were lost, especially in Europe, after the switch-off of their shortwave services and would ensure the smoother running of the global co-ordination process.

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SPEAKER HIGHLIGHTS



Ling Pek Ling
 Director, Digital Broadcasting
 Deployment Office
 Media Development Authority
 (MDA)



Seow Yoke Kong
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Peter Hutton
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News

from the ABU Region

Bangladesh

Betar's New Transmitting Site

Bangladesh Betar decided to upgrade the existing Kabirpur transmitting site with the Ampegon HP-RCA 2/2 to optimize the international shortwave coverage. Based on a rigid dipole array and a tubular shaft, the HP-RCA 2/2 is a back-to-back arrangement of a low-band and a high-band curtain antenna equipped with reflector screens. The 2/2 dipole array configuration gives a good radiation characteristic and the antenna gain of up to 19 dBi assures sufficient signal field strength in the coverage area. The antenna operates to any azimuth and can rotate 180 degrees in less than three minutes.

To take into consideration the environmental conditions at the site, the antenna is designed for a maximum survival wind speed of 240 kph and a maximum operational wind speed of 120 kph. By using rigid 1/2 folded dipoles, which are mounted to the steel structure at their "zero potential" point, the need of insulators in structural parts is eliminated and perfect static grounding is assured.

(APB)

Hong Kong

Broadcasters Urged to Protect C-band

Describing satellite C-band frequencies as "the lifeblood" of broadcast distribution in the Asia-Pacific region, the Cable & Satellite Broadcasting Association of Asia (CASBAA) urged broadcasters to take immediate action in joining efforts with the satellite industry to safeguard the C-band spectrum for satellite services.

The new initiative, which has also been endorsed by the Asia-Pacific Broadcasting Union (ABU), the Asia-Pacific Satellite Communications Council (APSCC), the World Broadcasting Union's (WBU) International Satellite Operations Group, and the Global VSAT Forum, is likely to thrust the divisive issue of spectrum allocation firmly back under the spotlight.

CASBAA stated that terrestrial wireless companies are lobbying heavily for additional spectrum in the C-band (receive/uplink) frequency band of 3.4G-4.2GHz. In addition, a new effort has been initiated for these companies to operate within the C-band (transmit/uplink) frequency band of 5.8-6.4/6.7GHz. If allowed to come to fruition, excessive levels of interference might occur, which may in turn preclude future use for satellite services in the Asia-Pacific.

GVF stated that wireless sharing with satellite services is being considered – and is opposed by the GVF Regulatory Working Group – at C-, Ku-, Ka- and V-band in national regulatory proceedings in every major region of the world and it is critical that a global Satellite Spectrum Campaign be coordinated immediately to more forcefully address the broadband wireless industry's ongoing efforts in preparation for WRC-15, where the challenges will be greater for the satellite industry.

(APB)

India

"National Robocon Contest" Conducted

Doordarshan (Prasar Bharati) and MIT Academy of Engineering Pune organised the National Robot Contests from 7th to 9th March 2013 to select the best Indian Team for their participation in the 12th ABU Asia-Pacific Robocon 2013 scheduled to take place from 17th to 19th Aug at DaNang, Vietnam. Teams from 75 Engineering Institutes across the country enthusiastically participated in the event. MIT Pune was adjudged the Best Team. Apart from Winners and Runners up, several awards were given to various teams for the Best Idea, Economy, Efficiency, Elegance, Aesthetics and Innovativeness. A special award was given to a team coming from Engineering Institute from Rural Background. MIT Academy of Engineering, along with members of the Doordarshan have helped in increasing the popularity of the game in India and are now well geared up to host the 13th ABU Asia Pacific Robocon 2014 at Pune India.

(MIT Academy)

International

New Video Codec

The introduction of the new High Efficiency Video Coding (HEVC), or H.265, standard will "considerably ease the burden" on overloaded networks, said the International Telecommunications Union (ITU), because it requires only half the bit-rate of its predecessor, ITU-T H.264/MPEG-4 AVC. HEVC will unleash a new phase of innovation in video production spanning the whole ICT spectrum, from mobile devices to Ultra-HDTV.

ITU-T's Study Group 16 has agreed the first-stage approval of the standard, formally known as Recommendation ITU-T H.265 or ISO/IEC 23008-2. The standard is collaboration

between the ITU Video Coding Experts Group (VCEG) and the ISO/IEC Moving Picture Experts Group (MPEG).

ITU-T H.265/HEVC has been designed to provide a flexible, reliable and robust solution, future-proofed to support the next decade of video, taking into account advancing screen resolutions. The standard is expected to be phased in as high-end products and services outgrow the limits of current network and display technology.

The ITU/ISO/IEC Joint Collaborative Team on Video Coding (JCT-VC) will also continue to work on a range of extensions to HEVC, including support for 12-bit video as well as 4:2:2 and 4:4:4 chroma formats.

Further to that, another important element of this work will be the progression of HEVC towards scalable video coding. The three bodies will also work within the JCT on 3D-Video (JCT-3V), on the extension of HEVC towards stereoscopic and 3D video coding.

(APB)

ATSC Begins Work On Next-GenTV

Advanced Television Standards Committee (ATSC) released its call for proposals for ATSC 3.0, the next-generation of broadcast television; a request that calls on broadcasters, consumer manufacturers and professional manufacturers to give their input on a new delivery method of real-time and non-real time television content and data to fixed and mobile devices. A document posted on the ATSC website includes an assessment of technical requirements, possible applications and a list of complete specification for fixed and mobile services using new broadcast signals. Interested parties need to send intent to respond to the CFP by Aug. 23 and submit their official response by Sept. 27. "The ATSC 3.0 Technology Group will develop voluntary technical standards and recommended practices for the next-generation digital terrestrial television broadcast system," according to an excerpt from the document. "ATSC 3.0 is likely to be incompatible with current broadcast systems and therefore must provide improvements in performance, functionality and efficiency significant enough to warrant implementation of a non-backwards-compatible system. Interoperability with production systems and non-broadcast distribution systems should be considered."

(TV News Check)

The Philippines

The Philippines National Telecommunications Commission (NTC) has reportedly backed the adoption of the Japanese DTV standard to replace the analogue system in the country by 2015. According to the Commission, the NTC endorsed and recommended the adoption of Japan's Integrated Service Digital Broadcasting-Terrestrial, or ISDB-T standard to the Department of Science and Technology (DOST) last December.

The DOST, which is in charge of big projects involving technology in the country, will make a final recommendation to Malacanang (Office of the President). If approved, the move would put the Philippines at odds with members of

the ASEAN grouping who have largely committed themselves to deploying DVB-T2 for the digital switchover.

ASEAN has agreed a timeframe of no later than 2020 to complete the switchover from analogue to digital broadcasting. Countries like Singapore, Malaysia and Thailand have already officially announced the 'adoption of DVB-T2 as the DTV standard of choice.

In a joint media statement issued at last year's ASEAN Ministers Responsible for Information and Second Conference of ASEAN Plus Three Ministers Responsible for Information conference, ASEAN ministers noted that "Digital Video Broadcasting – Terrestrial Second Generation (DVB-T2) is a more advanced technology compared to DVB-T and acknowledges the benefits of migrating directly to DVB-T2".

(APB)

Turkey

Turkey Begins DVB-T2

Turkey has finally begun its migration from analogue to digital terrestrial TV with the publication of licensing guidelines by the broadcasting regulator, the Radio and Television Supreme Council (RTUK), the guidelines were published in December. The RTUK will evaluate all applications and will issue an 'Eligibility Certificate' only to those organisations that fulfill all criteria.

According to a previous announcement by the government, the country's digital switchover process will be completed by June 2015. With most of Europe having already completed the transition to digital, its own policy has already made progress since being launched in 2006, with only a pilot project in Istanbul and Ankara having taken off.

The country is 800,000 square kilometres in area and most of this land is comprised of mountainous terrain, therefore 6,000 transmitter sites will be used to cover 90 per cent of the population. There will be eight multiplexes in total: one will be assigned to Turkish Radio and Television (TRT), one to local and regional broadcasters and six to the major national commercial broadcasters.

(Screendigest)

Vietnam

Vietnam to go to digital by 2020

Vietnam will completely switch from analogue to digital broadcasting by 2020 with five major cities – Hanoi, Ho Chi Minh City, Hai Phong, Da Nung and Can Tho – turning off all analogue signals by 2015. The remaining provinces are expected to complete the switchover by the end of 2020, as part of a nationwide scheme on digitising the transmission of TV signals. The government has specified that by 2015, 80 percent of households with TV sets should be able to view digital TV, with digital terrestrial TV serving up to 60 percent of the population.

(APB)

Digital Broadcasting Update

Digital TV

DTG Updates Freeview HD Specification

The Digital TV Group (DTG), the industry association for digital TV in the UK, has published an updated version of the 7th edition of the 'D-Book' – the technical specification for UK digital terrestrial television (Freeview and Freeview HD) and Connected TV. First published in April 2011, D-Book 7 is divided into two parts: Part A which contains the Freeview and Freeview HD specifications and Part B which is the technical specification for UK connected TV products and services.

The new version includes updates on RF performance figures for the DVB-T mode which will be used to broadcast local TV; Improvements to consistent audio loudness levels across stereo down-converted 5.1; Logical channel numbering clarifications; and Updated MHEG and DVB-SI sections. D-Book 7 Part A version 3 is now available.

(Digital TV News)

More DTT Channels for Thailand

Thailand has looked again at how it will structure its various digital TV multiplexes. The end result is a new auction process for a total of 24 channels will now comprise: 7 in HD, 7 news channels in standard definition, and a total of 24 commercial DTT channels. However, increasing the HD and news sector means that the number of 'variety' channels will be reduced from 10 to 7, and kids channels fall from 5 to 3.

The country's regulator National Broadcasting and Telecommunication Commission (NBTC) has come up with the new structure. Potential auction bidders are emerging with their plans. One operator, RS, has invested in 4 satellite TV channels and plans to bid for variety channels either in HD or in SD format. Another operator, MCOT, states that the firm is revising their business plan for commercial DTT bidding based on NBTC's new changes.

(Advanced Television)

India Gets Tough on Encryption

India's Information & Broadcasting Ministry (I&B) says cable MSOs, now beginning to make progress with digitisation of its signals, must also fully embrace the obligatory encryption of signals (via Conditional Access). I&B is setting up a centralised monitoring system to check that MSOs are keeping their word. The government's monitoring system will be able to detect those cable operators who are flouting the existing rules. One pilot project is already up and running in Bangalore (the centre of India's computing expertise) which includes the acquisition, logging, analysis

and reporting of the number of channels being carried, name of channels/services, encryption status, etc.

(Advanced Television)

Community Broadcasting Boost for Hong Kong

The Government of the Hong Kong Special Administrative Region is moving forward with a three-year Pilot Project for Community Involvement Broadcasting Service (CIBS). Radio Television Hong Kong (RTHK) has been tasked to devote part of its airtime and resources within the development of digital services to provide a platform for the community, non-governmental organizations and the underprivileged to participate in broadcasting. RTHK will also administer the Community Involvement Broadcasting Fund (CIBF), allocated by the Government to provide funding for joining the CIBS project.

Radio programme production is the first testing ground for the CIBS scheme. The aim is to embrace the promotion of a wider range of social gains to the community, such as to encourage plurality, diversity, social inclusion; to cultivate social empathy and civic mindedness, and to inspire creativity, uniqueness and talent nurturing. The programme themes for the first round of applications include education, arts & culture and ethnic minorities.

(C+T Magazine)

HDTV and 3DTV

Japan to Start 4K TV in July 2014

Japan will start the world's first 4K TV broadcast in July 2014, two years earlier than originally planned. According to the Asahi Times, the Japanese ministry of Internal Affairs and Communications has decided to start broadcasting in 4k during the finals of the football World Cup in Brazil in July 2014.

The first broadcasts will be transmitted via the country's communication satellites rather than via the direct broadcast satellites. However, usage of BS satellites is planned at a later stage. Originally, the Japanese were planning to launch 4K broadcast in 2016. The move to bring the world's first regular 4K broadcasts forward is intended to boost 4K television set sales. The UltraHD televisions are now on sale by Japanese makers including Sony, Panasonic, Toshiba and Sharp as well as from Korean manufacturers such as LG.

(Broadband TV News)

CES 2013: In Search of Television's "Next Big Thing"

At the 46th annual Consumer Electronics Show roughly 150,000 attendees gathered to assess what's new – and what might sell – in consumer electronics.

This year, manufacturers like Samsung, Sony, LG, Westinghouse, Toshiba and Panasonic are trying to shake the trees by building bigger television screens and quadrupling the resolution in their images to 4K in Ultra HD sets. However, many of these new models are quite expensive. Panasonic and Sony both announced new 56in sets, while LG said it has begun taking orders for a 55in flat-panel OLED screen that will ship in March.

The real action at the show was in the far more affordable software for “smart” TV receivers. Manufacturers are clamouring to add apps and other interactive elements to their ultrathin displays. And there’s more competition than ever to the home television set. Viewers can now access programming over smartphones, tablets and computers. This reduces the need by many people to buy a television set at all.

This year the “big thing” that manufacturers are pushing is 4K Ultra HD television. These new sets have four times as many pixels as their HD predecessors, though – like 3-D – there is little programming being distributed to watch at this high resolution. Ultra HD also costs more, far exceeding the low prices of HD sets.

(Broadcast Engineering)

Freeview Reaches Highest-ever Total

The UK DTT platform Freeview has recorded the highest ever number of households receiving the service on the main TV set. Over 11 million households have Freeview on the main screen with 20 million – 76% of UK television homes – watching Freeview on either the primary or secondary set.

On Tuesday BBC Two HD replaced BBC HD in the UK with Freeview suggesting a further 10 HD channels could launch on its platform before the end of next year. Three years since launch, cumulative Freeview HD equipment sales stand at 7.6 million and the total number of homes with Freeview HD on their main set has reached 3.53 million, making Freeview HD the second biggest HD platform in the UK. Freeview+HD box sales have increased 24% year-on-year. Typically FreeviewHD boxes are also capable of receiving on demand services.

(Broadband TV News)

Hybrid OTT and Internet

IPTV Surges in Korea

South Korea has taken to IPTV in a big way, with the number of subscribers growing from zero to over 6 million in the last four years. According to Korea Telecom (KT), this is now equivalent to 25% of the country’s entire pay-TV market. IPTV services were launched in South Korea in December 2008, with satellite hybrid IPTV following in October 2009. KT now claims a 60% market share in a sector also served by the companies SK Broadband and LG U+.

KT’s hybrid IPTV service OTS is characterized by rich content, consisting of 162 channels, 130,000+ titles and 145 ‘varieties’ (genres, etc). KT also operates Mobile and

N-Screen, giving a seamless service on any screen, anytime and anywhere.

(Broadband TV News)

Fibre Optics Opens New Opportunities in Sports Production

This year’s Super Bowl event, with more than 3500 hours of video content transported via the broadcast backbone based on fibre-optic transport, have established fibre-optic as a vital component in the mix of contribution technology for sports productions. However, there is much more to the role of fibre optics in sports than contribution. Over the past few years, fibre optics has emerged as an enabler of a rethink of the traditional approach to remote sports production.

At the top of the list of questions raised by the broad availability and speed-of-light performance of fibre-optic transport is how much longer will it be necessary to send a mobile HD production control room – with its video switching, replay, graphics, monitoring, camera control and audio mixing – to the stadium or arena? Rather than roll trucks and trailers, is it possible to transport raw, live camera and audio feeds directly from their pickup positions to a studio hundreds or thousands of miles away via fibre where all of the production is done without diminishing the final production? Is it possible to control camera setup from great distances and be just as responsive to the changing shooting environment as if control were being done from a CCU on site? How far can this concept of remote control be taken? How will this impact production staffing and travel expenses?

There are also tactical benefits that can be achieved by relying on fibre to transport feeds and control cameras positioned in dangerous or out of the way locations, such as with certain trackside camera locations at a speedway. There have been successful productions carried out using this technique and, the thoughts of those planning the next generation of production from remote sports production factories are wide open. The technical and production challenges must be addressed, and the setups should take advantage of the potential for fibre optics to transform how sports get produced.

(Broadcast Engineering)

New Technologies and Techniques Needed to Deliver Video to the Internet

A UK-based media management and workflow software provider has published an independent report outlining the shortcomings and challenges of Internet delivery of video content.

Noting that the consumption of content over Internet-enabled devices has exploded, which for content owners is, “a mixed bag of increased opportunity and increased operational pain.” The report highlights four key challenges content owners face when delivering content to the Internet: Delivery; Service; Packaging & delivery technologies; and Standards.

Internet TV is exploding, and content owners must sweat value from their content by leveraging multiple deals to stay in the game. However, fulfilment and delivery of content to the Internet can be incredibly painful and costly with the cost of preparation and repurposing often negating the

commercial upsides for smaller deals. What the content industry needs is to embrace new software platforms that are thankfully emerging to answer these challenges.

One of the reasons that content owners offload the responsibility of content preparation and delivery for VOD platforms to content services companies is the sheer level of complexity. This is brought about by a lack of standardisation and the amount of manual labour involved in delivering to multiple operators — often at short notice.

(Broadcast Engineering)

Satellite Mobile and Others

Ka-Band VSAT Roundtable Addresses Regulatory and Interference Issues

The Global VSAT Forum's Ka-band roundtable assembly in London featured top speakers from regulators, legal firms, as well as satellite companies all debating the future for Ka-band and high-powered satellites (HTS). Certainly, with more of these satellites going up, there is now more pressure than ever for effective regulation as operators look to make the most of these satellites.

One of the main talking points of the event was satellite interference. While this has been an issue long associated with broadcasting, it could become more and more of a factor in the data arena. Companies are working on solutions for the whole interference issue. Satellite operators and service providers have spent a considerable amount of time and money on their attempts to reduce interference. Carrier interference needs a solution quickly. More systems are getting deployed and interference issues are on the increase. There is a need to go beyond type approvals now and take periodic checks to make sure all the products going out in the field meets the requirements.

(Satellite Today)

Record Demand for iPlayer

BBC iPlayer had a record 59 million weekly requests on average in February, or 2 million more than a month earlier, while across February there were an average of 8.6 million requests a day. Despite the shorter month — 28 days, as opposed to 31 in January — resulted in an overall monthly total of 262 million requests, this was only 4% down on January's record breaking 272 million requests. Live TV viewing on iPlayer meanwhile remained stable in February at 12% of all requests.

Mobile and tablet usage was still strong, accounting for 29% of all requests for content and 77 million requests in total. The new series of Top Gear proved particularly popular in February on iPlayer, with five episodes appearing in the top 20.

(Broadband TV News)

YouTube Bringing Adaptive Streaming to Mobile, Home TV Screens

In 2012, YouTube switched to adaptive bit rate streaming (or scaling) for its desktop player. The move reduced buffering by 20 percent and sped up the launch of new online videos. Now, the Google-owned video service is bringing the new technology to mobile and home television sets.

The streaming works by detecting a user's bandwidth and CPU capacity in real time and adjusting the quality of a video stream accordingly. It requires the use of an encoder which can encode a single source video at multiple bit rates. The player client switches between streaming the different encodings depending on available resources. The streaming client is made aware of the available streams at differing bit rates, and segments of the streams by a manifest file. When starting, the client requests the segments from the lowest bit rate stream. If the client finds the download speed is greater than the bit rate of the segment downloaded, then it will request the next higher bit rate segments. Later, if the client finds the download speed for a segment is lower than the bit rate for the segment, and therefore the network throughput has deteriorated, then it will request a lower bit rate segment. The segment size can vary depending on the particular implementation, but they are typically between 2 and 10 seconds.

Mobile, on the other hand, comes with different challenges, as people move in and out of the reach of cell towers while they get their video fix on public transport. Average mobile Internet speeds are much slower in India and Brazil than in the U.S. and Europe, but videos still have to play without long and tiresome buffering. Broadband in Canada on the other hand is fast, but tightly rationed, with major ISPs charging their customers extra if they go over their caps. That's also one reason that players have retained manual settings that allow users to manually change the bit rate of a video.

(Broadcast Engineering)

More Alternate TV Services to Launch

Intel, best known for its computer processing chips, is getting closer to launching its own on-demand pay-TV catch-up and 'live' TV service. The company is said to be in discussions with major content providers in preparation for the launch of its Intel-based pay-TV service. The new Intel service, which could launch later this year, would echo the BBC's iPlayer system, but also have live network programming available on the system.

Key to the overall strategy is an easy-to-use Electronic Programme Guide (EPG). However, while the content owners might welcome any extra distribution for their signals, and archived content, there will be a price to pay.

(Advanced Television)

BBC Goes Open Source for TV App

The BBC has made its open source TV Application Layer available to the industry at large. The BBC is making the Application Layer available via an open source repository. The open source code would allow other parties to contribute to the development of the TV Application Layer and make building applications on TV easier for others, helping to drive the uptake of this nascent technology.

The BBC is keen to encourage the connected TV market. As the BBC licence fee has funded this work, it can create more value for money by sharing this work with others in the industry, for the benefit of the audience. The BBC TV Application Layer was developed to enable the BBC iPlayer, news and sports applications to run on as many connected devices as possible.

(Advanced Television)

Equipment Trends

Cameras & Accessories

A new GY-HM650 ProHD handheld mobile news camera has been introduced by JVC Professional Products Company. Equipped with dual codecs, it produces full HD files on one memory card while simultaneously creating smaller, Web-friendly files on a second card. With built-in FTP and Wi-Fi connectivity, the device delivers the footage back to a station without a microwave or satellite connection.



With a built-in Fujinon wide angle 23x zoom lens, superior low-light performance, and excellent sensitivity (F11 at 2000 lux), the camera has ideal optics for challenging shooting environments. The HD lens has a focal range of 29mm-667mm (35mm equivalent) and includes manual focus, servo zoom, and iris rings, along with three ND filters and a removable hood. Other features include JVC's auto-focus with face detection and an optical image stabilizer. Equipped with three, 1/3-inch 1920x1080 12-bit CMOS sensors, the lightweight GY-HM650 records HD or SD footage in multiple file formats, including native XDCAM EX™ (.MP4), Final Cut Pro™ (.MOV), and AVCHD, to non-proprietary SDHC or SDXC media cards. It also records .MXF files with rich descriptive metadata that is optimized for asset management. The camera also includes HD-SDI and HDMI outputs for easy monitoring of HD footage.

Another device, the GY-HMQ10 which was released by the company is the world's first handheld 4K camcorder, which captures, records, and plays video images at four times the resolution of high definition television. Having large-scale integration (LSI) chip for high-speed signal processing and a 1/2-inch CMOS imager with 8.3 million active pixels, it delivers real-time 3840x2160 footage at 24p, 50p or 60p.

Using MPEG-4 technology and a variable bit rate H.264 codec operating at up to 144 Mbps, the device records up to two hours of 4K video to economical SDHC or SDXC memory cards. In addition to 4K imaging, the GY-HMQ10 also captures and records astonishing 1080i or 1080/60p full HD, with extraordinary detail provided by its 8.3 megapixel imager and superior lens. HD is recorded on

a single memory card in a format compatible with most editing systems.

(www.pro.jvc.com)

Two New Prime Lenses



The new CN-E14mm T3.1 L F and CN-E135mm T2.2 L F single-focal-length lenses for large-format single-sensor cameras employing Super 35mm or full-frame 35mm imagers have been announced by Canon. The 14mm and 135mm join Canon's 24mm, 50mm and 85mm primes to provide a broad line of five EF-mount Cinema prime lenses that offer great optical performance, as well as a variety of focal lengths for any professional shoot. All five Cinema prime lenses will work with lineup of Cinema EOS digital motion picture camera systems, which include the EOS C500 4K/2K Digital Cinema Camera, EOS C300 Digital Cinema Camera, EOS C100 Digital Video Camera and EOS-1D C 4K DSLR Cinema Camera.

All Cinema EOS lenses use advanced materials and coatings to provide high performance, including 4K (4096 x 2160) production standards. Each lens is equipped with an odd-numbered 11-blade aperture diaphragm, which is ideally suited to achieve creative depth-of-field manipulation. The five Cinema prime lenses is precision-matched for consistent and solid optical performance that minimizes focus-induced changes in the angle of view. All feature a full-frame image circle in a lightweight, compact design, and they incorporate proven lens elements designed to fulfill contemporary 4K production standards.

(www.hdvideopro.com)

LiveU Uplink Software Option

A software upgrade key for the P2 AG-HPX600 camcorder that integrates LiveU video uplink compatibility has been released by Panasonic. The AG-SFU603G software upgrade key integrates LiveU's LU40 portable uplink technology with the AG-HPX600 HD camera recorder. The expanded functionality can be activated via the software key after installation of the software upgrade; the upgrade is being released simultaneously on the camera.



LiveU's LU40 unit and the AG-HPX600 are interconnected via the SDI and USB. Live camera video (HD/SD signals) can be transmitted through up to six connections via the LU40. This upgrade will allow the uplink 'start-and-stop' to be controlled from the AG-HPX600, and the LU40 status to be displayed on the AG-HPX600 viewfinder, enabling camera operators to relay live video securely. An optional upgrade system has been introduced in the camera recorder so that only necessary functions, such as an Internet connection (AG-SFU601G) and VFR recording (AG-SFU602G), etc., are installed.

(www.tvtechnology.com)

Upgrade for Studio Camera Systems

A major free firmware upgrade for the new AK-HC3800 studio camera system, announced by Panasonic supports 720/59.94 output from the studio camera and enables IP control between the AK-HRP200 remote operation panel (ROP) and the AK-HCU200 camera control unit (CCU). The upgrade also allows the ROP to set-up and control up to 19 PTZ cameras (such as the AW-HE120, AW-HE60H/S, and AW-HE50H/S) via IP.

The HC3800 camera system also offers standard RS-422 serial control and connectivity between the studio camera, CCU and ROP. With the firmware upgrade, the ROP will deliver direct cabled or IP control of virtually any Panasonic studio or remote HD camera.

The addition of 720/59.94 output from the AK-HCU200 CCU diversifies recording and transmission choices for operators of the HC3800 system, which can also be switched to allow worldwide use at 1080/59.94i and 1080/50i.

The AK-HRP200 remote operation panel (also called paintbox) offers extensive camera control over serial or IP connections, and SD card memory for easier setup and systems management. With this free version 2.0 firmware upgrade, the HRP200 can also adjust such popular cameras as the AW-HE120, AK-HC1500 (serial only) and many others. Remote lens control of these and other cameras is also available from the HRP200.

(www.pro-av.panasonic.net)

Memory Recording Deck for XDCAM HD422 Workflow



The new PMW-1000 XDCAM HD422 Recording Deck has been announced by Sony. The half-rack sized recorder, with two SxS memory card slots and VTR-like jog/shuttle

operations, enhances XDCAM HD422 workflow and is suitable for both in-house and field operations due to its versatility. Usage applications that can benefit from the PMW-1000 include ENG, studio and OB productions by broadcasters.

The PMW-1000 drives enhanced XDCAM HD422 workflow with tape-like operation including linear ingest with RS-422 control and linear editing (as player) with jog/shuttle control. This similar operability to tape-based devices brings familiarity to operators accustomed to them. The VTR-like jog/shuttle dial and RS-422 control also come into play when ingesting is done in baseband through an ingest controller at broadcast stations where a content server may be in operation. The device also provides outstanding MPEG HD422 picture quality as well as high quality eight channel (HD-SDI) 24-bit audio recording capability, all packed in a compact sized deck.

Besides MPEG HD422, the PMW-1000 also supports XAVC Intra HD record/playback**, enhancing the XDCAM HD workflow in the operation of cameras such as Sony's PMW-F5 and PMW-F55. The PMW-1000 is the only recorder which can record the XAVC HD format in SxS media***. It is also useful in the playback of XAVC HD recorded contents on professional monitors. The device can operate on AC, DC or battery power, thus can be used in both in-house and field operations such as studio or OB productions.

(www.pro.sony-asia.com)

Production Equipment

Solution for Workflow Efficiency

New software for nonlinear production solutions released by Grass Valley includes new tools to increase workflow efficiency through automated, rules-based file operations and sets a new standard in proxy editing workflows with the Edius XS nonlinear, low-resolution proxy editor Edius XS includes most of the effects capability of the full resolution Edius editor, delivering capability for newsroom desktop editing and also opening the door to workflows that previously required full-resolution editors.



Based on a service-oriented architecture and an easy to use graphical user interface, the GV Stratus application framework brings the concept of nonlinear production – where production and distribution operations merge onto one collaborative platform to broadcasters and media companies of all sizes.

(www.tvtechnology.com)

Integrated Media Server



The Spectrum™ MediaDeck™ 7000 SSD integrated media server delivers the broadcast quality and mission critical reliability of the Spectrum™ media server system in a convenient and cost-effective package. With MediaDeck 7000 SSD, small broadcast and programming operations can implement server-based operations and sophisticated file-based workflows in a broad range of video formats. The server can pack up to four video channels, Gigabit Ethernet (GbE) connectivity and high performance solid state drive (SSD) storage into a compact 1-RU chassis. SSD storage increases content availability in facilities where environmental factors might compromise traditional disk-drive performance. By leveraging the proven Spectrum architecture, the server is immediately deployable for ingest, playout and delay serving applications in the most uncompromising production and playout environments.

(www.harmonicinc.com)

New M6 Lighting Console



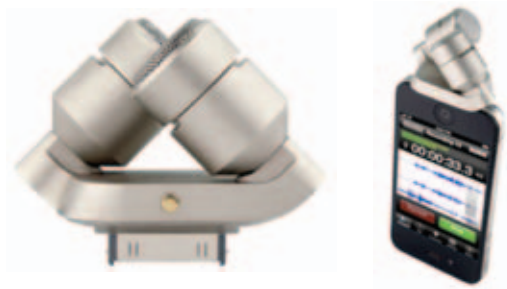
A new M6, a state-of-the-art lighting console that functions as a visual control surface and designed to control everything from conventional and moving lights to the most advanced media server was introduced by Martin Professional. With an industrial multi-core processor, solid-state drives and custom-designed high-brightness touch screens, the M6 is capable of delivering up to 64 DMX universes directly from the console's network ports without using costly external processors. The console has advanced features like a LiveBlender™ T-Bar, FastDial™ rotary encoders, Paired Playback buttons and BriteTouch™ display, offering a total of 44 playbacks, including dual Main Go sections, 10 motorized faders and 12 additional faders, as well as a total of 17 encoders for parameter access.

(www.martin.com)

Audio Equipment

iXY Microphones For iOS Devices

The iXY, a stereo microphone for both the iPhone and iPad with 30-pin connector that allows high-quality recording at sampling rates up to 24-bit/96kHz was announced by RØDE Microphones. The microphone has a matched pair of 1/2" cardioid condenser capsules that are fixed at a 90-degree 'near-coincident' alignment that will provide



high-quality stereo recording capability using its own high-fidelity analogue to digital conversion to make sure that all recordings are smooth and accurate. The tool is designed to record live music, meetings, lectures, reporting, dictation and sound design and also can be used on-camera as a dual-system recorder when shooting with DSLRs.

(www.hdvideopro.com)

The New M82 Dynamic Cardioid Microphone



The M82 dynamic cardioid microphone, introduced by Telefunken features a large 35mm diaphragm with low frequency capabilities, with two separate EQ switches: KICK EQ and HIGH BOOST. The KICK EQ switch engages a passive filter that reduces some of the lower mid-range frequencies (centered around 350Hz) commonly cut when processing a kick drum. This helps to keep the kick drum from sounding "boxy" and allows the low end to remain strong. The HIGH BOOST switch tilts the upper mid-range and high frequencies (starting around 2kHz with a 6dB boost by 10kHz). For kick drum use, this allows for more beater attack when placed inside a kick drum. This gives the option of either a vintage-style kick drum sound, or a more modern sound. For a source such as vocals or guitar amps, the high boost provides further articulation and airiness in the upper register.

(www.telefunken-elektroakustik.com)

Low-cost Stagebox Options For Soundcraft Digital Consoles



The new Mini Stagebox range from Harman's Soundcraft provides a simple solution to stage connectivity offering a lower-cost option for the systems where the modularity and configurability of the larger systems are not required.

The device provides 32 analogue inputs and 8 analogue line outputs, with 4 pairs of AES outputs, providing a total I/O capacity of 32 inputs and 16 outputs, with the Mini Stagebox 16 (2U) model providing 16 analogue inputs and 8 line outputs making a 16 x 8 matrix. They connect to any of the Soundcraft Si Expression, Si Compact, Si Performer, Si Series and Vi Series consoles via a MADI card fitted to the option card slot. The new units are part of the ViSi Connect range of interface options for all Soundcraft mixing consoles which includes the Compact and Vi Stageboxes and a range of option cards such as MADI, AES, CobraNet and AES.

(www.soundcraft.com)

Digital Live Sound Mixer



The new DL806 8-Channel Digital Live Sound Mixer with iPad Control, announced by Mackie delivers all the digital goodness and wireless control that the DL Series is known for in a mixer with a channel count that's perfect for smaller utility applications that have never before been able to take advantage of digital mixing tools. The 8-channel device brings the digital mixing and the wireless control. With the Easy-to-setup wireless control, it can be used from anywhere with up to ten iPad, iPhone or iPod touch devices. The DL806 hardware comes with eight Onyx mic preamps and 24-bit Cirrus Logic® AD/DA converters and a host of powerful plug-ins like EQ, dynamics, effects and GEQ.

(www.mackie.com)

Transmission

New DVB Transmitter



The world's smallest transmitter with the LDMOS technology has been introduced by Elti. The device is compact, fail-safe, with high efficiency, designed for digital TV networks, configurable for indoor/outdoor applications. The features of the transmitter are as follows: fully compliant with EN 302 304 (DVB-H), EN 300 744 (DVB-T) and EN 302 755 (DVB-T2), IFFT 2k up to extended 32k mode, LDMOS technology, remote management and control via LCD, TCP/IP, HTTP and SNMP interface, plug-and-play installation,

output power of TERX 50W transmitter is stated after output filter.

UHF Omni-Directional Antenna

The Elti family of UHF antennas now include a new state-of-the-art UHF Omni-Directional Antenna with exceptional horizontal and vertical radiation patterns based on a low weight design. TVA OMNI antenna has been developed for easy rooftop installation for special requirements of dense city coverage offering 1 or 2 bay solution.

Specifications:

	type OM-1	type OM-2
Input connector	EIA 7/8"	EIA 1 5/8"
Impedance	50 Ω	
VSWR	≤ 1.12 (25 dB)	
Frequency range	470 – 862 MHz	
Gain (ref. to half wave dipole)	4,5 dB	7,5 dB
Polarization	Horizontal	
Max. input power	2,5 kW	3,5 kW
Elevation pattern	25°	11°
Material:		
– dipoles and feeders	Aluminium and brass with protection	
– radome	Polyester	
Mounting	A holder with 2 clamps for pipe Φ (80-120mm)	
Icing protection	An efficient anti-frost polyester protection covering	
Lightning protection	All metal parts of antenna are DC grounded	
Weight	29 kg	50kg
Wind load	330 N at 160 km/h	590 N at 160 km/h
Max. wind velocity	225 km/h	
Dimensions (mm) *without lightening rod (250mm)	1.352 x 340	2.546 x 340

(www.elti.com)

Miscellany

Steadicam Smoothee iPhone Camera Stabilizer



The Steadicam Smoothee is designed and engineered to work right out of the box, with iPhone devices allowing the capture of video and images without the shakes normally associated with hand-held video shots on the go. The device allows control whilst shooting up and down steps, indoors and outside and through crowds. The removable mount also serves as a tabletop stand or can be mounted to any tripod with a standard 1/4 x 20" camera mount, 8"W x 14.5" H x 2.5" D (20.3 x 36.8 x 6.4cm) in operating configuration.

(www.tiffen.com)

Personalities & Post



Sharad Sadhu
Retires from the ABU

Sharad Sadhu retired as Director Technology in March 2013 after 20 years of service to the ABU.

Mr Sadhu joined the ABU Secretariat in 1993 and took up the post of Director Technology in September 2007. He began his career as a broadcast engineer in 1971, when he joined India's national TV broadcaster, Doordarshan (DDI) after receiving a first class Bachelor's Degree in Electrical Engineering from the J&K State University in India. For the following 21 years Sharad held a number of senior technical management positions at DDI, looking after TV broadcasting operations, maintenance and project installations. For two years from 1979, he worked at the Film & TV Institute of India in Pune as Assistant Professor and later Professor and Head of the TV Technical Department. From 1981 to 1992, he again worked at Doordarshan, initially as Station Engineer and from 1986 as Director Engineering, responsible for DDI's satellite TV services. Sharad left DDI to take up the position of General Manager in TCIL, a consulting company in New Delhi, providing consultancy for broadcast engineering, satellite, cable and MMDS projects and preparing tenders for operational jobs in foreign countries.

In 1993 Sharad joined the ABU Technical Department (now called ABU Technology) as Senior Engineer. It was a position he held until 2007, when he was promoted to Director of the department. While at the ABU he was a member of many international committees, including Vice-Chairman of the WBU-Technical Committee, a Steering Board member of the DRM Consortium, and a member of the conference advisory boards of the BES Conference (New Delhi), CabSat (Dubai) and BroadcastAsia (Singapore). He was also active at ITU world conferences and associated meetings, mainly in satellite and shortwave broadcasting issues and related matters, including frequency planning and standards setting.

Sharad played an important role in developing a strong base for spectrum management, regulation and new technologies activities in the ABU, as well as in introducing mobile and ICT technologies. Among his strong interests were new delivery technologies for handheld devices and broadband delivery.



Zeki Ciftci
New Deputy Director General, TRT

Zeki Ciftci received his BS degree in the Electrical and Electronics Engineering from the Middle East Technical University in 1985 and a MS degree at the same faculty. He completed his PhD Degree in the Electronics and Computer Education Department of Gazi University in 2002. He started working in Development Bank of Turkey, DBT, in 1987 as an Assistant Expert and worked as Expert, Senior Expert, and Manager in DBT respectively. He was appointed as the Director of Project Follow-Up II (Tourism) Directorate in 1997 and Director of Technology Follow-Up and Research Directorate in 2006. Between 2007 and 2011 he worked as the Manager of Information Technologies Department in the Turkish Grand National Assembly and from 2011 to July 2012 he worked as the Acting Head of Information Technologies Department.

Projects he studied in the Development Bank of Turkey included source usage support funding, Industry and Tourism projects and renewable energy subjects, especially wind energy. During his term in Turkish Grand National Assembly an information and communication infrastructure project and Electronic Document Management project were completed. He has been serving as the Deputy Director General at TRT in Ankara since 26 July 2012.



Nguyen Thanh Nam
New Specialist Engineer, ABU

ABU Technology welcomed its new engineer Nguyen Thanh Nam from VOV-Vietnam in March 2013. Before joining the ABU, Mr Nam has been working in the Broadcast Engineering Centre of VOV since 2003, where he was responsible for planning, deployment, implementation, installation, troubleshooting, training and management transmitter systems for VOV.

He received his Bachelor Degree in Electrical and Telecommunication Engineering in 2003 and Master degree in Business Administration in 2007 from Hanoi University of Science and Technology. He has also been trained at the Multimedia College (MMC) and Vietnam National University.

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Memory Card Camera Recorder "P2 Cam"

AG-HPX600EN

Main unit only

AG-HPX600ENF

Bundled with AG-CVF15G Color LCD Viewfinder and FUJINON 16x Auto Focus Lens

AG-HPX600ENC

Bundled with AG-CVF10G Color LCD Viewfinder and FUJINON 16x Auto Focus Lens



The New Concept P2 cam Meets Needs of a Wide Range of Use

- A 2/3-type mount allows use of existing lenses
- A compact body weighing 2.8 kg
- HD/SD multi-codec, including AVC-Intra100
- Versatile upgrade options, including proxy playlist editing
- Compatible with the microP2 card*1
- Future support for AVC-ULTRA codecs*2

<http://pro-av.panasonic.net>

*1: An upgrade (free of charge) may be required.

*2: Future support scheduled as an upgrade (paid option). Not all formats will be supported.

P2HD