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Symposium 2014:
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Asia-Pacific Broadcasting Union

TECHNICAL REVIEW

From the Editor's Desk



Over-the-air broadcasting is often threatened by a lack of frequencies available to offer new and future services such as 4K. The ABU, together with other partners, is making efforts to secure access to broadcast spectrum to maintain plurality and access to information. For the first time, DBS-2014 dedicated a session to spectrum issues, discussed by a number of experts, the essence of which the ABU will raise with World Broadcasting Unions (WBU) and at the next World Radiocommunication Conference, WRC-15.

With social media, more and more information is now available to everyone. However, it is the duty of the broadcaster to offer fast, reliable and accurate information to its viewers and listeners. Though it is a matter of delicate balance and professional judgement, the process can be supported by today's technology.

It is imperative that broadcasters review their funding models to offer their products on multiple delivery platforms. In particular, attractive content can be used to secure new types of advertising on emerging platforms. Broadcasters can use over-the-top (OTT) to engage and interact with their audiences and to create brand loyalty.

The 2014 ABU Digital Broadcasting Symposium explored all these exciting prospects for the broadcasting industry to move forward with new services, especially in the converging world. A collection photos and articles on a number of the sessions is included in this edition of Technical Review. Eighty-four Speakers spoke in 11 conference sessions and 13 workshop sessions over four days. A total of 1288 participants attended the event including 750 conference delegates. The sixty exhibitors reported that they had a good response from visitors to their booths.



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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Dr. Amal Punchihewa
ABU Technology

The Asia-Pacific Broadcasting Union
2nd Floor, IPPTAR Building, Angkasapuri, 50614 Kuala Lumpur, Malaysia
Telephone: (60-3) 2282 3108 Fax: (60-3) 2282 4606

For advertising inquiries, contact
Hamidah Rani
email: hamidah@abu.org.my

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UHDTV System Colourimetry and Technical Development for Its Implementation

by Kenichiro Masaoka, Takuji Soeno, Yuichi Kusakabe,
Takayuki Yamashita, Yukihiro Nishida, Masayuki Sugawara
NHK Science & Technology Research Laboratories, Japan

abstract

In addition to the high pixel count of ultra-high definition television (UHDTV), the UHDTV system colourimetry is designed to have a wide gamut for reproducing most object colours, sharing the common objective of providing more realistic images than HDTV. This paper introduces the design process of the ITU-R standard system colourimetry for UHDTV as well as the development of our 8K camera and laser projector to demonstrate the effectiveness of the wide colour gamut.

Introduction

Ultra-high definition television (UHDTV) is a next-generation television system, that provides a better viewing experience than high definition television (HDTV). In August 2012, ITU-R issued Recommendation BT.2020 [1] specifying the video parameter values for UHDTV programme production and international exchange. The main feature is its high pixel counts of 4K (3840 x 2160 pixels) and 8K (7680 x 4320 pixels), which provide a wide field of view (FOV). NHK evaluated the effects of UHDTV's wide FOV and high resolution from the viewpoint of the "sense of presence" and the "sensation of realness." Masaoka *et al.* [2] showed that as the FOV increased, the subjective score of the sense of presence increased and reached a plateau at about 80 degrees. Masaoka *et al.* [3] also conducted a unique subjective experiment where real objects and their images were compared at various angular resolutions. Their results showed that the sensation of realness increased steadily as the angular resolution increased to around 60 cycles per degree. Based on these experimental results, it was concluded that 8K will be realized as the ultimate two-dimensional television system [4].

In addition to the high pixel count of UHDTV, Rec. 2020 specifies a system colourimetry with a wider colour gamut than that of the HDTV specified in Rec. 709 [5] to represent images more realistically. System colourimetry refers to the expression of colour primaries and the colour chosen for reference white. The colour gamut depends on the saturation of the primaries.

During 1949–1953, a number of primary sets for a colour television system were proposed based mainly upon silicate phosphors, which were the only suitable ones available at

that time [6]. In 1953, the National Television System Committee (NTSC) promulgated a set of chromaticity coordinates, the saturation of which was relatively high and they were suitable for covering real object colours. Later, the NTSC 1953 primaries were reexamined from the standpoint of the durability and emission efficiency of the CRT phosphors, which resulted in a reduction of the colour gamut, i.e., the use of less saturated primaries for NTSC (SMPTE 170M [7]) and for HDTV (Rec. 709). However, with the advancement of non-CRT technologies and wide-gamut displays such as LED-backlit LCDs and laser displays, and the subsequent discontinuation of CRT displays, the design of system colourimetry for UHDTV is no longer constrained by the CRT phosphor characteristics.

This paper introduces the design process of the ITU-R standard system colourimetry for UHDTV [8,4], as well as our 8K camera and laser projector to demonstrate the effectiveness of the UHDTV system colourimetry.

Designing RGB Primaries

The wide-gamut system colourimetry was designed based on the requirements of colour encoding efficiency, programme quality management, target colour gamut, and efficient gamut mapping.

Considering the colour encoding efficiency and programme quality management, physically realizable, highly saturated RGB primaries were decided to be used, instead of more than three primaries or unreal primaries with chromaticities outside of the spectral locus. Programme quality management requires that each colour can be displayed on a reference monitor so that broadcasters can monitor and control colour

reproduction. If we use unreal primaries or an extended gamut by utilising negative RGB values such as xvYCC [9] and Rec. 1361 [10], we would have to design a real RGB primary set for reference monitors in programme production. Thus, to handle the maximum colour gamut, it was assumed that the RGB primaries should be monochromatic.

With respect to the target colour gamut, the gamut of the following system colourimetries were considered to be covered by the UHDTV system colourimetry: Rec. 709 for HDTV, SMPTE RP 431-2 [11] for the RGB primaries of the reference projector for digital cinema, and Adobe RGB [12] as the de facto standard in professional colour processing. This requirement restricts the ranges of the wavelengths of the monochromatic RGB primaries ($\lambda_R, \lambda_G, \lambda_B$) to >615 nm, 525–538 nm, and 455–468 nm, respectively, as shown in Figure 1. The reference white was set to the same point as HDTV at D65.

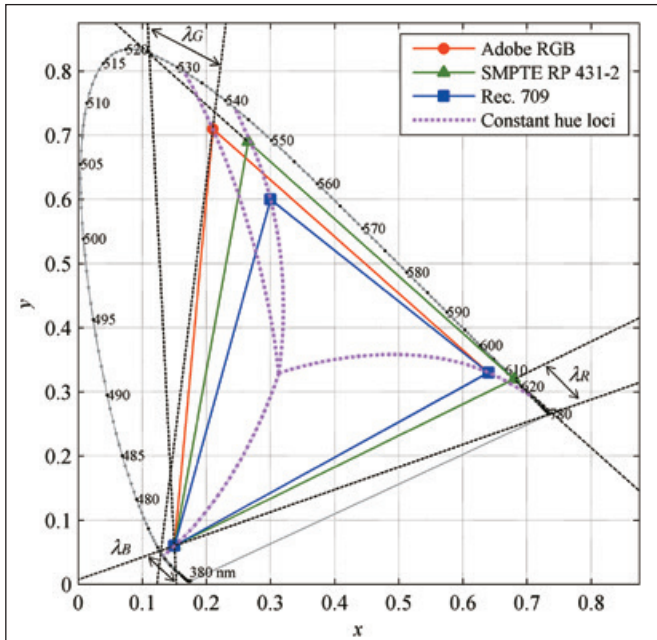


Figure 1: RGB primary sets and their constant hue loci for HDTV (Rec. 709), Adobe RGB, and digital cinema (SMPTE RP 431-2), and the wavelength ranges needed for monochromatic primaries to cover these standard gamuts.

To ensure efficient gamut mapping between UHDTV and existing standard systems, it is desirable that each primary of the UHDTV system colourimetry is in the constant hue of the corresponding primary of each standard. The constant hue loci are shown in Fig. 1. The cross points of the constant hue loci and the spectrum locus correspond to 628 nm for λ_R , 531 nm and 542 nm for λ_G , and 467 nm for λ_B .

Next, the feasibility of using laser diodes as the light sources of the RGB primaries was examined after a thorough discussion with many experts in the field. For λ_G , a second harmonic generation (SHG) laser operating at 532 nm wavelength is already available for use in display light sources. In addition, pure-green semiconductor lasers have been developed, and they are expected to be miniaturized and made highly efficient in the near future. For λ_B , InGaN semiconductor lasers, where the wavelength can be controlled by the GaN/InN ratio, are already available

for 467 nm. For λ_R , two wavelengths were proposed: 635 nm using the established LD technology for DVDs and 625 nm based on the hue linearity of a red primary for the AMOLED technologies. Finally, the middle wavelength point of 630 nm was standardised. Table 1 shows the chromaticity coordinates of the RGB primaries specified in Rec. 2020.

Table 1: Rec. 2020 Colourimetry

Chromaticity Coordinates	x	y
Red primary (R)	0.708	0.292
Green primary (G)	0.170	0.797
Blue primary (B)	0.131	0.046
Reference white (D65)	0.3127	0.3290

Coverage of Object Colours

The UHDTV system colourimetry is expected to reproduce most natural object colours. The colour gamut covered by the Rec. 2020 system colourimetry was tested against Pointer's colours [13], the standard object colour spectra (SOCS) database [14], and optimal colour [15]. Details of the calculations required to estimate the coverage ratios are provided in [8].

Pointer's Colours

Pointer's colours represent the maximum gamut of real surface colours. Figure 2 shows the chromaticities of Pointer's colours and standard RGB primaries. Figure 3 shows a contour plot of the gamut coverage in the CIELAB colour space where λ_G is fixed at 532 nm. The coverage was $>99.9\%$ with the Rec. 2020 RGB primaries, but 91.4% for SMPTE RP 431-2, 90.3% for Adobe RGB, and 74.4% for Rec. 709. From Fig. 2 and Fig. 3, it can be observed the blue primary at 467 nm is sufficient to cover both cyan and magenta.

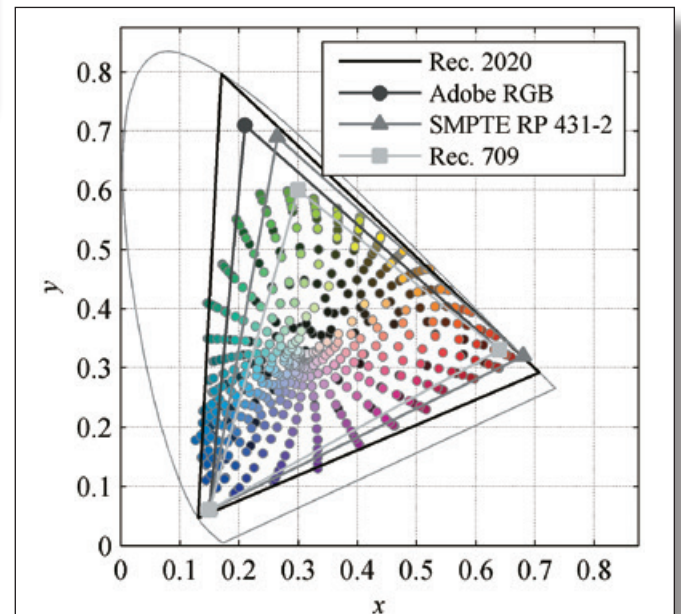


Figure 2: Pointer's colours and standard RGB primaries.

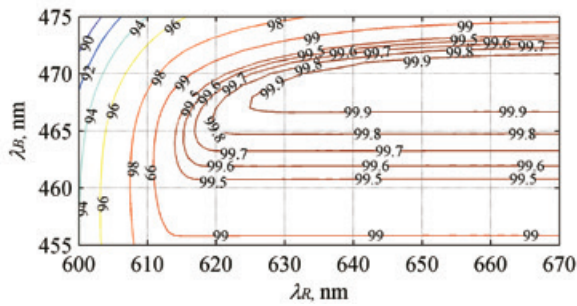


Figure 3: Coverage of Pointer's gamut with a wavelength of 532 nm for the green primary.

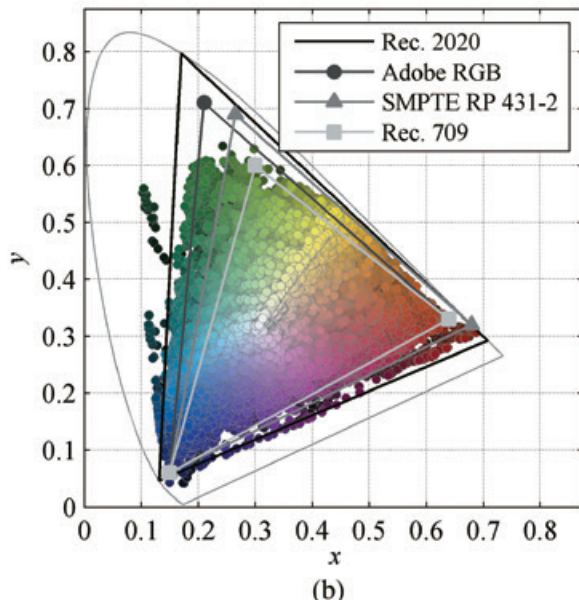
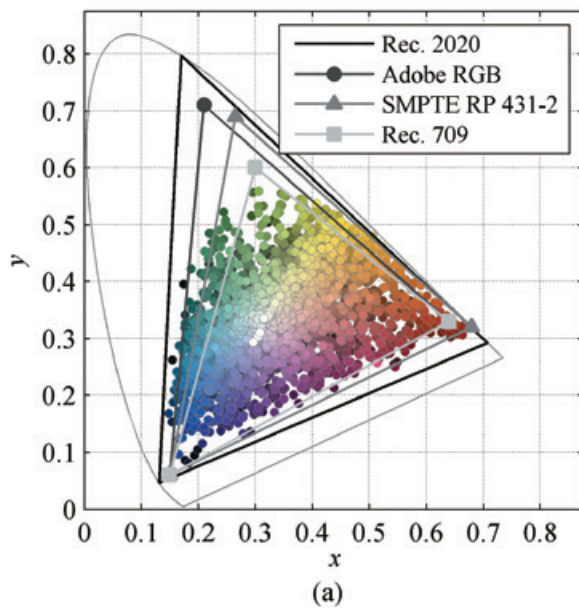


Figure 4: Chromaticities of the SOCS colours: (a) Natural Objects; (b) Media Objects.

SOCS

The SOCS database was used for further analysis of the coverage of object colours. Since the SOCS colours do not represent a continuous volume, we examined each colour

individually to measure the coverage achieved by the Rec. 2020 colourimetry. First, we divided the SOCS colours into two groups: "Natural Objects" and "Media Objects." The Natural Object colours comprised 12,569 spectral reflectance data in the seven categories of Paint (not for art), Paints (for art), Textile, Flowers, Leaves, Human skin, and Krinov data. These objects appear often in television programmes and their colours need to be covered. The Media Object colours comprised 40,784 spectral reflectance or transmittance data in the three categories of Photographic materials, Graphic prints, and Computer colour prints, which include samples used as media themselves. Figure 4 shows the chromaticities of the colours under illuminant D65. For Natural Objects (Fig. 4a), all of the colours are within the Rec. 2020 gamut, except five samples with specular reflection or fluorescence. For Media Objects (Fig. 4b), 132 colours are outside the Rec. 2020 gamut.

Optimal Colour

The SOCS database published in 2003 includes more saturated colours than Pointer's gamut published in 1980 because new pigments were developed in this period. To account for colour materials that may be developed in the future, it would be useful to evaluate the coverage for optimal colour, which is the theoretical limit of the object colour. The coverage of optimal colour with a primary set [16] designed to maximize the coverage was 77.0%, which was larger than that with the Rec. 2020 RGB primaries (75.8%). On the other hand, the coverage of Pointer's gamut with the primary set (97.7%) was lower than that with the Rec. 2020 RGB primaries (>99.9%). Taking into account the fact that the optimal colour gamut is a theoretical maximum whereas Pointer's gamut is a real maximum, selecting the Rec. 2020 RGB primaries is reasonable.

Luminance Equation and Bit Depth

Video systems transmit one luminance component and two chroma components. The nonlinear luminance component Y' is formulated as a weighted sum of nonlinear gamma-corrected $R'G'B'$ components, departing from the principle of colour science. This nonlinear summation causes some artifact after chroma subsampling, which usually constitutes a reduction in the luminance component. This artifact is well known to some video engineering experts as "nonconstant" luminance.

At the ITU-R meetings, two luminance equations were proposed. One was a conventional nonconstant luminance equation, $Y' = 0.2627R' + 0.6780G' + 0.0593B'$, and the other one was a constant luminance equation, where the linear luminance component Y_c is formulated as a weighted sum of linear RGB components, and then a nonlinear transform is applied to Y_c to form the nonlinear luminance component Y'_c as $Y'_c = (0.2627R + 0.6780G + 0.0593B)'$. In the latter equation, luminance is recovered completely from the Y'_c component, irrespective of how the colour difference signals are subsampled. However, the mixture of linear and nonlinear quantities in the colour difference equations, $B' - Y'_c$ and $R' - Y'_c$, causes hue shift artifacts

after chroma subsampling (e.g., luminance details where saturated red becomes yellowish).

Based on the fact that the subjective difference between natural images encoded with the constant luminance and non-constant luminance equations is not significant, both equations were adopted for Rec. 2020. Japan adopted only the nonconstant luminance equation for Japan's ARIB standard [17].

The bit depth required for quantisation was estimated on the basis of Barten's contrast sensitivity model [18] so that the contour artifacts of the luminance signal become invisible, and 10 bits or 12 bits were decided to be used [4]. These bit depths are higher than those for Rec. 709 (8 bits or 10 bits), and they are specified in the ITU-R and ARIB standards.

Implementation of the UHDTV System Colourimetry

8K Video Camera

The spectral sensitivity properties of broadcast cameras are designed based on the ideal camera spectral sensitivities [19]. The curves are calculated from the CIE colour-matching functions by a linear transformation where the matrix is determined primarily by the chromaticities of the three primaries and the reference white. A colour camera with the ideal spectral sensitivity curves outputs the relative amounts of the RGB primaries so that the chromaticities and relative luminances of the displayed colour and the original become identical. Figure 5 shows the ideal camera spectral sensitivity curves for the Rec. 709 and Rec. 2020 system colourimetries. The theoretically required ideal sensitivity curves are not physically realisable because of their negative sensitivities. Modern cameras apply a 3×3 matrix to the RGB linear output to approximate the effect of the negative regions. As Fig. 5a shows, the negative lobes for Rec. 709 are large, which results in large negative coefficients of the off-diagonal elements of the linear matrix and degradation in the signal-to-noise ratio.

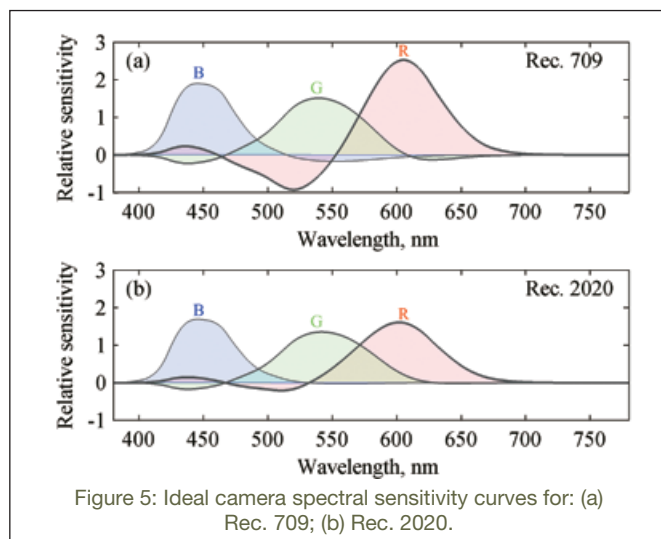


Figure 5: Ideal camera spectral sensitivity curves for: (a) Rec. 709; (b) Rec. 2020.

We developed a new prism for Rec. 2020 and installed it in our 8K video camera [20], replacing the prism designed for Rec. 709. Figure 6 illustrates the optical design of the prism. The first dichroic optical coating (D1) transmits the red and green and reflects the blue and infrared. The infrared is absorbed in the filter in front of the blue sensor. The spectral transmittance of D1 is designed mainly to shape the spectral sensitivity curve at longer wavelengths for the red channel. The red transmitted through D1 is reflected from the second dichroic optical coating (D2), while the green passes through D2. There are no trimming filters in front of the sensors and no absorptive infrared cut filter in front of the prism, while the dichroic prisms installed in broadcast HDTV cameras have trimming filters in front of the sensors to compensate for the large negative lobes of the Rec 709 ideal camera sensitivity curves.

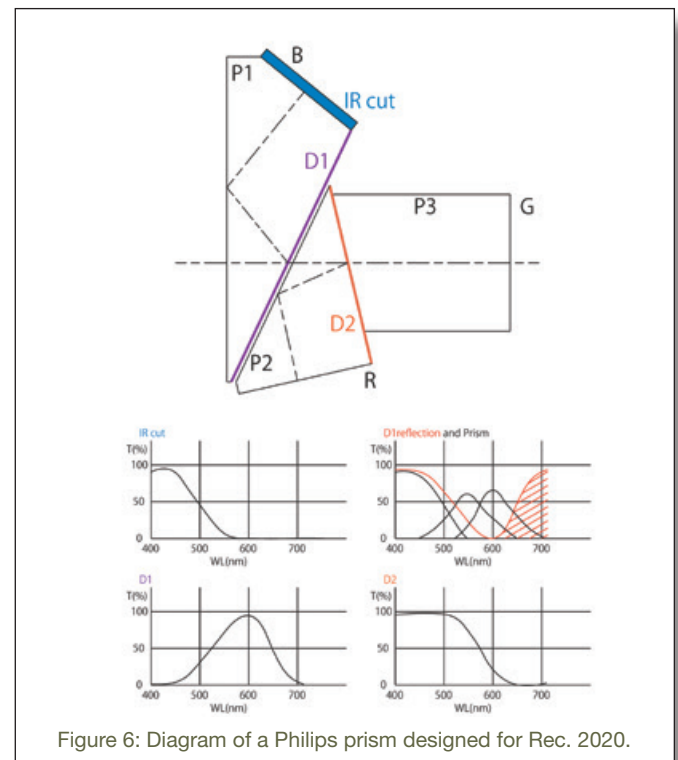
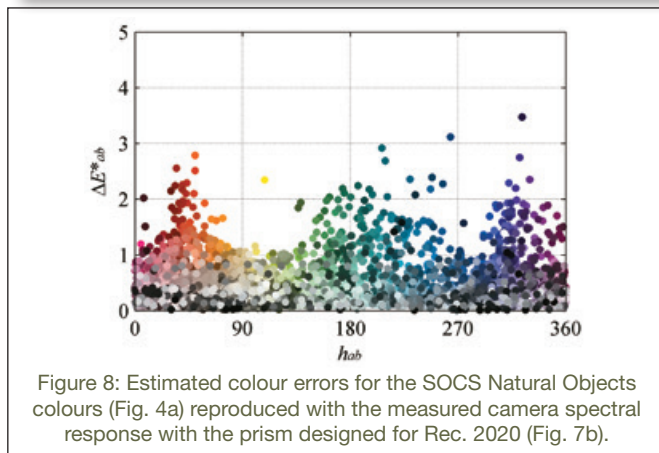
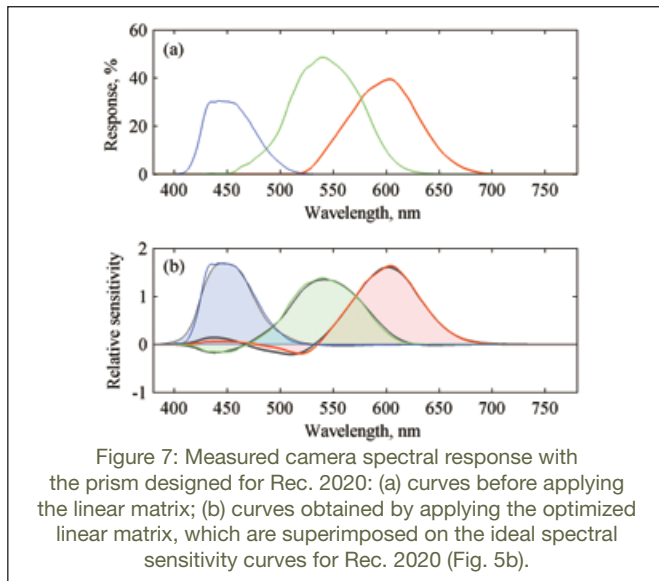


Figure 6: Diagram of a Philips prism designed for Rec. 2020.

We evaluated the accuracy of colour reproduction of the 8K camera equipped with the new prism. In practice, the linear matrix for correcting the input linear RGB values is optimised with some standard colour samples so that the colour differences between the references and the reproduction are minimised. We used the spectral reflectance data of the 24 ColorChecker colours [21] simulated under illuminant D65 to optimise the linear matrix and quantified the colour errors with the CIELAB colour difference formula. Figure 7a shows the overall spectral response of the 8K camera with the prism designed for Rec. 2020, including the characteristics of the lens, prism, and sensors. Figure 7b shows the curves applied by an optimised linear matrix, with an average ΔE_{ab} of 0.5 and a maximum of 1.6 (No. 10 Purple) for the ColorChecker colours. To further analyse the colour reproduction of the 8K camera, we estimated the colour reproduction of the SOCS Natural Objects colours. Figure 8 shows the colour errors simulated with the curves of our 8K camera for Rec. 2020 (Fig. 7b), which yielded an average ΔE_{ab} of 0.5.



8K Laser Projector

We demonstrated the effectiveness of the wide-gamut system colourimetry at the NHK Science & Technology Research Laboratories Open House in 2013 [22]. Figure 9 shows a photograph of the demonstration. On the left side, we placed objects with highly saturated colours. The objects were shot with the 8K video camera and the images were displayed in real time on the screen on the right side using our 8K laser projector. The images reproduced with Rec. 2020 were compared to those reproduced with Rec. 709. Every visitor easily distinguished the difference between the Rec. 709 and Rec. 2020 images and reported that the Rec. 2020 images looked much more similar to the real objects.



Figure 9: Demonstration of the UHDTV wide-gamut system colourimetry using an 8K video camera with the new prism and an 8K laser projector at NHK STRL Open House in 2013.

Conclusions

We have presented the design process of the wide-gamut UHDTV system colourimetry adopted by ITU-R. The colour gamut covers most real objects. The effectiveness of the wide gamut was demonstrated using our 8K camera and laser projector designed for the Rec. 2020 system colourimetry. The colour reproduction of the cameras for Rec. 2020 is potentially more accurate because of the smaller negative lobes of the ideal camera spectral sensitivities than those for Rec. 709.

We are about to shift to the new TV colourimetry from the conventional TV ones, which have been used for more than half a century. We hope that UHDTV provides a significantly increased sense of presence and sensation of realness with its high pixel count and wide gamut system colourimetry.

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authors



Kenichiro Masaoka
NHK Science & Technology Research Laboratories, Japan

Kenichiro Masaoka received a B.S. in electronics engineering and an M.S. in energy engineering from the Tokyo Institute of Technology, Tokyo, Japan. He joined NHK (Japan Broadcasting Corporation) in 1996. He is Principal Research Engineer for the Advanced Television Systems Research Division, NHK Science and Technology Research Laboratories (STRL), Tokyo. He received a Ph.D. in Engineering from the Tokyo Institute of Technology in 2009. His research interests include colour science, human vision, and digital imaging systems. He is a member of IEEE, SMPTE, and the Institute of Image Information and Television Engineers of Japan (ITE).



Takuji Soeno
NHK Science & Technology Research Laboratories, Japan

Takuji Soeno is Research Engineer at NHK STRL. He received B.E. and M.E. degrees in applied physics and physico-informatics from Keio University, Yokohama, Japan. In 2004, he joined NHK and established his career as a video engineer doing TV programme production. Since 2010, he has been in charge of research and development of UHDTV systems, particularly cameras, image sensors, and digital signal processing. He is a member of ITE.



Yuichi Kusakabe
NHK Science & Technology Research Laboratories, Japan

Yuichi Kusakabe received B.E and M.S. degrees in applied physics from the University of Tokyo, Tokyo, Japan. Since 1999, he has been working for NHK. He is Principal Research Engineer at NHK STRL and is engaged in the development of display systems for UHDTV. He is a member of ITE.



Takayuki Yamashita
NHK Science & Technology Research Laboratories, Japan

Takayuki Yamashita is Senior Research Engineer at NHK STRL. He is currently researching UHDTV systems, and his research fields include the development of camera systems, image sensors, and high-bandwidth digital signal processing. He also has a research interest in image capturing systems for next-generation 3DTV. He joined NHK in 1995 after receiving B.E. and M.E. degrees in electronic engineering and information science from Kyoto Institute of Technology, Kyoto, Japan. He is a member of SMPTE and ITE.



Yukihiro Nishida
NHK Science & Technology Research Laboratories, Japan

Yukihiro Nishida is Senior Research Engineer for the Advanced Television Systems Research Division of NHK STRL. He has been involved in many areas of broadcasting technologies including HDTV, digital broadcasting, video coding, multiplexing, quality evaluation, and UHDTV. He is also active in the standardisation of broadcast technologies in ITU-R and ARIB. He is Vice-Chairman of ITU-R Study Group 6 on broadcasting services, and is also Chairman of Working Party 6B. He received B.S. and M.S. degrees in electric engineering from Keio University, Yokohama, Japan, and a Ph.D. in engineering from the University of Electro-Communications, Tokyo, Japan.



Masayuki Sugawara
NHK Science & Technology Research Laboratories, Japan

Masayuki Sugawara received B.S. and M.S. degrees in electric communication engineering, and a Ph.D. degree in electronic engineering from Tohoku University, Sendai, Japan. He joined NHK in 1983. Since 1987, he has been researching solid-state image sensors and HDTV cameras at NHK STRL. He was an associate professor at the University of Electro-Communications, Tokyo, Japan, from 2000 to 2004. He has been attending ITU-R SG6 meetings since 2004 and been active in the working parties that deal with programme production. At present, he is Head of Advanced Television Systems Research Division at NHK STRL and is engaged in research on UHDTV systems. He is a member of SMPTE, IEEE, SID, IEICE, and ITE.

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A New Approach for Broadcasting: Hybrid Broadcast Broadband TV (HbbTV)

by Ruhi Taş¹, Sedat Onay¹

¹ Turkish Radio Television Co. Ankara / Turkey
ruhi.tas@trt.net.tr, sedat.onay@trt.net.tr

abstract

Hybrid Broadcast Broadband Television is a technology platform that combines television and Internet services. TV has shaped 20th-century culture more than any other technology. The Internet has also significantly expanded our communication options. This paper provides an overview of the Hybrid Broadcast Broadband TV (HbbTV) concept and its applications, as well as an update on standardisation and deployment status. It then describes the add-on to a digital TV headend (Satellite, DTTV, Cable, IPTV) to enable delivery of innovative HbbTV interactive non-linear and linear services.

Keywords: TV, IPTV, Digital TV, HbbTV.

Introduction

HbbTV is a technological standard that many major hardware and software manufacturers support and promote for use in TVs and set-top boxes. HbbTV was standardised by the European Telecommunications Standards Institute (ETSI) in June 2010. (ETSI TS 102.796 v1.1.1) [1] Version 1.2.1 of this specification has been approved by ETSI as ETSI TS 102 796 in November 2012. and Support for HbbTV version 1.5 (ETSI TS 102 796 V1.2.1) [2] is currently in development. HTTP Streaming is also becoming more and more popular for delivering audiovisual content over broadband links. HbbTV 1.5 introduces support for HTTP adaptive streaming (based on MPEG-DASH-Dynamic Adaptive Streaming over HTTP) [3], improving the perceived quality of video presentation on busy or slow Internet connections, and advanced DRM support added to this version. Figure 1 summarises HbbTV, which is a content distribution platform for signalling, transport and presentation of enhanced and interactive television services and related applications designed for both broadcast and internet networks and running on hybrid terminals that include both a broadcast and internet connection. Solutions for interactive TV services, developed previously, deliver similar functionality.

Some broadcasters have already worked on different hybrid solutions for different markets, for example MHP (Multimedia Home Platform) in Italy, MHEG-5 (Multimedia and Hypermedia Expert Group), Connected TV, and YouView in the United Kingdom.[4] It is expected that HbbTV will be inter-operational with these while ensuring significant enhancement to the viewing experience. Most other European

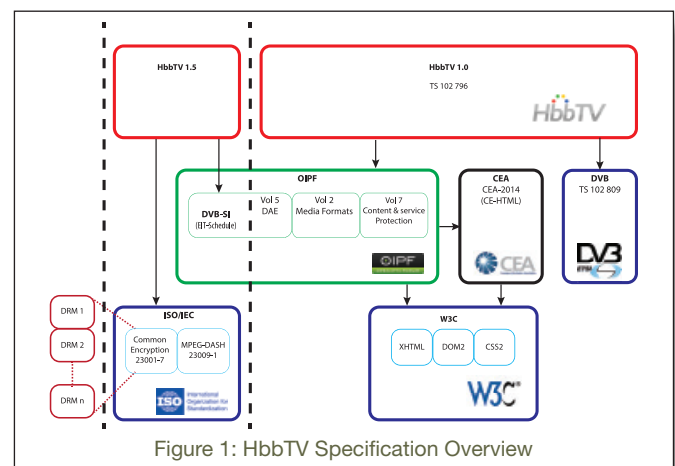


Figure 1: HbbTV Specification Overview

countries have officially endorsed the standard, including Germany (ARD, RTL, SAT1, Pro7 etc), France (France Telecom, NRJ, TF1, arte,

M6 vb), the Netherlands, Austria, Switzerland [5], the Czech Republic, Poland [6], Finland [7], and Hungary [8]. HbbTV services are deployed across satellite, terrestrial and cable platforms. [9] Figure 2 shows HbbTV trends in Europe [10].

HbbTV was originally developed in relation to the DVB system family for satellite, terrestrial and cable broadcasting (DVB-S/S2, DVB-T/T2 and DVB-C/C2) as well as for DVB-IPTV networks. HbbTV services can be embedded within the digital broadcast signal. [11]

The term Hybrid Broadcast Broadband TV represents a simple concept that facilitates a whole host of new functions. The

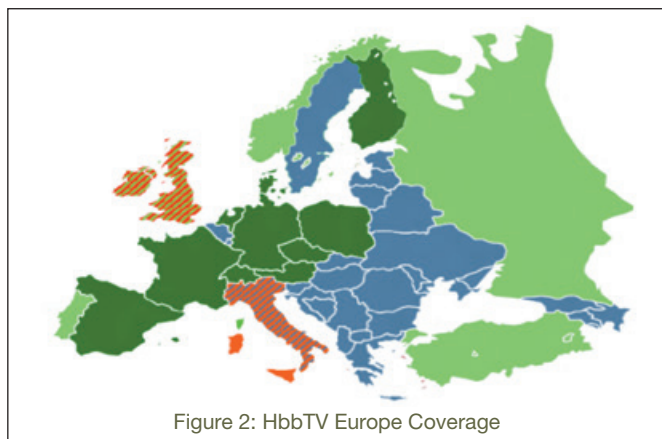


Figure 2: HbbTV Europe Coverage

principle is that, with the push of a button, viewers can carry out actions defined by the channel at specified access points during the programme. Like basic teletext, a push of the red button opens up or closes the HbbTV applications.

The form of processing information typical of TV is also used to call up Internet pages, which means the distracting URL will not be visible as it is in the Web browser. A blocking mechanism also prevents any terminals other than the TV from accessing the technology, which conceals a unique version of HTML developed specifically for entertainment devices. Web pages are called up using an application information table (AIT), which is sent as an additional signal attached to the radio signal. When the user activates the “red button” function, the AIT is read and the predefined URL appears on the screen without any irritating embellishments.

How Does it Work?

The signalling of applications is compatible with the DVB standard, this is done via the Application Information Table (AIT) in the relevant DVB service and is indicated in its Programme Map Table (PMT). The AIT signalling offers mechanisms for starting, stopping and switching to different applications.

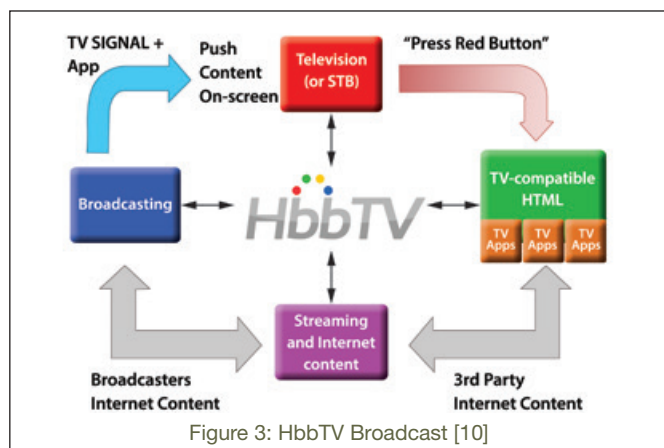


Figure 3: HbbTV Broadcast [10]

Applications can stream media content by using HTTP or RTSP unicast protocols. This is particularly useful for applications displaying broadband originated content, such as VOD or catch-up, but enables also extra content linked to an advertisement present on a TV channel for instance.

The standard specifies that the following media formats must be supported for broadband content:

System format: MP4 or TS
Audio: MPEG2 layer 3, E-AC3, HEAAC
Video: H264 AVC up to 1920x1080

HbbTV is based around technologies that will be more familiar to web developers than those of MHEG, including CE-HTML, a specification that includes XHTML, CSS, Ajax and Javascript. Crucially, that makes it accessible to considerably more coders than MHEG, with its more esoteric tech, does. In short, with HbbTV, its supporters claim, content providers can build and release apps that link to their material more quickly.

HbbTV's Javascript API has extensions to provide for TV functionality, such as handling channel changes.

The HbbTV specification has been approved by ETSI (ETSI TS 102 796) and is based on existing standards and web technologies including OIPF (Open IPTV Forum), CEA, DVB and W3C. HbbTV provides the features and functionality required to deliver more advanced TV services and experiences for the future, typically areas are to replace the old EBU Teletext with a “supertelext”, catch-up TV and on-demand services and other internet services with often a combination of classical broadcast and broadband delivery to the viewers. Utilising standard Internet technology it enables faster and easier application development for the broadcasters.

HbbTV applications are web-based applications using existing web Technologies; HyperText Markup Language (HTML), Cascading Style Sheets (CSS) and JavaScript. However HbbTV applications differ from regular web applications. HbbTV applications need to comply with different accessibility cases and HbbTV limitations.[12]

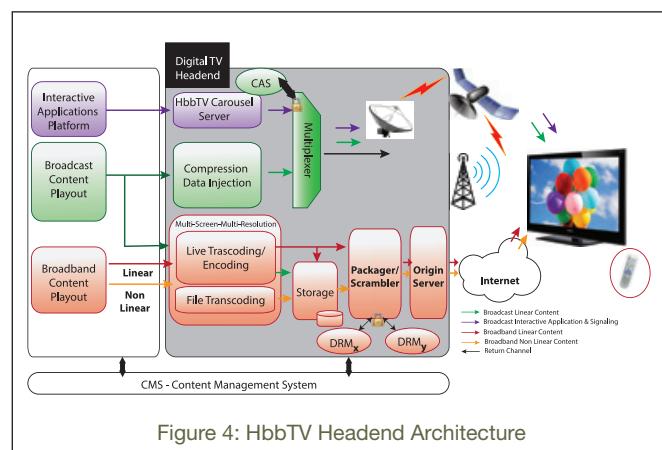


Figure 4: HbbTV Headend Architecture

Thus, existing online services can readily be adapted to the TV screen and service providers can more or less instantaneously provide services also for the TV screen. This allows the leveraging of synergy and effectiveness at the levels of conceptual design and application development as well as during integration and operation.

Deploying HbbTV application means dedicating bandwidth to these new services, 100 to 300 kbps to carousel an

application portal. The hybrid device (TV set or STB) is simultaneously connected to the broadcast network and the Internet. In systems where Internet connection is not available, applications like EPG, super teletext and news are still possible. If broadband coverage is not available and it may be preferable to broadcast more data through this HbbTV stream, e.g. full EPG or Teletext. In these cases the required bandwidth will be higher and can even reach 2-3Mbit/s per multiplex, for instance. [13]

HbbTV Services

HbbTV is a standard which allows TV and internet content to be linked via a television set. At the touch of a button on their remote control, the viewer can access information or complementary services, such as in-depth background on the current programme, video on demand, catch-up TV on demand, and sharing via social networks. It also makes it possible to interact with programmes themselves in the form of votes or the submission of questions. So, rather than being revolutionary, HbbTV is a pulling together of existing standards to create a platform designed to be straightforward to implement, and to enable easy development of applications.

Essential to HbbTV is a multimedia programme guide in which viewers will find content which doesn't reach the normal broadcast audience. For example in a live sports match spectators can view statistics, highlights, interviews etc. New TV will offer the most interesting moments of matches from your video archive. Also viewers will be able to vote and comment. when viewing the programme guide, being able to directly run trailers. An intelligent system can offer them related content, such as previous excerpts or other programmes with the same actors or director

Main Applications;

News, Sport, Stock Market etc. (figure 5)



Figure 5: HbbTV News Application

Video streaming applications delivering movies, tv shows and including trailer, rating, purchasing and visiting related contents features. Live, Catchup and VoD services, (Figure 6)

Games and competitions including quizzes or puzzles. These applications can be related to the broadcasted event in order to enhance the user experience. Such as, chess or Sudoku [14]

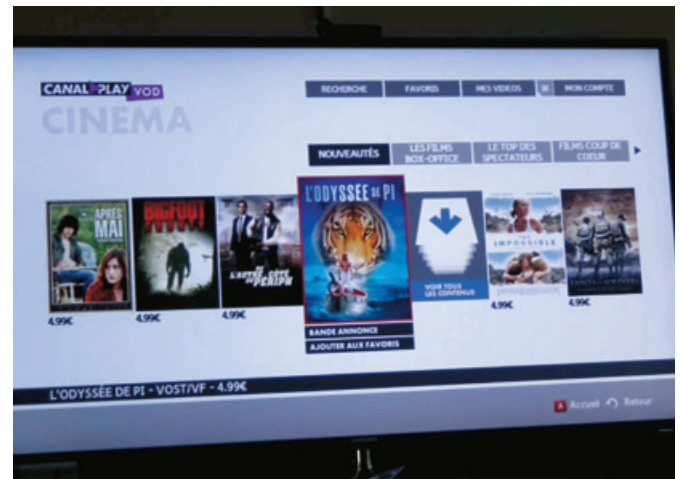


Figure 6: VOD application

Second Screen interaction applications; Video streaming applications delivering movies, TV shows, including second screen features to amplify information on a tablet, smartphone or PC.

Weather forecast, user can adjust their city,



Figure 7: Weather Forecast Application

Design and development of live voting applications related with the broadcasted event,

Sponsor apps, instant advertisement and selling, (figure 8)



Figure 8: Commercial application

Enhanced Teletext,



Figure 9: Teletext application

Enhanced EPG; 7 days electronic programme guide features



Figure 10: EPG

Live Sport statistics can be added

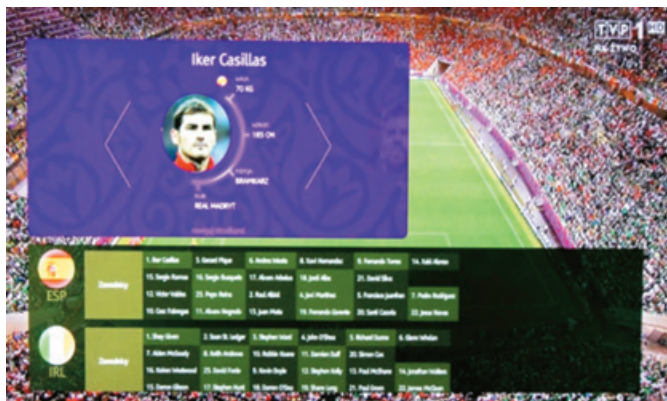


Figure 11: Sport Statistics

Social networks integration, instant messages, twitter, facebook etc.

Usability, Accessibility; These tools are different colour contrasts, font sizes, text to speech etc.

All these applications include integration with different backends like video, metadata and advertisement providers and servers.

Conclusions

TV applications are an efficient method of content delivery to end-users. In the fast moving world of Internet video services, HbbTV has gained wide ranging support from

broadcasters, operators and technology providers throughout the world, and is the leading harmonising standard of broadcast, IPTV and broadcast entertainment delivery.

Through the adoption of HbbTV, consumers will be able to access new services. In addition to conventional TV, hybrid systems provide viewers with catch-up TV services, video on demand (VoD), interactive advertising, personalisation, voting, games and social networking as well as programme-related services such as digital text and EPGs.

A host of new attractive, interactive and personalised services as well as easy access to Internet services, comfortably all in one. Hybrid applications including different tools in order to improve the user experience and make the services available and accessible to everyone in any specific situation. HbbTV content can be either broadcast via DVB using DSM-CC object carousel or delivered via IP connection.

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authors



Ruhi TAS

Turkish Radio Television Co. Ankara / Turkey

Ruhi TAS, an Electronics Engineer, received his B.Sc. degree in Electrical and Electronic Engineering Department of Hacettepe University, Ankara in 1995. He has M.Sc degree in mobile learning subject (The Application of Mobile Information Systems Technology to Electrical and Electronics Engineering Courses) from same university and same department, in 2011. He worked as a project leader and developer in R&D department (TRT), and he is currently working in the IT department as a software chief engineer in TRT. Skilled in Microprocessor programming and hardware design, web programming ASP.net, C #, Silverlight, database design and he attended many courses related to web and mobile programming. He is working on the HbbTV Project for TRT HD channel.



Sedat ONAY

Turkish Radio Television Co. Ankara / Turkey

Sedat ONAY, an Astronomer and Physicist,, received his B.Sc. degree in Astronomy and Space Sciences and Physics Departments of Ankara University, Ankara in 1998. He has M.Sc degree in Theoric Calculation of Atomic Lande Factor subject from Kırıkkale universty and Physics department. He has pH.D degree in same university same department on 3D modelling of Electromagnetic waves with Computer in 2008. He worked as a Responsible of Broadcasting in Transmitter department also as a System administrator and tecnichal director in News department (TRT), and he is currently working as Head of IT department in TRT. Skilled in multi programming and hardware design, VB, Matlab, C #, etc and he has attended many course related to web programming, ISO27001. He speaks English and some Chinese.



LOOK FROM THE TOP  **TO WATCH THE WORLD**



DBS 2014

– New Technologies Bring Profound Transformation, Deputy Minister says

By Olya Booyar,

ABU

The advent of new communication technology has brought a profound transformation in the way people communicate, the tenth ABU Digital Broadcasting Symposium was told.

In his opening address, Malaysia's Deputy Minister at the Ministry of Communications and Multimedia, Dato' Jailani Johari, said new technologies such as interactive TV and IPTV offered vast opportunities for public participation and engagement.

"Media use is expanded further and the time has come to examine the root and route of the communications and multimedia," he told delegates to DBS 2014 at the Hotel Istana in Kuala Lumpur. "The best place to start looking is the paradox of transformation."



He said Malaysia, like many other nations in the region, was very keen on the digital transformation of the broadcasting industry and had taken up the digital challenge.

"Our priority is to position the broadcasting industry in this country at the forefront of development and innovation in content, and we have made significant progress towards achieving this objective," he said. "To encourage and promote development of local content, the government is providing incentives to help nurture local entrepreneurs and producing products catering to the international markets."

Dato Jailani said that, to stay relevant, it was important for traditional media to persistently evolve and embrace the advent of new broadcasting technologies while remaining strong in upholding the ethics of public broadcasting, such as providing accurate news, respecting individual privacy, treating replies generously and listening to both sides.



Earlier, at the start of the symposium, Dato' Yasmin binte Tan Sri M Yusuff, one of Malaysia's best-known broadcasters, spoke in praise of radio.

"It's free, it's personal and it's always there," she said, though she warned that radio still needed to challenge itself to give people something they would not get from anyone else.

"Radio is still the biggest mood enhancer for people," she said, calling it a "Lifestyle support system".



Dato' Yusuff added that the rise of new technology had been predicted to spell the end of traditional media, but despite all the gadgets, the simple thing of listening to radio made people happy.

She said radio was still the most profitable mode of media; it was still free.

"It's not dying," she concluded. "It's evolving."

DIGITAL BROADCAST SYMPOSIUM 2014: Embracing Technological Innovations

Among the participants was Wayne Huggard, Transmission Services Manager at Television New Zealand. These are his impressions of the conference.

750 Delegates – 84 Speakers – 50 Countries



The 2014 ABU DIGITAL BROADCAST SYMPOSIUM was held from 4-7 March 2014 at Hotel Istana, Kuala Lumpur. This symposium, held once annually by the ABU, was the tenth symposium with the theme 'Embracing Technological Innovations'. In this particular year, a total of 12 workshops were also conducted in conjunction with the conference including a pre-event, RTM-WorldDMB – ABU Regional Workshop and Demonstration, held on the 29 Feb-4 March 2014.

Session 1:

System Standards – New Developments and Standards



Masakazu Iwaki

Femim John

Tuck Yee Poon

Kenichi Murayama

About every ten years there is a new compression format with about 50% improvement in efficiency each time. Femim John from ATEME, France, spoke of the development of HEVC which increases the options for encoding, giving reduced bandwidth and reduce content distribution costs.

Tuck Yeen Poon offered an overview of the BBC half-RF Radio Camera system. Mobile cameras that use a radio link are used for sports and special events broadcasts. However there is a limited number of channels available for these links. The half-RF system is a research project that goes back to the basics of RF and re-uses the enhancements of DVB-T2, in particular MIMO (multiple in, multiple out antennas) to provide a link in half the RF bandwidth.



Joan Warner

Colin Prior

Alexander Zink

Hermann Zensen

Phil Laven the Chairman of DVB asked if we need to take special measures to protect the future of terrestrial TV. He pointed out that free-to-air digital TV is the standard feature of modern TVs and is cheap for the consumer to receive. Broadcasters need to protect their spectrum by lobbying regulators and using spectrum efficiently. He revealed that 12% of the BBC's distribution costs are spent on online but deliver only 2% of the total viewing. 98% of viewing is still by broadcast.

NHK introduced their 8k Super HiVision system with 22.2 sound; to make you "feel that you are really there".

Kenichi Murayama asserted that Terrestrial Broadcasting is an integral part of society, therefore the next generation of Terrestrial Broadcasting should include 8K. NHK is making steady progress to realise SHV (8K) ISDB-T terrestrial transmission over long distances; using dual polarisation MIMO antennas with up to 4096 QAM to give 91.8Mbps over 27 km, a world first for 8K!

Emergency Warning System was a popular theme for several speakers:

Colin Prior described the Enensys Emergency Warning System for DVB-T2 and also an innovation that allows a DTH satellite distribution to provide a DVB-T2 input to DTT transmitters. The video based Emergency Warning System interrupts normal programmes in all services in the mux, but only at relevant sites. Thus all existing receivers are covered.

Joan Warner, representing both Commercial Radio Australia and World DMB, considered what is needed in a Broadcast Radio Emergency Warning System and demonstrated a proposed warning system. She further spoke of new developments in DAB+ standards, incorporating hybrid operation.

Alexander Zink gave an update for the DRM (Digital Radio Mondiale) perspective and stress the importance of an Emergency Warning System serving the needs of the hearing impaired and those speaking other languages.

An analogue topic concluded the session with Hermann Zensen describing DIGIDIA's synchronous FM headend to minimise interference between FM transmitters on the same frequency.

Session 2: Going Beyond HD: Opportunities and Challenges



Maintaining focus on moving objects is a particular problem in 4K production. Takeshi Shibagaki described Sony Corporation's newly developed products to support focus and other aspects of 4K in a case study of the FIFA Confederations Cup production. He also outlined '4K stitching' where two 4K images are stitched together to cover the whole field of play. An HD image can then be cut from the stitched image with flexible framing and zoom.

Jean-Paul Moerman (Salzbrenner Stageteq Mediagroup) listed the key elements to control loudness:

1. Uniformity in measurement
2. Using reference monitoring
3. Dynamic control
4. Listening to the content

His measurement of the sound level at which people listened to the News in their homes is 73dB SPL and 77dB pink noise will match this. He also drew our attention to reference standards EBU R128 and ITU-R BS 1770.

Won-Hyun Cho discussed KBS-Korea's experimental Terrestrial 4K UHD TV service and plans for some coverage of the Asian Games this year in the UHD format. He noted that, "Technical issues will always be solved by time and money". Korea has not yet decided on the use of the 698 ~ 806 MHz spectrum between LTE or UHD TV. In Korea this is called the "700MHz problem"! He suggested broadcasters should check their national situation regarding this.

NHK Japan is accelerating its R&D plans. The various targets for SuperHiVision (SHV) have been advanced and they anticipate a more usable 'Integral 3D' system in 2030. SHV is an 8k system with 33 million pixel resolution (7680 x 4320) for a 100deg field of view, with 22.2 sound.

Masakazu Iwaki spoke of NHK's Science & Technology Research Laboratories activities across all aspects of SHV, including production and compression with satellite, terrestrial, cable and IP transmission. An example of the IP work was the 2012 London Olympics, with Super Hi-Vision demonstration to screens in the UK, US, and Japan.

'Audio Objects' were discussed by both Toni Fiedler of the Fraunhofer Institute and Ignacio Sanz from Dolby Laboratories.

Fraunhofer is working towards an Immersive Audio for Next Generation Broadcast standards with H265 xHE-AAC. The goal is an audio system that is:

- Personalised
- Immersive, with the addition of height
- Adjustable to the environment; eg headphones v. room listening.

MPEG-H 3DA supports 'audio objects' which are sound elements that can be separated from the mix. For example, to allow viewers to select their own preference for dialogue level.

Dolby 'Atmos' employing Audio Objects has already been extensively used in movies and Dolby are now working to bring Audio Objects to the Broadcast world. They are also developing 'Dolby Vision' to improve picture quality with increased dynamic range.

Session 3: Effective Business Solutions for the Evolving Media Market

Digital archiving is now a must for Broadcasters with data consumption doubling every two years; but we also hold extensive pre-digital content. Sanjay Salil described a complete archive digitisation process and solution from MediaGuru.

Stephen Lee of Conax asked what you should expect from your content security partner.

From Smart Cards to Multiscreen



The unified content security head-end Conax Contego™ provides any pay-TV operator with a future-proof and flexible platform to introduce new services. Conax Contego™ is a sophisticated, modular and fully scalable content security solution that supports any business model for any TV operation and a multitude of consumer devices.

Conax Contego™ supports a wide range of consumer devices, tablets, smartphones, CAM, PC/MAC and STBs – with or without smart cards. All consumer devices are pre-integrated and easily managed in the highly intuitive user interface in Conax Contego™.

What happens when content and audience connect is an everyday magic. More than 380 digital TV operators in over 85 countries rely on us to sustain that magic by protecting their content and revenue.

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

securing content – sustaining magic

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Charles Seviour pointed out that we now have to support the third platform of IT; the first was Terminals, the second PCs and now the third is mobile devices. EMC Isilon provides platform solutions for the file storage that is at the heart of 'tapeless' operation.

A solution of some of the issues Broadcasters in emerging markets faced when sourcing new systems was offered by Fintan McKiernan. Ideal Systems can provide Automation, MAM, Playout, Newsroom, etc systems, all as software that can be run on locally purchased PCs; avoiding equipment shipping and importation problems and costs.

Aale Raza asked if 24 hour News Channels had had their day, now that on-line has become the main source of news for many people. He believes that hard news is what viewers want from us and news channels had to consider their ratio of Hard verse to Soft News. He offered a series of suggestions to revamp the newsroom to retain viewers.

Ruhi Tas gave an overview of Hbb and TRT's (Turkish Radio Television) Hbb project including a preview of their new EPG.

The conditions for 4K to be a success were considered by Andrew Yeo of APB magazine and challenged Broadcasters to, "Make haste slowly while keeping a close watch on your audiences." There is an opportunity at the intersection of Cloud Technology and Big Data Analytics. He ended the session with a call to, "Embrace Technology and secure a piece of the silver lining in the cloud!"

Session 4: Future of TV Content



Session 4 was a time for Engineers to hear the voice of Producers.

Shigeru Iino is the Principal Programme Director of Science Programs at NHK-Japan. As a Producer he advocated the 'power of code'. Engineering has made new programme formats possible such as 'BitWorld' a children's program that uses multiple low-bit-rate sub-channels to achieve a 'game like' broadcast. However to facilitate these advances, there was a need for a conversation; a 'common language' between producers and 'geeks'.

Telecom Malaysia's strategy is to be a 'broadband champion'. It is moving into content with its 'Hyppy TV everywhere'

offering. Jeremy Kung Eng Chuang referred to their exclusively produced local content, and premium live sport. Streaming TV that is "Prime time /any time /anywhere".

James Jinhak Jeon, a TV Producer at Korean Broadcasting System, has observed the disappearance of CD shops from Korea; to be replaced by streaming services. He also described how the Korean 'Idol' shows have changed the music industry. The music companies have changed the process of finding talent (singers) from 'hunting or fishing, to farming'. The development of talent has been de-risked into a factory system of audition, training, debut and independent unit. However he also noted that PSY and 'Gangnam style' was a success outside the factory system; thus, "Unique content can always succeed".

Channel 7 (Seven West Media) Australian is a new member on ABU. David Porter their General Manager of News & Public Affairs used DBS2014 to launch 'Media Beach'. This is a new international content exchange for the industry including the ability for live streams. Media Beach even includes a smart phone app so staff can directly send in field content. The platform is intended to allow users to cost effectively buy and sell international news content.

Steve Ahern (Ahern Media & Training) spoke of audience divergence with large screens heading to high quality 4k image for group consumption while small screens and headphones were going to a personalised albeit low quality experience. The news cycle has become more complex with social media re-triggering stories and reactions through the cycle. With three or multi-screen environments there is now more than 24 hours of content consumption in a day. This is good news for broadcasters who are in the content business; however skills transfer is needed so that everyone in the organisation can contribute content. For example, camera operators can train everyone to frame a picture on their mobile phones. Staff also need the right apps and tools, such as external microphones for smart phones.

Session 5: Spectrum for Broadcasting – Nexus in Regulation and Broadcasting



Session five focused on spectrum issues.

Col. Dr. Sukonrat Chairman of the NBTC Thailand Broadcasting Commission outlined his country's transition from 15 years of no regulation to a new regulatory framework. Commercial television licences have been allocated by auction and public broadcasting licences by a 'beauty contest'. Short 60 minute auctions were used to discourage over-payment and the proceeds from the auctions will be used for the broadcasting development fund.

A key insight from Matthias Stoll (Ampegon, Switzerland) was that 'free to air' broadcasting means there is no gatekeeper. He also noted that comparing AM with DRM; the new technology transmitters give significant efficiency improvements.

Simon Fell from the European Broadcasting Union warned of the need to maintain spectrum for broadcasting and reminded that mobile has not yet made a case for its spectrum demands. The 700MHz band is the current issue [for allocation between Broadcast DTT and mobile LTE] and no decision has yet been made at an EU level. DTT is still the most popular viewing platform in Europe. Most TV viewing is still linear and TV is the one truly converged device. Data costs and limits mean that consumers are not watching full TV programmes on mobile devices; but "there is no fair use limit on your TV set"

The other area of spectrum concern for broadcasters was covered by Lindsay Cornell, the BBC's Principal Systems Architect. This is frequencies for programme making and special events (PMSE) also known as radio cameras and radio microphones, OB or ENG for News and Sports. Radio links are needed to get close to the action and to allow people to move around. The links need to be high quality (for subsequent editing), and low delay/latency (especially for audio performers). The allocation to broadcasters is under pressure and has shrunk dramatically which has created uncertainty for users and manufacturers. Spectrum for broadcasting is important, PMSE is a vital part of broadcasting and we must make sure our governments understands the value and importance of broadcast spectrum at WRC-15.

Yahya Khaled provided an ATDI case study of the interaction between IMT and DTT in 800 MHz considering the beneficial effects of changing polarity and filters on the LTE transmitters.

Session 6: Embracing Technological Innovations



The HiMotion II camera system is a collaboration between nac and Ikegami. The HiMotion was originally introduced in 2011 and has been used in major sports events since then. Hidetake Kimotsuki explained that the HiMotion II has a maximum frame rate of 1,000fps (1080i) and includes flicker correction but still has three sensors which give advantages such as matching with other camera types used in a production. The camera can operate either in stand-alone mode or as part of a multi-camera system.

Deutsche Welle delivers multimedia products in 30 languages from Germany. This includes 6 linear TV services in four

languages across developed and emerging markets. Internet play-out has now been brought back in-house because of its importance; and Akamai provides the CDN. DW has implemented an extensive monitoring system to assure its international delivery. Oliver Linow concluded that, "If you want to reach the same level of Quality of Service for online distribution as for traditional broadcasting you have to be aware about the importance of monitoring and quality control from beginning to end."

Marc Wharmby, Vice President of Front Porch Digital discussed Cloud-based Technologies for Broadcasters. He described the different models of Cloud Services

- Public Cloud (e.g. Drop Box)
- Private Cloud – dedicated to one customer
- Hybrid Cloud e.g. load balancing
- Community cloud – a shared private cloud.

He also listed the advantages of Cloud Services as; faster to develop services, agility, global access and data protection. Particularly for broadcasters there are advantages in disaster recovery and for deep archiving. However there are challenges with security and access bandwidth.

Andy Stanton described how Wohler have engineered a mid-range solution for confidence monitoring for streaming and file based formats in familiar formats.

Gunnar Nessa gave a radical re-think of head-end design by Appear TV. By moving the router to the backplane with encoders and multiplex as modules, a dramatic simplification is possible with attendant improvements in performance and availability.

Jérôme David from Thomson Broadcast reviewed the 'state of the art' in transmission standards with new HD services and telecom delivered IP services. He suggested that HEVC gave an opportunity for UHF spectrum sharing with 4G services. He proposed that DVB-T2 can provide a Hybrid broadcast and telecom service using the PLP (physical layer pipes).

Session 7: Implementing Green Technologies: Effective Solutions and Case Studies



All the Transmitter makers stress the power and operating saving that are available from modern transmitters. Transmitter efficiency as both a cost saving to broadcasters and as a green technology was covered by both Martyn Horspool of Harris Broadcast and Nils Ahrens from Rohde & Schwarz. Martyn described several techniques for transmitter efficiency, but some are too complex to be practical yet.

However Harris has a new 'push-pull' design that gives a 33% power consumption reduction. Nils demonstrated the importance of transmitter efficiency to the cost of operation over the life of a transmitter and the break-even point for a modern transmitter to recover its cost. John Abdour from Nautel went beyond the transmitter, to consider where Green technologies could be applied to the whole transmission site. He showed several examples of solar and wind power at sites. Modern tower lights can now be run at a fraction of former power costs. Better telemetry can reduce the need to visit transmission sites, thus using less fuel, especially for difficult to reach sites.

SFN networks require fine network planning and in some markets there is more competition 'on the air'. These are among the reasons why an accurate understanding of transmitter radiation pattern characteristics are important. Ground based measurements have limitations due to reflections and a limited number of possible measurement points. Helicopter measurement has been used, but this is expensive. Luc Haeberlé described Colibrex's use of an electrically powered 'drone' or remotely piloted aircraft to make airborne measurements and radiation pattern plots.

Optimisation of DVB-T2 network design was covered by Espen Myhre from Nevion. Reliable operation is dependent on good architecture. He also stressed the importance of the EPG for viewer satisfaction.

Shane Angelo (General Dynamics Mediaware) talked about working in compressed MPEG without returning to 'baseband' video. It is now possible to carry out all the normal channel operations (Logo insertion, switching, etc) in the compressed domain. This could provide several advantages including speed of turnaround and retaining highest available quality.

Session 8: Multiplatform Delivery of Radio and TV Content



Hbb (Hybrid broadcast broadband) allows broadcasters to leverage their existing infrastructure to thrive in the broadband world. Reuben Verghese offered Accedo's 'fast start' templates to get running with Hbb. However, as well as the technology the correct services and partnerships are necessary and these can provide new revenue. TV commerce with one-click-purchase is one possibility. Hbb can put broadcasters back in control of next generation TV devices and services.

Broadcast is still the backbone of the Radio industry, but Joan Warner asserted that Commercial Radio in Australia capitalises on everything it can, including the use of Apps. Radio uses Apps for access; streaming to Tablets and Phones

until we get broadcast chips into these devices. Apps can also be used to add interactivity to extend the conversation with listeners.

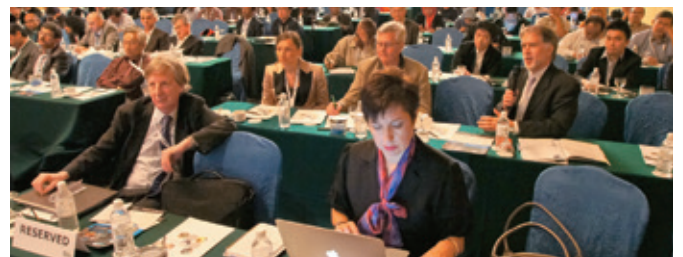
The key to OTT video is using adaptive bit rate to eliminate buffering issues. However this is a complex process that fragments the content with multiple copies at different bit rates. Tektronix' Klaven Siow explained that both quality of experience and quality of service must be monitored considering the different bit rates, the media and the network.

NHK launched Hybridcast in September 2013 which provides viewers with the best mix of broadcast and broadband services. Shigeaki Mitsuya showed screen shots of the EPG with the past 30 days as well as seven days forward and including video on demand and catch up services. It also allows a second screen device to interact by WiFi to give program information and even TV remote control (volume and channel up/down).

Jin-Woo Kim told how KBS Korea also has its 'red button' service called 'iCon'. The service is still at an early stage but version 2.0 is under development to also include second screen applications.

The final speaker returned to Hbb: Khush Kundi (Ericsson) gave a non-technical outline of how broadcasters can apply Hbb. for Interactive, catch-up and monetisation. Our viewers have more choice than ever before, "But it's not just about replication TV on the internet – its about creating a new experience!"

Session 9: Industry Debate: Embracing Technological Innovations: What Can We Achieve in the Next Three Years?



Moderator ABU Technology Director Dr Amal Punchihewa asked, "What can we achieve in the next three years. The ABU would like to see each member have a plan for its future."

Following are some comments made by panellists.

Chris Grey, Sony: 4k will force the move from SDI to IP. SDI Engineers will have a steep learning curve if they are not already ready. Don't wait for 4k transmission before you start 4K production, so you will have your content ready.

Charles Sevier, EMC Isilon: had three observations: 1-People: Both Broadcast and IT knowledge are needed. 2-Process:

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we must make more efficient processes. 3-Platform: There are now more outlets. Introduce file based workflows and get your metadata right. Get your big data right.

Joan Warner, Commercial Radio Australia and World DMB: The immediate issue is retaining a place for radio as an industry. We need to go to the Government to ensure we are not forgotten. Plan to go to the regulator with a digital plan.

Lindsay Cornell, BBC-UK: We need to do research into making life easier and satisfying for viewers and listeners. Broadcasters and the Broadcast industry as a whole need to represent themselves to government to prevent loss of spectrum. New processes and new workflow have saved the BBC money. Be aware of 700MHz issue.

Simon Fell, European Broadcasting Union: the 'trick' is to provide more and different content on DAB compared to FM. You need to be findable on relevant on all these platforms; your metadata must be right. Big Data is an important development and you need to keep across this. No one has really thought through production in 4K yet; for example are audiences ready for multiple images on one screen? Embrace the IP change and deliver great catch-up content to your audience.

From the audience,

Ian Bull, Radio New Zealand: We need to be prepared for disaster. RNZ is moving from having a dominant site to a multi-site operation.

Phil Laven, DVB: The challenge is switching off analogue. "Set a date and just do it."

Session 10:

File Based Workflow and Media Management Solutions



Jacky Chung introduced the Sony Optical Disc Archive system. He listed the requirements to consider for an archiving system: Reliability, Scalability, Compatibility, Efficiency, and your Liability (cost of ownership).

Stage two of NKK's transition to server based operational and archive was describe by Go Koshii. 'NDACS' is a very large system and it changed the workflow in News broadcasting dramatically with much faster editing, clip status information and metadata management.

Panasonic have a new concept: a 'media-less' field camera (PX270). Their aim was to reduce the data rate sufficiently to take advantage of cloud based operation via WiFi/3G/4G/LTE. Neil Ugo described a work flow where assignment metadata is sent form the station to the camera, all video

shot is streamed back to the station as proxy and the TV station editor can immediately edit the proxy. The EDL is sent to the camera where it is auto-conformed and the finished clip is transmitted to the station in the camera's downtime.

Production workflow over the last 20 years was reviewed by Peter Bruce of Grass Valley and proposed a simplified workflow top give improved efficiency.

Session 11: Digital Switch Over: Learning from Experiences



The first two speakers considered frequency and interference planning:

Milos Pavlovic described LS telcom AG work in frequency planning and to predict interference between LTE and DVB-T2 services; for example in the border region between Poland (DTT) and Germany (LTE). Degradation to the Television signal from LTE can be due to any of: overloading of the DTT receiver, co-channel or adjacent channel interference. It was encouraging to learn that under "provision 36 of the [German] national frequency band allocation mobile service must not cause any interference into the broadcasting service." Mats Ek Technical Director at Progira separated the interference issue into LTE uplink and downlink interference into DTT, to show the holes in the DTT coverage area that can be caused by mobile devices.

IP Infrastructure for the Future Broadcast Facility was the subject of the next two speakers:

The building blocks in a broadcast facility were set out by Glyn Bartlett, from Vector 3, to show an approach to redundancy management in a multi-channel where IP Infrastructure offer significant advantages. Evertz' Mark Moore, demonstrated a virtualised station environment using IP with 10GbE. This has the advantages of less cable with bidirectional and direct optical interfaces available. However to achieve this reliable, deterministic video paths are required that are seamlessly integrated into present control interfaces.

Then two speakers covered the testing and certification of DTT receivers.

Tatjana Medic described the 'reception solutions' Funke provided and stressed the importance of a good antenna and tested, certified reception equipment.

Pasi Toiva, from Finland's Labwise Ltd observed that without a fixed standard and testing regime the consumer market can have problems, especially with dynamic PSI/SI.

DBS Workshops

Report by **Jeewa Vengadasalam**

Deputy Director, Institute of Broadcasting and Information, Malaysia (IPPTAR)

RTM-WorldDMB-ABU DAB+ Technology Workshop: Results and Next Step



Patrick Hannon

This workshop was presented by Partrick Hannon, President WorldDMB; Zulkifli Abdul Rahim, RTM; Les Sabel, S Comm Technologies, Azlina Mohd Yusof, Malaysian Communications and Multimedia Commission and Kathryn Brown, Commercial Radio Australia. The discussion was on the field test results in Malaysia, DAB+ business case reviews, next steps to move forward, regulation, collaboration and commercialisation, rollout timing, geography and cost.



Dr Les Sabel



Kath Brown

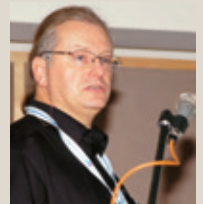
A DAB+ trial in the VHF band III Channel 11 A was conducted over the previous weekend using a 1KW main transmitter at KL Tower and five 50W repeaters located at several sites in the Klang Valley. The main transmitter antenna was a horizontally polarised 8 high stack of Dipole Panels and the repeater antenna was single log periodic. The demonstration was to investigate the Quality of different audio bit-rates and coding methods, impact of field strength on performance at different FEC code rates, complex multipath situations and dynamic environments. Simulation was also done and actual field trial results confirmed the coverage predictions. The results obtained were quite impressive despite the fact that there was Adjacent Channel Interference (ACI) from an analogue TV transmission on Channel 12.

Recommendations made are that: (1) Coverage prediction is essential for successful rollout. (2) Use map data that is appropriate to the area being planned. (3) Field strength planning levels vary depending on the type of buildings in the area. (4) Use field testing at the beginning to verify coverage planning data and parameters are appropriate. (5) Use field testing after broadcast system rollout to check coverage and tune the models.

The competitive landscape for broadcasters is changing with the advent of digital music services, smart devices and the competition for FM radio. The FM spectrum is crowded and there is no room for innovation. DAB+ can reap benefits by bringing in new audiences, revenue and extending coverage.

Graphically Rich Monitoring and AVB

Geoff Love, Axon presented a topic on broadcast monitoring and control in which a complex workflow can be configured in a short amount of time. Events can be managed and reported using hierarchical system status. The control devices via intuitive and user friendly interfaces can maintain a workflow over its lifetime.



Geoff Love

The increasing interest in 4K has required the need for larger bandwidth and SDI may no longer be practical. This utilises a single wire for a single stream of video going in only one direction. For routing, a central cross-point based video router is used with all signals going to and leaving that central box. With an Ethernet based solution we will get a distributed, networkable, routing system where routing and transport are merged into a single layer infrastructure. However conventional Ethernet less ideal for a production environment as it is a best effort delivery strategy, non-deterministic with no concept of Isochronous Delivery and not content aware. Audio Video Bridging (AVB) is now available that can make reliable audio/video connections possible through a few additional protocols/technologies. It has specifications that will allow time-synchronized low latency streaming services through IEEE 802 networks.

Next Generation Format XAVC Workflow for 4K and HD



Takeshi Shibagaki

Presented by Sony, this workshop focused on production and editing equipment for 4K. The differences between 4K and HD workflow was discussed and this session was mainly a practical demonstration. There was considerable interest generated as broadcasters want to be futureproof by being 4K ready when they purchase HD equipment.

Digital Broadcast – The Role of Efficient Multiplatform Ecosystem and Technologies

The presenters were Tony Moran and Khush Kundi from APAC, Ericsson, who discussed consumer & technology



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- Designed, integrated and supplied Ku/C-band DSNG Van to Doordarshan, India.
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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.

On Going Projects

- Supply & commissioning of 2 nos. of 1000 kW MW AM DRM Operational Super Power Transmitters to AIR for their external services.
- Upgradation of 3 Camera T.V. Studio at Jamia Milia Islamia University.
- Supply, upgradation & commissioning of combiner cable and antenna system, including strengthening of tower aperture at 4 metro & 15 other site for DD.
- Setting up of Video Recording Studio, PCR, MCR & Post Production Facility for NIOS.
- Supply, installation, testing & commissioning of HDTV Studio setup for Rajya Sabha's RSTV Channel.
- SITC of Log Periodic Antennas between 3 to 30 MHz for monitoring setup at three (3) sites of ARC.



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trends and architecting for change. The key trends are the growing importance of mobile devices, linear TV is coming under pressure and the emergence of aggregated, pick-and-mix solutions. Mobile TV makes TV viewing a continuous activity and are second screens during multitasking. The traditional way of viewing is losing momentum except for live TV junkies and sports fans. Consumers are looking for one simple and personalised experience that combine their TV, content and services.

High Efficiency Video Coding (HEVC) is ten times more complex than AVC but it can reduce SD bit rates by 40%, HD bit rates by 50% and UHDTV by 53%. Among HEVC features are that it uses 64x64 block sizes and 35 Intra modes compared to 16x16 block size and 9 Intra modes for AVC.

MPEG DASH has been standardised for adaptive streaming and offers several advantages over legacy streaming. It has common encryption, separate metadata and easy time shifting. Many international organisations including Microsoft and Google are supporting the MPEG DASH initiative.

Experience How WASPD 3D is Changing the Real Time Content Creation Strategies



Tushar Kothari

Tushar Kothari demonstrated the capabilities of the graphics system which reduces the complexities of end to end content creation and on air delivery. The aim is faster content creation and easier data integration in quickly delivering in depth, visually stunning and sophisticated news presentation in real time. Its applications include custom made presentations of News, Sports, Elections and Weather.

Spotlight on Fast and Portable Baseband Health Check Solution

There are many aspects of a health check of a studio broadcast chain as stated in this workshop by Mohd Fauzi Kamaruzaman, Tektronix. During the ingest and production, the technical parameters examined include Video Levels, Gamut, Black/Frozen frames and Audio Levels. Monitoring is very important as the broadcaster has to comply with regulations laid down by the individual country such as subtitling and closed caption. Furthermore, there would be loss of revenue from picture loss or advertisement not played out correctly.



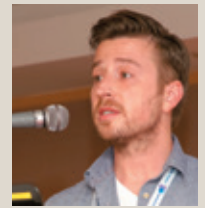
Tony Moran



Khush Kundi

Dolby Audio in DVB-T2, HbbTv and Case Studies

Dolby has created a complete technology system for the conveyance of mono, 5.1 and 7.1 channel Surround Sound through content creation, distribution, transmission, and presentation in the consumers home. The Dolby system comprises of 1) Bitrate reduction codecs and matrix encoding 2) Metadata to provide a controllable, predictable, and enjoyable listening experience in a variety of listening and monitoring environments and 3) Loudness measurement for proper usage of key metadata parameters.



Greg Price



Jerry Gui

DVB-T2 and Two 4K Services over DVB-T2 and DVB S2



Michael Van Dorpe



Colin Prior



Phil Laven

The presenters were Phil Laven, DVB, Colin Prior, Enensys Technologies and Michael Van Dorpe, Village Island. The technical parameters of DVB-T and DVB-T2 were compared and the utilisation of Low Density Parity Check Code (LDPC) for the Forward Error Correction Subsystem, 256 QAM Constellation mode and FFT size up to 32K was highlighted. DVB-T2 is also future proof as it has the capacity to deliver two UHDTV 4K services, as evidenced by the demonstration held in the workshop hall. DVB S2 with 8PSK modulation and capacity of 40-58 Mb/s was used to downlink two 4K services, each at 19Mb/s HEVC bitrate, to a DVB T2 transmitter at the DBS Symposium hotel site. The DVB T2 transmission parameters were 32K FFT, 256 QAM and payload of 40 Mb/s

4k Ingest & Distribution



Tuck Kay Chan



Li Bin Eric



Chao Yin Loong

Tuck Kay Chan, Li Bin Eric and Chao Yin Loong of Rohde & Schwarz presented this workshop. UHDTV or 4k provides more immerse and captivating experience for the viewer. There is already a trend to increase the display dimensions

and resolution. Several TV manufacturers have presented displays of 60 to 180 inches that offer a wider viewing angle of 550 for UHDTV compared to 300 for HD. The viewing distance for UHDTV is 1.5 x picture height compared to 3x picture height for HD. Colour space parameters also increase with the adoption of BT 2020 with 10 & 12 bit sample whereas the existing HD uses BT 709 with 8bit sample.

'DRM – The Unique Benefits for Your Needs'



Lindsay Cornell

This workshop was presented by Alexander Zink, Fraunhofer; John Abdnour, Nautel; Matthias Stoll, Ampegon AG; Hermann Zensen, DIGIDIA and Lindsay Cornell, BBC.

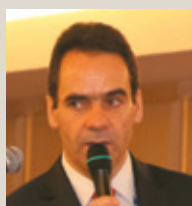


Alexander Zink

When DRM was created in 2001, AAC with SBR was the best codec available, but needed more than 14 kbps to work. The most robust DRM modes only provide around 10 kbps payload in a 10 kHz channel. The speech codecs allow DRM to carry audio in these robust modes and multiple services in less robust modes. The DRM core standard provides choice of three MPEG audio codecs: HE-AACv2 (general-purpose, i.e. all kinds of audio signals), CELP (speech content only), HVXC (speech content only). With advances in audio compression, improved codec are available: xHE-AAC, AMR-WB+ (speech) and HE-AACv2 (general audio). Anticipated applications include media download to mobile devices and digital radio.



John Abdnour



Matthias Stoll

With Extended HE-AAC (xHE-AAC), there is no need to restrict content to speech only in very robust modes. Broadcasters can deliver their normal programming even when they are using NVIS or multi-hop around the world. Opportunities are available to provide multiple audio services in good audio quality even in standard 9kHz MW channels. Broadcasters can provide alternate programming like news in different languages simultaneously but with all their usual jingles and sound beds.

Media Beach: The Industry Marketplace for High-Speed Delivery of Broadcast Quality Content Across the Globe

The presenters were David Porter, Seven Network, Australia and Colin Grimes, VideoShip, Canada. The current trends are



David Porter



Colin Grimes

that there is maturity of file based workflow & IP transfer which enables opportunity for direct relationships globally. There is a need for integrated networks as there are ever-increasing demands in newsrooms for bulletins, specials and live breaking news. A media industry gap exists during content exchange for broadcasters & contributors and the need for broadcast quality files and live streams together with high speed transmission.

Accelerated File Transfer using proprietary acceleration technology enables all file transfers to be as fast as possible – regardless of account type or workstation/desktop being used. The infrastructure incorporates cloud transcoding of the highest broadcast quality that can handle standards conversions such as NTSC to PAL and vice versa.

DigiTAG Workshop



Simon Fell



Tatjana Medic



Paul Higuera

This DigiTAG workshop was presented by Simon Fell, EBU; Tatjana Medic, Digitag and Paul Higuera – Digital TV Labs. The key priority of DigiTAG are to create momentum around, and to raise awareness of the importance and need for, terrestrial broadcasting (and spectrum) as a service worldwide. Concern was raised about the release of spectrum in 700MHz band which represents typically 24.5% of the total allocated to terrestrial transmission. No decision at EU level has yet been made and significant issues would result from the release of this band from current use. Serious consideration needs to be given to compensation for any move. Considerable costs would be incurred by citizens and industry from such a change of use. Terrestrial Broadcasters also need certainty regarding the rest of the UHF band in order to continue to innovate and develop their services. The future use of the UHF band must be considered in the wider context, taking into account all technologies and frequency bands available to deliver services to consumers.

The twelve workshops that were conducted at the Digital Broadcast Symposium 2014 provided an in-depth knowledge of the latest developments, management techniques and opportunities in the broadcast industry.

INDUSTRY DEBATE:

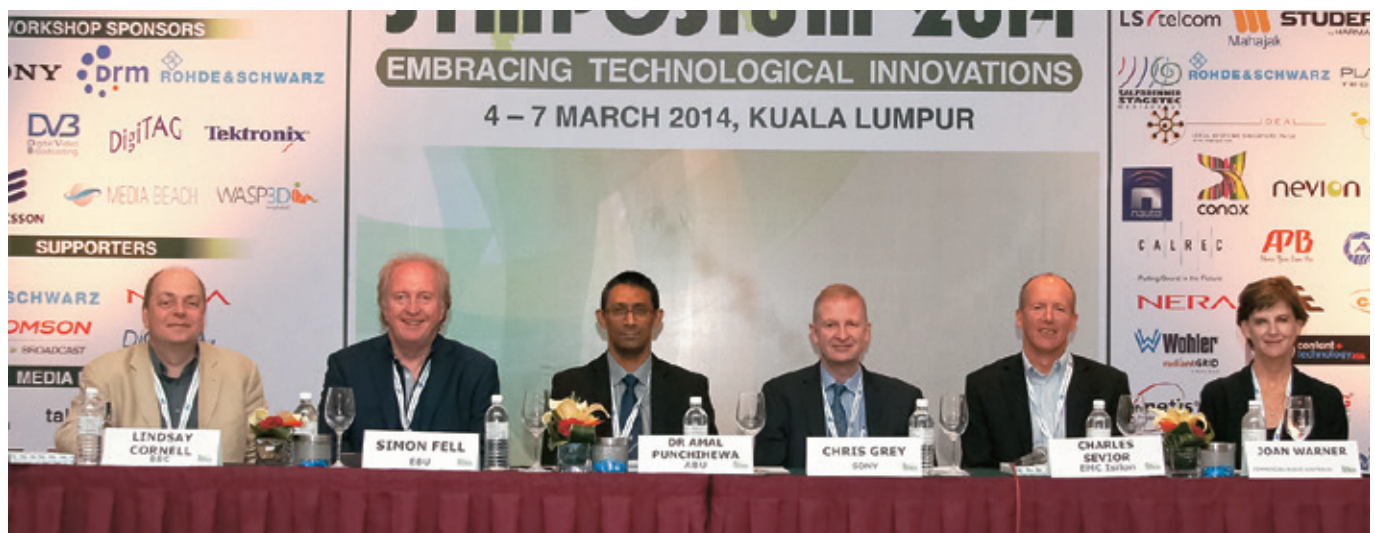
Focus on What can be Achieved in the Next Three Years

Moderator:

Dr Amal Punchihewa

Panel Members:

Chris Grey, Sony; **Charles Sevier**, EMC2; **Joan Warner**, CRA; **Simon Fell**, EBU; **Lindsay Cornell**, BBC;



The ABU represented by the Dr Amal Punchihewa, Director of the Technical Department lead the debate by posing the question, 'What can be achieved within the next three years?' Chris Grey responded by stating that the next step would be larger screens and higher resolution formats 4K and 8K. This requires installation of facilities that would accommodate the higher bitrates and IP technology would provide the solution. Integration between IT and broadcasting should take place with the use of 6G SDI as a single cable solution.

Charles Sevier touched on the issue of people, process and places. The skills of IT staff and broadcast staff have to be merged as there is a rapid move to IP. The staff have to learn new technology but not lose skills. Process is the change in operation from linear tape to file based systems. The IT platform brings with it the need for new storage, which can be cloud based.

Joan Warner stated that radio broadcasters must retain their place in the communication and multinational sector. Radio tends to be forgotten and broadcasters must remind the government to focus on the future of radio as social

media cannot deliver everything. Regulation is needed to ensure that digital radio chips are incorporated into phones.

Simon Fell commented that Norway has switched off FM Radio and is using DAB+. Norway being a mountainous region cannot use satellite effectively as there is considerable amount of blockage in terms of Line of Sight. He also said that car manufacturers must make new cars with DAB+ radio tuners so that emergency features and traffic and travel information are available during a drive through tunnels in the mountains.

Lindsay Cornell debated on the issue that broadcasters have no strong voice at the ITU administration. The broadcasters had taken for granted that the spectrum initially allocated was their right for life and had become complacent. There is pressure on the VHF spectrum that rightly belong to DAB+.

The comment from Phil Laven was that the real test is whether analogue can be switched off. Nations must have a plan on ASO and show the plan to the government. He also emphasised that it is now important to have 4K content and pointed out that many 4K cameras are being sold.

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For enquiries contact:

The Editor:
Dr Amal Punchihewa
Director Technology
Asia-Pacific Broadcasting Union
2nd Floor IPPTAR Building
Angkasapuri
50614 Kuala Lumpur
MALAYSIA

E: amal@abu.org.my
T: +6 03 2282 3108
F: +6 03 2282 4606
www.abu.org.my

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DBS 2014 Concluded with Great Success

We have just concluded the tenth ABU Digital Broadcasting Symposium; an activity we undertake annually for the benefit of our members and other stakeholders in the broadcasting industry in the region and beyond.

The rapid technological developments that are influencing the media landscape bring challenges and opportunities to the broadcasting industry. New technologies and the infrastructures based on them pave the way to new value-added services for broadcasters. Converged technologies offer media opportunities to telcos, bringing competition to incumbent broadcasters. Viewers and audiences have more choice and opportunity to access content, including premium services.

We have been assisting our members by informing and educating them on these new developments by conducting training, workshops and other activities. OTT, IPTV and broadcast regulations are some of the themes we covered recently in our ABU Technology activities.

Radio spectrum is a natural, economic but scarce resource. Hence, there is regulation at national level through the spectrum regulators, in agreement with global administration by ITU. In recent times we have observed the emergence of converged regulators – who handle both telecommunication and broadcasting.

Digitalisation of radio and television services is making spectrum available for new services due to compression and multiplexing. In simple terms a number of programme channels can now be carried by a single frequency. Similar to the demand upon mobile operators to provide new services, broadcasters will also be required to offer various new services in the future, such as 4K and 8K; reflecting technological advances and changes in viewer requirements. It is thus necessary to protect and preserve that part of the spectrum, made available through the digitalisation of current analogue services, for the future service offerings of television and radio broadcasters.

With sister broadcast unions and WBU, ABU is making a strong appeal to ITU and national regulators to maintain spectrum provisions for future services to be offered by broadcasters. Further work needs to be done to reinforce the recommendation adopted by WBU based on initial work done by ABU. Broadcasters also need to collaborate with spectrum regulators to protect spectrum for broadcasting.

ABU Technology urges you to work with your spectrum regulator, media regulator and industry partners to create awareness on the need to maintain spectrum for future broadcast services. We believe that together we can make such provisions a reality in WRC-15.

From Amal, Nadeem, Kyaw Zaw, Nam, Geraldine, Hamidah and Ramlah



Several countries in our region have been severely affected by tsunami, earthquakes and floods over the past years. We need to put our efforts together to increase public awareness and save lives. The ABU invites you to join the Summit on Climate Change, ICTs and Disaster Risk Reduction that will be held in Jakarta from 4-6 June 2014.

– **Dr Javad Mottaghi, Secretary-General, Asia-Pacific Broadcasting Union**

The MCIT is proud to be hosting this Summit that will address the role of media and ICTs in creating awareness on climate change, disaster risk reduction and other environmental issues, and helping the public contribute to reducing the factors driving climate change.

– **Freddy H. Tulung, Director General of Information and Public Communication, Ministry of Communication and Information Technology, Republic of Indonesia**



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The ABU Digital Broadcasting Symposium 2014 recorded its highest number of exhibitors this year with WorldDMB, Sony, Grass Valley, Harris, EMC Isilon, ATDI, Rohde & Schwarz, Playbox Technology, Measat, Nautel, LS Telcom, High Definition Technology, Content+ Technology Asia, Front Porch Digital, Kathrein, Orban, Light Way Electronics, Wohler Technologies, Asia-Pacific Broadcasting, Gencom Technology, Tektronix, Calrec Audio, Bessar, Thomson Broadcast, Radio Frequency Systems, Canara Lighting, ELTI, Nera, Spinner, Ideal Systems, Enensys, Mahajak & Studer, Appear TV, Dimetis, RTM, Axon, Stagetec, Canon, WASP3D, Lynx Technik Pte Ltd, APT, Whiteways, Skyline Communications, Aviindo, Village Island, Nevion, MSA Focus and Conax.

Exhibition

The exhibition, which spread over two halls, displayed 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 with 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 with 4K video transmission systems and OTT distribution over internet. Also, well-known media providers were present in the exhibition and provided a different perspective to the event.

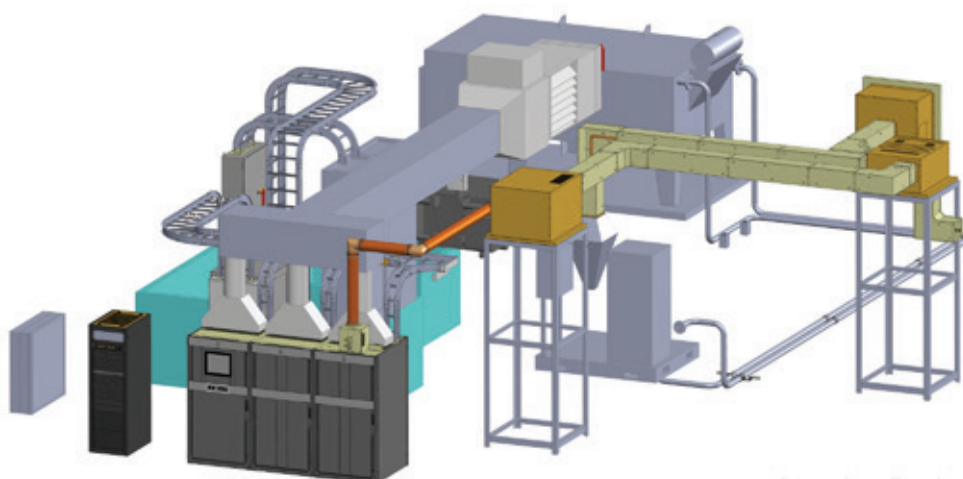


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Making Digital Broadcasting Work.



10th Global Shortwave Coordination Conference



The 10th Global Shortwave Coordination Conference was held from the 20th to 24th January 2014 in Kuala Lumpur. The event was attended by over 100 frequency managers representing over 50 shortwave broadcasters and operators. The Global Coordination meeting is the joint meeting of the three coordination groups, HFCC from Europe, ASBU from the Arab States and ABU-HFC from the Asia-Pacific region. Together these groups comprise around 90% of the world's shortwave radio broadcasters. The joint meetings are held once every year and are hosted in the Asia-Pacific region every other year. The three Groups, as a whole, deal with reduction of interference on frequency channels used for around 5000 shortwave radio transmissions that are put out by the broadcasters' every day.



Speaking at the opening session of the conference, Oldrich Cip who chairs the High Frequency Coordination Committee (HFCC) said that shortwave radio was important for travellers and isolated people, and it reached across the digital divide to the most disadvantaged and marginalised societies. The International Federation of Red Cross and Red Crescent Societies had underlined this role of wireless radio in the 2013 World Disaster Report, saying that, "Marginalised populations might not have the money or the knowledge to take advantage of the digital revolution". The report noted that with only six per cent of people in low-income countries using the Internet in 2011, the digital divide was still stark and therefore access to low cost media technology was really the key. Mr Cip also urged the conference that effort was needed to ensure that terrestrial broadcasting was part of the framework of the Global Strategy for Disaster Risk Reduction. The session was also addressed by Mr Bassil Zoubi, Head of Transmission at ASBU and Chairman of the ASBU coordination group. He said "Shortwave programs will continue to be vital in addressing and communicating with some important parts of the world, especially with Internet penetration in the Arab countries around 34% while in some other parts of the world it is less than 10%". From the host, ABU Director of Technology, Dr Amal Punchihewa, reiterated that the ABU will continue to work with its partners to ensure this technology will survive and thrive for the benefit of the populations, in times of crisis, in areas of isolation and at the most vulnerable times.

The Steering Committee of the ABU-HFC Group also had its regular meeting to discuss issues surrounding shortwave in this

region. Several important issues were discussed including the move to digital, specially on shortwave platforms, the need to support HFCC and the coordination process and how to improve member coordination and contact within the group as some of the bigger broadcasters do not actively update and coordinate their schedules. The group also nominated the Members of the Steering Committee for the next two years.



The meeting also discussed more on the DRM platform, as it is the most viable solution for shortwave broadcasters to go digital. The meeting requested the possibility of getting more information on its implementation as well as sharing the experience of broadcasters who have already implemented DRM, such as India and Malaysia. It also raised concerns regarding the availability of DRM receivers, which will play a key role in its roll out. The other topic widely discussed was the role of shortwave radio in disaster early warning and mitigation efforts.

The 5-day conference also had meetings of the associated groups on the sidelines. These include the Group of Experts (GOE), Meeting of the ASBU coordination group and the meeting of the ITU representative and the regional coordination groups. These sessions discussed a number of tasks and activities to help improve shortwave broadcasting and make it more relevant as well as ways to increase listenership.



As usual the meeting had parallel training and workshop sessions conducted by experts. These workshops sessions help participants, especially those who are new to the shortwave coordination process and the use of the software tools, to understand the basics of shortwave operations and how the software tools help in generating the required schedules. It also helps and guides the less experienced participants on how to approach and read the collision lists to improve their schedule and to reduce interference.

The global meeting was hosted by the ABU on behalf of the ABU-HFC group. Shortwave Coordination is a bilateral process in which the frequency managers adjust their frequencies to accommodate each other's transmissions. This process is supported by a complex technical evaluation and validation process, the latter requiring advanced software tools and fast computing facilities.

RTM-WorldDMB-ABU DAB+ Technology Workshop and Transmission Demonstration Report

Radio Television Malaysia (RTM), the WorldDMB, the Tun Abdul Razak Institute of Broadcasting and Information (IPPTAR), Commercial Radio Australia (CRA) and the ABU organised a successful four day DAB+ Technology Workshop and Transmission Demonstration in Kuala Lumpur from February 28 to March 4, 2014. This event showcased the DAB+ technology standard and its transmission techniques, demonstrating its features and efficiency improvements compared with analogue FM broadcast.

The workshop, organised in the lead-up to the Digital Broadcasting Symposium 2014, held from 4th to 7th March, was attended by more than 130 delegates from 18 countries and reflected growing interest in the digital radio and DAB+ standard in the Asia-Pacific. DAB+ equipment was displayed and experts from Australia, France, Germany and Singapore demonstrated tools and equipment. Delegates gained first-hand knowledge of the transmission equipment and experienced digital-quality audio and the new features of a wide range of receivers.



a 1-day transmission trial and field measurement exercise in and around the city of Kuala Lumpur plus a half day session to discuss the results of the test. The first day of the workshop provided an overview with up-to-date information on planning and digital radio implementation, benefits of DAB+ digital radio services, receiver availability and functionality, automotive receivers, smartphones, radio apps and information on the cost savings offered by transmitting via DAB+. Participants experienced a live demonstration of DAB+ receiver capabilities such as automatic switching from current on-air programming to an emergency warning and a new categorised slideshow feature. The second day involved discussion of aspects of infrastructure system planning, structure of DAB+ broadcasting, transmission, RF planning, network planning, system construction and operations and maintenance.



A one-day live drive test trial enabled delegates to listen to DAB+ transmissions on air in Kuala Lumpur and some adjacent areas. Two coaches transported over 60 delegates on the drive tests and they were able to tune in to a live DAB+ transmission

from the KL Tower and a number of repeater sites around the city, providing invaluable insight on the many factors to bear in mind when conducting field tests.



The workshop achieved the aim of equipping the participants with expertise in the area of digital radio broadcasting, helping them towards carrying out similar implementations. This included the provision of a set of recommendations for broadcasters and regulators to consider when planning the digitalisation of radio in their own countries.

Director of Technology at the Asia-Pacific Broadcasting Union Dr. Amal Punchihewa highlighted the need for having a clear plan and strategy in digitalisation of radio broadcasting. "It is important that we use the limited resources we have efficiently to serve communities," he said.



He added that commitment from all parties, including regulators, public and commercial broadcasters and receiver manufacturers, is paramount for a successful roll out of a digital radio broadcasting, as it was with television.



The field-test results and discussion session presented the results of successful broadcast trials of DAB+ in Kuala Lumpur, included an investigation into the next steps to move forward with DAB+ implementation, looking at regulation, collaboration and commercialisation as well as business cases for digital radio, network roll out planning, geography and costs.

WorldDMB President, Patrick Hannon said: "Commitment from all parties including regulators, public and commercial broadcasters, receiver manufactures and retailers is paramount for a successful roll-out of DAB+ digital radio. Now is the time to tell your regulator about your spectrum and network planning requirements for digital radio so that the regulator can develop a policy framework that paves the way for a digital radio future."



ABU Director Welcomes Digital Rollout in India

By **Olya Booyar**
Editor, ABU News



A report on the rollout of Digital Radio Mondiale in India was one of the highlights of the opening day of the DRM Consortium general assembly in London.

Dr Amal Punchihewa attended on behalf of the ABU and said afterwards he was glad to hear that India, having a large geography to cover for radio broadcasting, was rolling out digital radio.

“One key feature of Digital Radio Mondiale is its ability to cover large areas,” he said.

“The Indian economy could also benefit from receiver manufacturing using multi-standard chip sets. This will promote the concept of Smart-Radio through which the ABU and WBU with other sister unions promote access to radio irrespective of technology or device.”

Delegates from around the world attended the conference at New Broadcasting House, the BBC Headquarters in Central London, launched in the iconic Radio Theatre by the Chief Operating Officer of the BBC World Service and Global News.

On the first day were reports from the rollout of DRM around the globe, including a report on progress so far from broadcasters and equipment manufacturers in India. Then Brazilian experts gave participants an in-depth insight into Brazil’s digital radio and the support for DRM coming from the industry, community stations and other stakeholders.

Under the title “DRM in Action”, the opening also featured demonstrations of DRM on multiple devices, including USB sticks, tablets and desktop receivers, as well as services integrated with social media.

On the second day, DRM Consortium members endorsed past activities and the strategy for the next year. They also elected the new Steering Board of the Consortium, welcoming to it new members such as BT Transmitters (Brazil), Thomson Broadcast (France), and Gates Air (formerly Harris Broadcast, USA).

Ms Ruxandra Obreja was re-elected as DRM Consortium Chairman, saying it was “the best, most intense and most encouraging General Assembly of the past years”.

“The Consortium is stronger than ever and ready to face the many challenges of its key target markets,” she said.

The 22nd China Content Broadcasting Network 2014



Dr Amal Punchihewa, Director Technology, was invited to give a presentation at the 22nd China Content Broadcasting Network 2014 (CCBN 2014). During the conference inauguration, the international advisory committee to CCBN was announced. Amal is a member of that committee.

CCBN is among the largest broadcasting technology and equipment fairs in the Asia-Pacific region and took place on 20-22 March 2014 at China International Exhibition Center (CIEC), Beijing.



Prof Du Baichuan, Vice Director, CST of State Administration of Press, Publication, Radio, Film and Television

A feature of the CCBN 2014 was the combination of technical and business conferences. CCBN 2014 was also the key platform for communication and interaction between Chinese and foreign enterprises in this sector.



Dr Ahmad Jailani Muhamed Yunus, ABU Vice President and Deputy Director-General (RTM) addressing the meeting



The CCBN International Advisory Committee meeting

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- **Second screen** as the future in the non-linear TV, OTT space
- **DVB Implementation in Asia** – Insights into new extensions and how to leverage new opportunities presented
- Business case for **4K investment** – Is this the time for it?
- **Media Asset Management** – Balancing the cost and performance equation
- **Radio Broadcasting** in the digital space

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News

from the ABU Region

Arab

Arabsat to Add Four New Satellites

Arabsat has announced proposals for the procurement of four new satellites. The new satellites, to be designated HS3, HS4, AR6E and AR6A, will be positioned at three different orbital locations with coverage over Middle Eastern, African, Asian and European markets with high power DTH payload in Ku bands and Ka spot beams capacities.

The two new HS3 and HS4 satellites will be favourable to the replacement of Hellas-Sat's current HS2 at the 39 degrees East orbital slot with additional capacities in Ku and Ka bands payload brought to customers with great flexibilities. HS4 will, additionally, provide Arabsat with prime Ku-band capacity over Europe and the Mediterranean which will complement the existing in-orbit capacity. ARB6E and ARB6A will have payload capacities in Ku and Ka bands. They will be dedicated to support the growth of Arabsat's business and provide in-orbit backup capacity to its customers; and to serve the increase in the markets demand for satellite capacities and services over the Middle East, Africa and Asia. All four satellites are set to launch in 2016 and 2017.

(Broadband TV News)

Australia

Australia to See FreeviewPlus Launch in May

Freeview Australia will launch its FreeviewPlus HbbTV (hybrid broadcast broadband television) service in May this year with all seven free-to-air broadcasters signed up to the project. FreeviewPlus will offer a new electronic programme guide which, when the FreeviewPlus box is connected to a broadband network, will allow viewers to catch up on shows which have been broadcast up to seven days previously.

The rollout will be supported by a huge marketing campaign from the FTA networks – Australian Broadcasting Corporation, Special Broadcasting Service, Seven Network, Nine Network, Network Ten, Prime Media Group and Southern Cross Broadcasting – although Seven has so far been the most aggressive in talking about HbbTV.

(Advanced-Television)

Hong Kong

Hong Kong Authority Raids Illegal Radio Transmitter Site

The Hong Kong Office of the Communications Authority (OFCA) mounted what it called “a raiding operation” in one evening of February against suspected use of illegal radio transmitters for broadcasting. In the operation, one set of equipment was seized.

OFCA officers acted on information that the suspected illegal radio transmitter was located in an industrial building. Illegal radio broadcasting is liable to cause harmful interference to other legitimate radio spectrum users. OFCA would continue to enforce the law to ensure proper management of radio spectrum.

(Content + Technology)

India

Indian Cable Digitisation has Positive Impact on Carriage Fees

Phase I digitisation of cable-TV systems in Delhi, Mumbai, Chennai and Kolkata has resulted in a 20-25% fall in carriage fees, according to the Ministry of Information and Broadcasting (MIB). The subscription charges earned by broadcasters had also risen 200-300%, according to a report submitted by the News Broadcasters Association (NBA) on the impact of Phase I digitisation on revenues of 10 news broadcasters.

However, broadcasters do not expect the results in Phase II digitisation in 38 cities to be quite so good. MIB has asked both the IBF (Indian Broadcasters Foundation) and the NBA to give them reports for phase II. Broadcasters need to share their data with the ministry to help understand if the carriage fees have gone down or not.

The total number of cable TV homes was 116.5 million as per the 2011 census, which means that the total number of digital set top boxes required – after adding 20% for multiple TV households and TVs in offices and shops – is 140 million. To date, a total of 30 million STBs have been seeded in Phase I and II collectively, which means a further 110 million are needed for Phase III and Phase IV.

(Next TV Asia)

India Approves DTT/DTH Expansion

India's Cabinet Committee on Economic Affairs has approved investment of USD 564 million in the 12th five year plan

of the Ministry of Information and Broadcasting covering the infrastructure and network development of All India Radio (AIR) and Doordarshan.

Under the plan, Doordarshan will expand the capacity of its free direct-to-home television service – DD Direct Plus – to 250 channels by 2017, and is currently expanding the number of channels offered on DD Direct Plus from 59 to 97.

A total of 23 additional digital terrestrial TV transmitters are also proposed to be installed, with eight along the Indo-Nepal border targeted to cover 65% of the Nepalese population. Provisions have also been made for modernisation of existing equipment and facilities in studios and satellite uplinks and also for high definition television (HD TV) studio facilities at Chennai and Kolkata.

(Rapid TV News)

Japan

NHK to Broadcast in 8K UHD TV for 2016 Olympics

Japanese public broadcasting company, Nippon Hoso Kyokai (NHK), has announced details of its plan to pilot satellite broadcasting in Super Hi-Vision (8K ultra-high definition TV) for the 2016 Olympic Games to be held in Rio de Janeiro, Brazil. NHK says it will broadcast documentaries and special events in the 8K format (which increases picture resolution to 7680 x 4320 pixels) from 2016, and subsequently plans to offer complete 8KTV broadcasting by 2020 when Tokyo will host the Olympics.

NHK conducted a successful broadcasting experiment with 8K format from its headquarters in Hitoyoshi to a receiving station which is 27 km away. In May 2012, NHK's sent the world's first successful terrestrial signal in 8K to a point 4.2 km away.

Reiterating its commitment to ultra-high definition digital video format space, the company also announced that it will install a 350" cinema-style screen at the upcoming NAB broadcasting technology show in Las Vegas, April 7-10, and will showcase the latest 8K cameras, including its 8K 'Cube' camera weighing around two kilograms.

(Next TV Asia)

Malaysia

Malaysia's RTM to Broadcast FIFA World Cup

Malaysian public broadcaster Radio Televisyen Malaysia (RTM) has been granted exclusive terrestrial broadcasting rights for the 2014 FIFA World Cup taking place in Brazil from June 12 to July 14.

RTM will air 35 of the 64 World Cup matches in HD – of which 24 will be live and 11 will be aired as delayed telecasts. The matches to be telecast live include those of national teams favoured by Malaysian fans – especially Brazil, England, Argentina, Spain, France, Portugal, Italy, Argentina, South Korea and Japan.

(Goal.com)

Singapore

Singapore to Subsidise Digital Migration Costs

The Singapore government has said that up to 170,000 households could receive some form of financial aid to mitigate the cost of migrating to digital terrestrial television (DTT) – with the low-income group to get help with almost the full cost.

It said that DTT is expected to be rolled out to all Singapore households by 2020, and DTT set top boxes are expected to retail for about S\$129 (USD 102) when they become available. This is to allow low-income households to migrate without them having to spend a lot of money, helping them by giving assistance through the set-top box, the antenna and a bit of funding for installation.

(Next TV Asia)

Sri Lanka

Exclusive World Cup Cricket Deal for Sri Lankan Radio Stations

Sri Lanka's Voice of Asia network has acquired exclusive radio rights to broadcast ball-by-ball updates of the ICC T20 Cricket World Cup on all of its four stations. The network runs two English channels – Kiss FM and Real Radio – along with Varanam FM in Tamil and Siyatha FM in Sinhala.

Asia Radio Today reports the network was also involved with the 2007 and 2011 cricket world cups, engaging its listeners with a chance to win cars and other valuable prizes during the tournament.

Voice of Asia wanted to broadcast network-wide as they believed it is time Sri Lankan radio should break the language barrier and to reach the audience who work really hard day and night with limited access to television. This will allow the provision of updates for discerning fans across the nation.

(Asia Radio Today)

Thailand

Thailand to Start Digital Broadcast on April 1

Four Thai provinces will soon have access to digital terrestrial television (DTT) signals after the National Broadcasting and Telecommunications Commission (NBTC) set April 1, 2014, as the start date for system testing.

Residents in Bangkok, Chiang Mai, Nakhon Ratchasima, and Songkhla will be able to watch the new DTT system as of April 1, while the service will be extended to cover seven other provinces by June. The DTT system will cover all 22 million TV-equipped households nationwide in four years. Meanwhile, NBTC says it will soon complete discussions on the provision of set top boxes and antennas, and how to lower the cost of these items for the public.

(ThaiPBS)

Digital Broadcasting Update

1. DVB-S2X Specification Receives Approval

The new extensions to the DVB-S2 **DVB S2X** specification have been approved.

The new enhanced specification, known as DVB-S2X, offers spectral efficiency gains for professional applications by up to 20-30% and for some scenarios, gains of up to 50% can be achieved. In addition, new operational modes such as channel bonding increase flexibility. The specification will now be sent to ETSI for formal standardisation and the DVB-S2X BlueBook will be published shortly.

The key impetus for the new DVB-S2X specification came from the providers of professional services and applications wishing to take advantage of technological advancements and the growing demand for their services. The timely approval of DVB-S2X means it can be implemented with HEVC, the latest video coding scheme.

Other key improvements to DVB-S2 include: additional framing and scrambling options for very low Signal to Noise Ratio applications, which will enable satellite services for mobile (sea and air) and very small antennas; channel bonding of up to 3 channels will support higher aggregate data rates and allow for additional statistical multiplexing gain for services such as UHD TV; better resilience to co-channel interference for broadcasting; optional super-framing structure, opening the door to advanced interference mitigation techniques for interactive broadband services.

(DVB news)

2. DVB-GSE Lite Specification Ratified

The DVB-GSE (Generic Stream Encapsulation) protocol allows **DVB GSE** for efficient encapsulation of IP and other network layer packets over the second generation DVB physical layer specifications – DVB-S2, DVB-C2, DVB-T2, and DVB-NGH. The first generation of DVB standards only supported data transport using the MPEG format with a Transport Stream packet multiplex (MPEG-TS). DVB-GSE maximises the efficiency of IP datagrams transport, thereby reducing the overhead by a factor of 2 to 3 with respect to DVB-MPE over MPEG-TS. This is achieved without any compromise of the functionalities provided by the protocol owing to the variable length Layer 2 packet size that is suited to IP traffic characteristics.

The GSE-Lite profile has been conceived to provide a simple, yet completely functional sub-set of DVB-GSE. The new profile reduces the memory and processing requirements at both the transmitter and the receiver. GSE-Lite is particularly aimed at consumer receivers, where cost is a major design factor. This includes cost efficient broadband reception such

as internet via satellite. The profile has been created to take into consideration the increased use of IP packets. It does however retain many of the generic features of the full GSE specification. GSE-Lite is particularly targeted at the second generation DVB physical layer specifications DVB-S2, DVB-C2, DVB-T2, and DVB-NGH.

(DVB news)

3. New Satellite To Offer More Capacity Over Asia-Pacific



SES-8 will bring additional capacity to the Asia-Pacific region.

Despite several delays, the SES-8 satellite has now been successfully launched into orbit.

A Falcon 9 booster operated by SpaceX successfully injected the SES-8 satellite into geostationary transfer orbit from the US Kennedy Space Centre at Cape Canaveral.

Co-located with the SES NSS-6 satellite at the orbital location of 95° East, SES-8 features up to 33 Ku-band transponders, and is designed to provide growth capacity over the Asia-Pacific region.

One of these customers is Thai satellite TV service provider IPMTV, a long-term SES customer who has signed up for the Indochina beam – using SES-8 capacity to deliver more TV channels and grow their existing four million subscribers across Thailand.

(APB-news)

4. Advanced Multi-Standard Digital Radio Receiver Chip Supporting T-DMB/DAB/DAB+, DRM+ And Legacy FM Radio

SMS2160, a new multi-standard digital radio receiver chip designed for automotive and portable/mobile consumer

electronics applications. The SMS2160 is versatile digital radio IC to support T-DMB/DAB/DAB+, DRM+, and FM Radio, including RDS/TMC. The newly released chip is particularly addressed to the emerging markets of DAB+ in Europe, and DRM+ in Asia and around the globe.

The SMS2160 is the first chip of its kind to support 2-way antenna diversity (MRC) for DRM+, T-DMB/DAB/DAB+. DRM+ (the FM mode of the all-band Digital Radio Mondiale standard) is the digital open candidate for FM band radio when FM broadcasts start phasing out. An extension of the DRM digital radio broadcasting system, DRM+ works in frequency bands over 30 MHz (Band I, II and III), delivering enhanced audio quality and multimedia broadcasts.

The SMS2160 is a highly integrated, small-size (5x5 mm) receiver chip with optional 2-way antenna diversity (MRC) and multiple frequency band support: VHF Band III (174-240 MHz), VHF Band I (47-88 MHz), VHF Band II (88-108 MHz), and L1-Band. Tailored to meet the challenging demands of automotive applications, the chip offers superior mobility algorithms and is environmentally friendly (RoHS and REACH compliant).

(Digitalbroadcasting)

5. Uncompressed 8K Video Transmission Demonstration

Transmission was over 100 Gbps Ethernet between Osaka and Tokyo

Japan's Kanagawa Institute of Technology has announced the successful transmission of an uncompressed 8K ultra-high-definition video earlier this month. The video trial was hosted by Japan's National Institute of Information and Communications Technology and involved the transmission of uncompressed 8K video over a 100 Gbps Ethernet path linking the two cities.

The uncompressed video transmission demonstration also involved Japan's National University Corporation of the Nara Institute of Science and Technology, the NTT-IT Corporation, PFU Limited, AstroDesign, and the Nippon Telegraph and Telephone Corporation. The demonstration involved the transmission of progressively-scanned 60-frame per second 8K UHD video content sent as a 12-bit stream at 24 Gbps. The received video was stored on two "super high-speed" video servers equipped with IP interfaces.

The testing was conducted in order to gather information about the transmission, storage and production techniques involving 8K video, as plans are under way to provide UHD coverage of the 2020 Tokyo Olympic Games. The next phase of the testing will involve implementation of a cloud-based production workflow for UHD streaming video.

(Tvtechnology)

6. SMPTE Updates SMPTE-TT and RP to Assure Interoperability

Includes corrections, clarification, new RP for CEA-708 mapping.

The Society of Motion Picture and Television Engineers announced that the standards and recommended practices governing the SMPTE Timed Text–SMPTE-TT–caption format have been updated with corrections and edits meant to improve clarity and assure interoperability. SMPTE also has released a new recommended practice that addresses Consumer Electronics Association 708 mapping.

Adopted by the FCC as a "safe harbor interchange and delivery format," the SMPTE-TT standard provides a means by which closed-captioning may be made available to the greatest number of media consumers. The updated SMPTE-TT documents, available for free at www.smpte.org/standards, facilitate compliance with the Twenty-First Century Communications and Video Accessibility Act of 2010 that the FCC began implementing on Jan. 1, 2014.

For previously broadcast over-the-air programming, the CVAA mandates that consumers have access to closed captions via almost every type of device—including a smartphone, tablet, personal computer, and television set-top box—that is capable of receiving or playing back video programming. This mandate affects TV stations, cable systems, broadcast and cable networks, streaming online video services, and virtually every other professional video program producer that makes television programming available online.

(Tvtechnology)

7. NHK Broadcasts 8K Video Over the Air

8K UHD video received 27 km path in field test.

Japan's NHK says it has successfully transmitted 8K "Super Hi-Vision" television signals via a single standard UHF terrestrial broadcast channel over a distance of 27 km. The field test, conducted on Jan. 20 was performed as a follow-up to a May 2012 demonstration in which the UHD signal was sent slightly more than four km.

This most recent test was performed by NHK's science and research laboratories and took place at that organization's bureau located in Hitoyoshi, Kumamoto Prefecture in southern Japan.

Super Hi-Vision 8K video with its 7,680 x 4,320 pixel images provides about 16 times the resolution of conventional 1080-line high-definition television and generates a proportionally greater amount of data. Uncompressed, an 8K 60-field image produces a data rate of about 24 Gbps.

According to an NHK press release, this large amount of data was fitted into a "standard" six MHz broadcast channel via "image compression technologies" and was transmitted using "ultra-multilevel" orthogonal frequency division multiplexing and multiple-input multiple-output dual-polarization technologies.

The experiment was intended to demonstrate that Super Hi-Vision television could be satisfactorily delivered to the home over a signal path typically encountered in terrestrial broadcasting.

(Tvtechnology)

Equipment Trends

1) Panasonic Introduces AV-HS6000 2 M/E Live Switcher with Advances in Operation, Functionality and Style



Panasonic has announced availability of the new AV-HS6000, a powerful, cost-effective 2 M/E switcher with 32 HD-SDI plus two DVI-D inputs, 16 HD-SDI outputs, 16 keyers, four independent MultiViewers, expandable clip storage, a Web server and many other advanced features.

The new switcher is configurable to match an expanded slate of production needs through options including a touch-screen menu panel, extra Primatte®* chroma keyers, expandable clip storage, and an SDK for development of a virtually limitless range of customized plug-ins to suit emerging production workflow needs. Easily customizable for diverse workflows, the HS6000 is a great tool for advanced production in house of worship, sports, broadcast, staging, and education.

With a 3U compact design, the HS6000's main chassis features a generous range of inputs and outputs to facilitate system integration. With its four DVEs per M/E, 16 keyers and 16 Aux busses, the HS6000 is easily able to handle creative projects requiring a fast, flexible response.

The HS6000's sleek design is enhanced by an ergonomic button layout with OLED source labeling, active thumbnail touch buttons for intuitive clip access, and many other technical director-friendly features. This newly designed, easy-to-use graphical control feature supports an accurate, intuitive workflow; with quick access for each M/E to wipe patterns, shot memories, event memories and other important functions. An optional 10.1-inch, touch-screen menu panel (AV-HS60C3) can also display video, MultiViewer, waveform, and vectorscope information. A separate monitor output is provided, as standard equipment, for non-interactive.

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The HS6000 supports HD and SD multi-format signals, with upconversion available on four inputs, and downconversion on two outputs, as well as colour correction on eight inputs and four outputs. The live switcher's system frequency is also changeable between 59.94 Hz, 50 Hz, and 24 Hz (or 23.98Hz), enabling worldwide operation and digital cinema production.

(Panasonic)

2) FT-ONE The Ultimate 4K Solution for Super-Slow Motion



The world's first high-speed camera designed for super-slow-motion acquisition at 4K resolution up to 900 frames per second (fps). The FT-ONE incorporates the groundbreaking FT1-CMOS, a global shutter CMOS colour sensor. The FT-ONE CMOS was developed by FOR-A to provide superior resolution and sensitivity. RAW material is recorded at high speed to the internal RAM memory, which holds nearly 10 seconds of 4K content shot at 900 fps. For convenience, material can then be transferred to optional internal SSD cartridges. Unleash your creativity with this unprecedented innovation in super-slow-motion video at 4K resolution.

(www.for-a.com)

3) Sony UWP-D11 Wireless Microphone

Hybrid Digital Processing for high quality sound for ENG / EFP productions.

The UWP-D11 belt-pack wireless microphone package with Sony Hybrid Digital Processing offers the sound quality of digital audio processing combined with the reliability of analogue FM modulation. The package includes the UTX-B03 belt-pack transmitter and URX-P03 portable receiver. Also included is a high quality omni-directional lavalier microphone and a range of accessories including



windscreen, microphone holder clip, belt-clip and shoe-mount adaptor. The UWP-D11 package offers wide frequency coverage with up to 72 MHz bandwidth across a wide range of channels, with a choice of four models to choose from. Easy-to-use features include a large display and small size receiver to fit neatly on any size camcorder or DSLR camera, automatic channel setting function, headphone output, USB connection for power supply and line input availability.

(Sony)

4) ExpressP2 CARD for 4K and High Frame Rate Recording



Panasonic has announced a new generation of P2 solid-state recording media, the expressP2 card, specifically designed to accommodate high frame rate 1080 HDAVC-ULTRA recording (above 60fps) as well as 4K capture. The company's new 4K VariCam 35* and 2/3" VariCam HS* (High Speed) camera/recorders, both with higher requirements for data handling than prior P2 camcorders, incorporate two expressP2 slots.

The 256GByte expressP2 Card (AU-XP0256A) facilitates the 4K VariCam 35's recording of 4K video at frame rates up to 120p, as well as the 2/3" VariCam HS's 1080 HD recording at frame rates to 240fps.

The expressP2 card offers fast transfer speeds (up to 2.4Gbps.), and contains a flash memory error correction system, equivalent to a RAID system, to recover from a failure in a sector, page, or entire block. The expressP2 card also features a secure Content Protection System, a self-monitoring system for usage count.

(Panasonic)

6) JVC's DT-V17G15Z 17-Inch HD Monitor

The JVC DT-V17G15Z is a near-EBU Grade 1 LCD monitor, with (mercury free) LED backlight illumination. Factory default gamma is 2.2, but three other values are available: 2.35, 2.45 and 2.6. There are two modes of colour gamut operation: ITU-709 (default), and "wide," which covers 110 percent (NTSC) of the panel's colour space. The display provides 10-bit processing for smooth gradation. Optical characteristics include an 800:1 contrast ratio, 300 cd/m2 brightness, 1,073 million colours and 178-degree horizontal and vertical viewing angles. The unit accepts both Dual Link HD-SDI and the latest 3G-SDI interface. It handles 1080p uncompressed video data at 60 fps and 3 Gbps.

Acceptable formats include 3G A-1 to A-4, 3G B-DS1 and DS-2, along with 3G B-Dual.



On-screen displays include waveform, vector, along with metering for up to 16 channels of embedded audio. Other features include 1920 x 1080 resolution, a latency of less than one frame, JVC image processing, front LED dimmer, source ID input by ASCII code, LTC, VITC and D-VITC support, gold-plated HD/SD, SDI terminals, DVI-D with HDCP terminal, built-in speakers, a top handle, rugged-adjustable stand and more.

(Tvtechnology)

7) The MoVi M10 Camera Stabilization System



The true genius of MoVi is in how it repackages existing technology into something that's new, effective and exciting those of us wanting an alternative to tripod-based camera support. In some ways, it's a high tech Rube Goldberg variation on a tricked-out DSLR shooter's rig. It can be operated either with both hands on a short handlebar or with only one hand via its top handle. The remote controller in the MoVi package is the same one used to control quadcopters and other UAVs.

In many respects MoVi is unique in its design and composition. At heart it's a triple-axis, digital gyro-stabilised camera support system with a continuous 360-degree pan range and 180-degree tilt and roll. Slew rates range from 0 to 150 degrees per second.

There are three control modes: majestic, stabilised and stabilised slew. Majestic is operator stabilised via a gimbal base. The stabilised mode requires no operator control and basically operates on autopilot. The stabilised slew mode enables remote control of pan, tilt and roll axes with the Spectrum DX7s remote controller, which is part of the MoVi 10 package.

(Tvtechnology)

Personalities & Post

Dr Rohmad Fakeh

Retires from Radio Television Malaysia

The ABU Technology Department said farewell to Dr Rohmad Fakeh, Deputy Director, Strategic Planning Section, Radio Television Malaysia who has retired.

Ms Mazura Mansur, Head, International Relations Unit, Ms Wan Maslinda Md Ali and Tuan Haji Zulkifli Abdul Rahim, Senior Assistant Director (Radio Studios) together with Dr Rohmad visited the ABU on 30 January 2014.

Dr Rohmad worked closely with the ABU Technology Department on a wide range of activities and could always be relied on for his help and good advice.



Haji Zulkifli bin Abdul Rahim

Appointed New Technical Liaison Officer for Radio Television Malaysia

Haji Zulkifli bin Abdul Rahim, Senior Assistant Director (Radio Studios), Radio Television Malaysia. Haji Zulkifli bin Abdul Rahim has been appointed the new Technical Liaison Officer for Radio Television Malaysia. Haji Zulkifli is Senior Assistant Director (Radio Studios) of Malaysia's public broadcaster, Radio Television Malaysia. He joined RTM in November 1984. Haji Zulkifli has 16 years experience in radio and TV transmitters, six years in radio studios and five years in research.

New Members

Additional Full Member

Mongol Television LLC, Mongolia (10 February 2014)

Mongol Television is a private free-to-air broadcasting company, incorporated on 28 February 2007 and located in Ulaanbaatar, Mongolia. Its first launch was in September 2009. Mongol TV was later taken over by the Gatsuert Group's Chinbat family in June 2011 with the goal to provide the Mongolian population with non-biased news and entertainment worthy of the Mongolian culture. Ms Nomin Chinbat, appointed CEO, took over the Mongol TV to revamp and re-launch the HDTV Network.

Mongol TV enlisted Format People Inc. a USA/UK TV consulting group and appointed Michel Rodrigue as Project Manager and Principal Consultant to revolutionise Mongolian television. The 3 year plan included the building of two new state of the art live studios, one to host the news and current affairs programs adjoining a modern high tech newsroom and the second to broadcast a daily 3 hours live morning show called Unuu Ugluu (This Morning).

Mongol TV was re-launched on February 1st 2013 and ranked in the top three terrestrial networks in Mongolia, and audio visual landscape counting no less than 14 terrestrial stations and over a hundred cable and satellite channels. The Unuu Ugluu programme became an incubator of talent and concepts, hatching new programs such as cooking shows, arts & entertainment, sports and financial programs, all contributing to a 50% national content quota.

The other half of the programming grid is made up of the most recent USA and UK series such as Homeland, The Good Wife and, Downton Abbey, as well as recent blockbuster movies such as Avatar, Rio, Despicable Me; also broadcasting live international events like the Emmy's, the Oscars and most recently a special documentary on the life of Nelson Mandela from Sky UK. All local programmes are produced and aired in the Mongolian language and all acquired programming is translated and dubbed internally by Mongol TV's in house team of Mongolian actors and producers.

Mongol TV's next target is sports fans by broadcasting the upcoming winter and summer Olympics to complete their broad general audience. The new infrastructure includes a Canadian built OB unit to cover local and national sporting, cultural and political live events.

New Members

Associate Members

France Medias Monde, France

(4 March 2014)

The France Medias Monde group is in charge of French international broadcasting services. It was launched in April 2013 and comprises of three media:

- the trilingual news TV channel FRANCE 24
- the international radio station RFI
- and the Arabic-language radio Monte Carlo Doualiya

The France Medias Monde broadcasts to the world in 14 languages. The group's journalists and its unique network of correspondents offer viewers and listeners comprehensive coverage of world events, with a focus on cultural diversity and contrasting viewpoints via news bulletins, reports, magazines and debates.

The group has a combined weekly audience of over 90 million listeners and TV viewers and its new media platforms attract 25 million visits a month.

Kristal-Astro Sdn Bhd, Brunei

(4 March 2014)

KRISTAL-Astro Sdn Bhd is a private company registered on 18 January 2000 in Bandar Seri Begawan, Brunei Darussalam. They are Brunei's only multi-channel pay-television service operator, a joint-venture business between KRISTAL Sdn Bhd, a subsidiary of DST Group (Brunei) and Malaysia's MEASAT Broadcast Network Systems Sdn Bhd.

They launched their digital Direct-To-Home (DTH) satellite television service on 24 January 2000, providing over 100 channels of digital quality satellite television, radio programmes and other interactive services. They launched the first high definition (HD) broadcast in Brunei in June 2010. There are currently more than 20 HD channels being offered to subscribers in Brunei. KRISTAL-Astro has penetrated 40 percent of Brunei's television viewers' market.

Subscribers have access to pay-per-view services and Astro First, a first of its kind movie-on-demand service in Brunei, with the latest cinema titles within two weeks after the cinema release. Subscribers can view these movies in the comfort of their homes at an affordable price. With the launch of Astro Best in August 2012, subscribers can purchase via Short Message Service (SMS) on their mobile phones for Hollywood and Asian titles as early as three months after the movies' cinema release.

Redbridge TV and Film Production, Vietnam

(28 September 2013)

Redbridge TV and Film Production is a private company established in Hanoi, Vietnam on 17 March 2004. They are one of Vietnam's leading media production companies. They have been engaged by leading organisations to provide a range of production services that have earned them a strong reputation both locally and internationally. Redbridge is one of the first private companies to produce co-production films with international independent filmmakers and broadcasters and institutions around the world.

Redbridge has been contributing to the development of Vietnam media and movie industry by organising Vietnam's second International Film Festival, coordinating with Cinema Department. They have worked with Vietnam Television (VTV) in organising a workshop that included Discovery Channel, Bang Production and NHK's office in Vietnam. They have worked with international broadcast companies such as Discovery Channel, BBC Channel 4, Geographic Channel, Bang Production (Singapore & Korea), FINAS (Malaysia) and many other local independent filmmakers, institutions and production companies.

Redbridge's mission is to become a leading documentary, feature, drama series production and leading media company in Vietnam.

Affiliate Members

Maldives Broadcasting Commission, Maldives

(26 December 2013)

Maldives Broadcasting Commission was constituted on 22 August 2010 under Article 3 of the Broadcasting Act, Maldives (Act number 16/2010) as an independent institution with members being appointed by President Mohamed Nasheed on 4 April 2011 in Male, Maldives.

They are a regulatory commission, responsible for regulating and developing the broadcasting sector and establishing sound regulatory mechanisms for broadcasting infrastructure and services in the Maldives, to facilitate and support the professional development of broadcasters to enhance and ensure responsible use of the freedom of expression enshrined in the constitution, increase access to information, and foster the growth of a free and responsible media.

Their Mission is:

- To responsibly protect the rights of "freedom of expression" as per the constitution with egalitarianism
- To protect the fabric of the society; encompassing the religious, social, cultural, economical and political values
- To partake in building the nation and fostering democracy.
- To play a pivotal role in enriching the talents, skills creativeness, and innovativeness of Maldivians
- Guiding the broadcasting industry towards enriching knowledge, increasing awareness and as a source of entertainment for Maldivians.
- Promote and facilitate the introduction and development of new services, innovations and technologies in broadcasting
- Fostering healthy competition within the broadcasting industry.

Guntermann & Drunck GmbH, Germany

(20 January 2014)

Guntermann & Drunck GmbH, a private limited company, was founded in 1985 and is located in Wilnsdorf, Germany. They are regarded as one of the leading and highly specialised manufacturers of digital and analogue KVM solutions. Their core competencies are extending, switching and distributing standardised computer signals.

As a manufacturer of quality products committed to providing highest quality, they are certified according to DIN ISO 9001. Their KVM solutions assist to separate users from the computers by extending the distance in-between peripherals – such as keyboard, mouse, display a.s.o. – and the corresponding interfaces at the computer side for a range of up to 10,000 m. By removing computers to dedicated server rooms, thus, better ergonomics at the workplaces can be achieved with less noise, less heat and more space.

The KVM switches and matrix switches multiple computers can be operated by one or more consoles. This gives maximum flexibility as different systems can be operated from any position, making the IT infrastructure an optimum for staff collaboration. The KVM extenders and KVM switches for single or multi-user operation are specially designed for mission-critical environments such as broadcast live surroundings. The wide product range provides high video quality (DP, DVI and VGA) and support of special input-devices.

G&D components are reliable and of high performance suitable for equipping studios, OB vehicles, technical rooms and for mobile transmission solutions.

Mediaguru Consultants Pvt Ltd, India

(4 March 2014)

MediaGuru Consultants Pvt Ltd was incorporated on 27 February 2006 in Jaipur, India. MediaGuru, a global media services company, it is engaged in media consulting, technology, and digital archiving solutions, with expertise across television, film, radio, new media, and print. The company's focus areas include new launches and revamping of TV channels, FM radio stations, digital and print businesses.

MediaGuru's latest and ambitious initiative is in digitisation of audio and video archives through a joint-venture with the sector's global leader, Memnon Archiving Services, a Belgian company, which has to its credit, clients such as the BBC, Readers' Digest, British Library to name a few. On offer worldwide with remarkable success, are comprehensive services for multi-format digitisation, content tagging, subject division, archiving, instant retrieval, usage and re-purposing. The range of archival digitisation services that are on offer are not only for media firms, but also for the government sector, museums, libraries, research labs and all business domains which require preserving and re-use of audio and video data.

The MediaGuru Technology Services begin with workflow design, followed by turnkey installation, commissioning, testing and handholding, technology sale and support and finally ongoing manpower support. Digital Archiving is a comprehensive service offered by MediaGuru-Memnon Archiving Services, one of the global leaders in the archiving field. It consists of multi-format digitisation, content tagging, subject division, long term preservation, instant retrieval, and usage. On-site and Off-site digitisation services are offered for media companies, government sectors, museums, libraries, research laboratories that require preserving and re-use of audio, video and text data.

Mediaguru's innovative technologies consist of a "Go Live from a Backpack" whereby the backpack uses bonded 2G and 3G networks to GO LIVE from a backpack as well as iPhone app for Live and file transfer of videos. With video interactivity, up to 25 viewers' webcam videos can be aired with just one click which can bring about new advertising opportunities. MediaGuru offers value advantage in key project operational areas that include quality benchmarks, delivery timelines and competitive pricing. Their clientele is spread across US, Europe, Asia, and Africa.

Office Of The Regulator, Samoa

(4 March 2014)

Office of The Regulator was established in 2006 in Apia, Samoa, under the Telecommunications Act, 2005, and Broadcasting and Postal Services Acts, 2010, to provide regulatory services for the telecommunications sector, as well as provide regulatory framework for broadcasting and postal sectors in Samoa.

The Regulator is required to establish a fair, unbiased and ethical regime for implementing the objects of these Acts including licensing of telecommunications, broadcasting and postal services, promotion of new services and investment, consumer protection, prevention of anti-competitive activities by service providers, and management of the radio spectrum and national number plans. The Office of The Regulator is also responsible for protecting the interests of end-users of telecommunications services by ensuring fair and equitable competition in all areas of the telecommunications market.

Their key responsibilities are:

- License telecommunications and broadcasting services
- Manage and license radio spectrum usage
- Administer the national numbering plan
- Manage competition in telecommunications sector
- Provide consumer protection services
- Approve equipment type
- Resolve telecommunications disputes
- Promote telecommunications market development

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