Asia-Pacific Broadcasting Union

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ABU Digital Broadcasting Symposium 2012:
Full Report Inside

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Asia-Pacific Broadcasting Union

TECHNICAL REVIEW

From the Editor's Desk

This edition leads with a report on the ABU Digital Broadcasting Symposium 2012. Exceeding all expectations, the event attracted a large numbers of delegates and industry players. The event involved conferences, parallel workshops, exhibitions and webinars.

Three technical articles for this edition have been contributed by British Broadcasting Corporation (BBC), Turkish Radio and Television (TRT) and Bhutan Broadcasting Service (BBS). The BBC article highlights the need for innovation in supporting multi-platform delivery and describes the role of IT based systems and commercial data services as an essential part of delivering media services.

The article from TRT defines the development of the radio automation system in that organisation.

The BBS article describes the improvements in broadcasting systems, startup of a new TV channel and the future plans and challenges of broadcasting in Bhutan.

The current issue also includes reports on the 8th Global Coordination Conference, PMP Conference, WRC-12 Conference and an HDTV workshop in Ankara.

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

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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DIGITAL BROADCASTING SYMPOSIUM 2012

"Decision time for Stakeholders"

The 2012 event of the ABU Digital Broadcasting Symposium was held from 9-13 March 2012 in Kuala Lumpur. It was the eighth such symposium organised by the ABU and carried the theme "Decision Time for Stakeholders". The event attracted over 1000 participants, representing broadcasters, regulators, policy makers, manufacturers, service providers and other industry players.

The composite 4-day event included a 52 booth exhibition and focused workshops and conference sessions, addressed by over 90 eminent speakers. The conference and workshop sessions provided, among other topics, information on the advantages of implementing digital technology and services.

Opening

The 2012 ABU Digital Broadcasting Symposium commenced on 6 March in Kuala Lumpur. The opening day saw eight workshops presented to more than 400 participants from ABU members, equipment manufacturers, system integrators, service providers and representatives from other sections of the broadcasting and associated industries.

As was customary, the DBS conference commenced with "Perspectives," presented by a media personality, providing a non-technical viewpoint on technological developments.

In his welcome address, the ABU Secretary-General said that new technologies brought with them several complicated issues and that it was for the stakeholders to take appropriate decisions so as not to be left behind in the marketplace.

Industry Keynote

The Industry Keynote was presented by Mr Brett Savill, Director of Strategy and Corporate Development of Broadcast Australia. He said that the theme of the Symposium, "Decision-time for Stakeholders," was the right one for 2012 and he suggested that one of the things preventing broadcasters from realising their vision was having to cope with the growth and complexity of content delivery.

Ministerial Address

The Ministerial Address followed the first Session of the conference and the ABU Secretary General welcomed the Hon. Deputy Minister of Information, Communications and Culture, Malaysia, Y B Dato' Joseph Salang. In his address the Hon. Deputy Minister said that audiences were now demanding diverse types of content on the platforms of their choice, yet meeting these requirements would not have been possible but for advances in broadcasting technology. He added that however, it was important that broadcasters met the challenges and made good use of the opportunities offered by the new technologies. He said that many countries in the region, including Malaysia, were keen to implement the digital technologies to enable their audiences to reap the benefits of digital services.

Presentation of Life-time Achievement Award

It was announced that the special lifetime achievement award was being made to Mr Doan Viet Trung, the Vice President of The Voice of Vietnam (VOV). Mr Trung, it was said, had been working with VOV for more than 20 years and that he had provided leadership in setting up and expanding VOV's radio and TV broadcasting network in Vietnam. He had initiated the introduction of new technologies and new media in VOV, including a traffic channel and news webcast. The award, presented by the Hon. Deputy Minister of Information, was received by a colleague, on behalf of Mr Trung.

Mr Tung (right) receiving the award

Systems Standards: New Features and their Evaluation


Philip Laven


Doug iies

The first session looked at recent enhancements in digital system standards and emerging new standards, their features and applications. The presentation on 'Standards Selection and Evaluation' addressed the need for standards. Digital system standards used in industry are evolving with enhancements to keep in step with advances in IC chip architecture and R&D work progress in broadcast, communication, computer and IT. Selection of the appropriate standard depends on market drivers together with techno-economic, policy and cost issues. Like broadcast delivery, standards require field tests to validate performance and feasibility, as well as trying ways of reducing capital and operating expenditure.


Ruxandra Obreja

The DRM+ standard has been endorsed by the ITU and, with this, DRM standards now cover all bands, up to and including VHF. Looking at recent developments, India, Russia and Brazil have enhanced their engagement with DRM30 and DRM+, thus becoming key players. Tests have been completed in other countries including the UK and Italy. New receivers are coming into the market, as seen at IBC 2011, and more are expected at the coming NAB. A sizeable number of AM transmitters in Russia, India and other countries are being replaced with DRM transmitters.


John Bigeni

DVB-T2 is promoted as being environmentally friendly with better efficiency. Compared to DVB-T, the current standard provides for more services per channel while operating at a lower transmitter power, resulting in more cost effective operation. With receiver prices falling rapidly the take up of the standard is increasing worldwide with many countries in this region already adopting DVB-T2.

The take up of DAB/DAB+ and DMB standards is increasing on five continents. A major driver for this is that as


Jorn Jensen

significant number of cost effective receivers is available, including mobile devices. The car industry has also realised the potential of DAB+ and it is becoming evident that digital radio, with its clarity, interactivity, value-added services, reduced capex and efficient spectrum use, is the future of radio.


Tony Fiedler

The HE-AAC global standard is supported by many industry players and is incorporated into millions of devices. The highlights of the standard include very efficient bit rates with uncompromising sound quality; a cost effective licensing mechanism; multi-channel, metadata and flexible control possibilities for different applications. Bitrate efficiency lowers bandwidth requirements and spectrum costs.

Image Acquisition for HD, 3DTV and Beyond

Significant developments have taken place in enhanced image capture and processing for delivery of 3D, HDTV and UltraHDTV. Huge advances have been achieved in CCD and CMOS image sensor technology, by Sony both these technologies having come a long way with steady enhancements over the years. CCD has sufficiently low noise and very low vertical smear, while the noise from CMOS is even lower and there is no smear, though it has flash banding when light changes during the scan. CMOS has higher SNR and is suitable for high frame rates with low power consumption, making it suitable for small size camcorders. Apart from sensors SONY has developed several image enhancement technologies for cameras, to optimise output.

DB Symposium hosts online Webinar session

This special workshop session was organised jointly with LStelcom. In it, the expert, Mr Markus Morgen of LStelcom, addressed the participants through an online webinar from Germany. His video and audio presentation was projected on a large screen and he later answered questions from the participants.

Regulators and operators, it was said, play key roles in frequency and network planning. The regulators focussing on the compatibility and avoidance of interference and the operators mainly focussing on coverage. The webinar highlighted both these aspects and the interaction between them, that needs to be managed. The session also detailed the steps involved in the typical workflow of a modern DVB-T2 planning exercise.

Image enhancement techniques using Retinex theory were presented by Ikegami. Cameras inherently have limited ability to sense luminance unlike the human visual system which encompasses a wide range of luminance variation. Also pictures cannot be obtained with good results during poor visibility conditions such as shadow, haze and snowfall. Image enhancement techniques using Retinex theory, can improve contrast in a shadowy scene and restore colour in hazy scenes.

Korean Broadcasting System (KBS) delivered a presentation on the 3DTV broadcast system and facilities used for the IAAF 2011 event at Daegu, Korea. The service compatible, full HD 3D service method which provides hybrid coded dual streams for L & R signals compared with the single stream used in the frame compatible method, was used for the event The bitrate adopted was 240 Mb/s (120 Mb/s each for L & R) using the JPEG2000 compression format. Service compatible delivery enabled 3D TV sets to view the picture in 3D whilst non- 3D TV sets were able to display a 2D picture.

'Content Quality and Assurance' is essential to ensure viewer comfort and protect business revenue generated from advertisements. However, traditional 'Quality of Service' (QOS), focusing on measurement of some key technical parameters and visual inspection by operators, is no longer practical with the large number of services and channels available in different formats. To answer this, 'Quality of Experience' (QOE), which monitors the video codec layer, the transport stream and other essential parameters, now provides a better quality assurance method in the digital processing and delivery area.

Assimilating Effective Workflows and Media Management

Though file-based content production has taken off, there are still some unresolved issues, such as interoperability and efficient media management. Current file-based production workflow is complex, with multiple production islands, duplicated services and tightly knit point-to-point connections, making it difficult to integrate with different vendors. The result is restricted collaboration and high IT manpower costs. Systems like the Media Backbone Conductor provide workflow management solutions that simplify integration of digital production islands and facilitate end-to-end tapeless operations. The industry is defining a standard named 'Framework for Interoperable Media Services' (FIMS) for common service interfaces.

Turkish Radio and Television (TRT) related its experience in setting up a digital archive system. To start with it was essential to clearly understand archive requirements and to start with smaller storage. More storage could be added as the workflow and system grew, allowing flexibility to add advanced storage devices and media. All stakeholders needed to be involved at the planning stage. The first steps involved defining a metadata structure, creating user profiles and deciding the input and output formats required. It was found to be helpful to go for the most flexible and customisable system option as this allowed changes in the workflow, if needed.

KBS has completed a transition to File Based Production System which it commenced in 2005. It took into consideration the input from the staff, potential to reuse parts of the old system and training of staff on the new system. It was very important to consider the people who would use the system first, keep them informed and preparing them for the change. Regular meetings were held with editors. The system storage having increased by 40 times since first installation, it was important to adopt flexible and upgradable solutions.

With fast processing power and high speed connectivity, content can be stored in an external host located anywhere in the world, the so called 'Cloud'. In the past, such solutions did not work well with large amounts of data due to limitations in connectivity and processing speed. But content storage and management solutions are now available creating easy collaboration and more efficient workflows. Security remains a major concern and needs to be addressed carefully.

Broadcasters have new competitors in the form of OTT providers like Hulu, Google TV, Apple TV and others. But it is a growing and open market which, with proper planning and a good business strategy, can become a monetising platform. Going to a multi-screen delivery system involves major changes in workflow and architecture and implementing technology without change management may not provide desired output.

ENGAGING AUDIENCES ON FOUR SCREENS

There has been a rapid transition from traditional platforms to more versatile multimedia platforms such as Hybrid TV, multimedia content over broadband, Smart Applications and the use of cloud technology. Telcos are moving fast to get a foothold in the marketplace which is at the moment very stimulated by content being made available anytime, anywhere on any device. Broadcasters need to step up their efforts in providing their content on these platforms.

Smart TV for Mobile

Content through streaming services is available on mobile handsets but the cost is high due to high broadband charges. Thus, a new service, WebDMB, has been introduced in South Korea, where a pilot service is currently running with several content providers onboard. It is a mobile TV hybrid platform based on T-DMB and the Internet. WebDMB offers a similar experience to the users but through a hybrid smart API which facilitates multimedia content streaming through the T-DMB channel, whereas web content is available via internet connection.

Hybrid TV

Hybridcast integrates broadband services with digital broadcasting to provide a seamless and harmonised experience. Key features are APIs for broadcast resource access that enable information retrieval for the current programme and for stream synchronisation, obtaining timing information to synchronise the broadcast and broadband content. Hybridcast is now in the process of finalising the technical specifications, establishing partnerships with industry players and developing platforms for receiver testing and verification.

iPads as Smart TVs

The scenario in Australia is that broadcasters hold less than 10% of the market share of online advertising. iPad-like devices offer a better user experience than Smart TVs as the latter are deemed relatively complex by users. The key lesson is that broadcasters must understand customer behaviour. Broadcasters need to embrace market trends by incorporating social networking and delivery to multiple screens.

Rights Management on Four Screens

Establishing a multiplatform and multi-screen delivery system requires consideration of many critical areas, such as subscriber rights management over multiple networks, addressing the range of device types and formats, harmonising stream management, adaptive rate control and rights management for different devices. Another key area in such a deployment is security and protection of content rights. Managing a multiple rights framework with many different scramblers and encoders is possible and is already in operation in some places.

Content Security

Over-the-top (OTT) content means online delivery of video and audio without the ISP being involved in the control or distribution of the content itself. This is an open platform and is available on many connected devices, including TV sets. It should be regarded as an opportunity for the traditional broadcaster to engage more audiences. However, one important area which needs to be addressed is the security of the content and the network.

Digital Radio Adds Value

Digital Radio Plus, in Australia, provides value added services like EPG, slide shows, pause and rewind and wider choices of content. A system has recently been developed to provide more interactivity through integration with mobile networks. Information is sent to both the DAB+ broadcaster and to the mobile service provider. The Free to Air DAB+ service is broadcast to DAB+ capable mobile phones which remain connected to the regular mobile network, thus providing interaction between consumers, broadcasters and advertisers.

Content Creation for HDTV

HDTV has come of age and with it a growing demand for high definition programming. The transition from SD to HD has faced production, technical and in commercial challenges.

File-based production has brought a tapeless environment where nothing is tangible and content creation is influenced by technology. HD brings out fine detail necessitating extra time and effort in makeup, set design and lighting. HD production costs are increased and some outsourcing may need to be considered. The benefits of HD are amazing, including picture quality and long-tail usage, whereas the downside is difficulty in working with mixed SD/HD environments and reduced revenue for SD content.

Some international collaboration in HD production has already taken place in Malaysia between local production companies and producers like National Geographic and

Discovery channels. Relationship building has forged cooperation with producers from different regions. However most HD production in Asia tends to be undertaken by producers from the West. It is time for a change and to encourage Asian producers to make the content which is more authentic.

The Korean viewpoint is that broadcasters have to take viewers who do not have HD receivers into consideration. Cropping takes place when down converting from HD to SD and subtitles are too small to read in SD. It is therefore best to make two different versions where it is important that content is enjoyed by all viewers. As for 3DTV, technology has not evolved fast enough and still requires the viewers to wear glasses. There is currently a dearth of 3D content, restricting the number of available 3D transmission hours.

Delivery of Content including 3DTV and UHDTV

The session looked at the different approaches that had been developed for terrestrial and satellite delivery of UHDTV, 3DTV as well as mobile multimedia services. Super Hi-Vision provides higher resolution and wider angle of view with its large frame size of 7680 x 4320 pixels, and uses a progressive scan frame rate of 120Hz with an aspect ratio of 16:9 and 22.2 multi-channel sound system, providing an immersive experience. Transmission experiments have been done using Ku and Ka band satellites as well as optical fibre and terrestrial means. To meet capacity needs, the 21GHz frequency band will be used for delivery but this band has higher rain attenuation, a problem which is currently under going further studies by experts.

Although DVB-T2 can cater for fixed, portable and mobile reception, some of its specifications are targeted specifically at mobile reception. Mobile propagation conditions induce frequency shifted echoes which require smaller FFT size. The Future Extension Frame (FEF) can be optimised to carry the proper combination of FFT size, guard interval and pilot pattern to mitigate mobile propagation condition without disrupting any T2 fixed receivers. This new mode of DVB-T2 is termed DVB-T2 Lite because certain parameters that are not relevant for mobile reception are discarded.

Hybrid TV uses both broadcast and broadband to send content to the viewers. As an example, Media Broadcast's Smart TV portal provides information on the screen mostly using text and pictures. The broadcast channel transmits only the relevant programme ID, URL and still pictures. There is no broadcasting of video or audio data and therefore requires only a narrow bandwidth. Once the user selects the programme, the content stream is delivered through the broadband/internet network and displayed on the screen.

Multichannel surround sound is an integral part of the HDTV experience and the 5.1 channel surround sound can be implemented with Dolby E-AC3 without the need to pay royalties for producing and transmitting. Minimal charges are imposed on receivers but this does not have a significant impact on prices, even for the low cost segment of the HD receiver market.

Regional and local content is a key driver and differentiator for DTT networks compared to DTH systems. It can also be used to generate new revenue streams through local or regional advertising. A well configured DVB-T2 network can be used to distribute the same DTH content from satellite at the same time allowing insertion of local content. The DVB-T2 parameters allow easy insertion of content within the network.

Digital Radio: Looking to the Future

This session addressed current developments in digital radio and how it will march into the new future.

DBS Attracts System Proponents

DVB Asia Review Meeting

The DVB hosted Asia Review meeting on 7 March was attended by a host of Asia-Pacific broadcasters together with Philip Laven, Chairman DVB, and John Bigeni, DVB representative for Asia. An update on the take-up of DVB-T/DVB-T2 systems around the world and specifically in this region was provided, sharing experience gathered from the recent trials in many countries.

DRM hosts Asia Group Meeting

The DRM Consortium had its Asia-Group meeting on 8 March, attended by its partners and Asia-Pacific broadcasters at the DBS. Ruxandra Obreja, DRM Chairman and DRM members conducted the meeting. Briefs on the progress of the DRM standard and of receiver availability were provided. The meeting highlighted prospects of major DRM implementations in Russia and India.

ISDB-T: Demonstration and Open-day

The Japanese digital broadcasting standard, Integrated Services Digital Broadcasting (ISDB) had an open-day demonstration of its technology and its applications in terrestrial and mobile broadcasting. The full day open-house had on display, ISDB-T set-top-boxes displaying SD and HD services, mobile devices with integrated ISDB-T capabilities and a demonstration of the Emergency Warning Broadcasting System (EWBS) on ISDB-T networks. ISDB-T experts explained the technology to the participants and provided up-to-date information on its progress. The demonstration also included the new ISDB-Tmm devices, the mobile multimedia broadcasting standard based on ISDB which will start its services in Japan later this year.

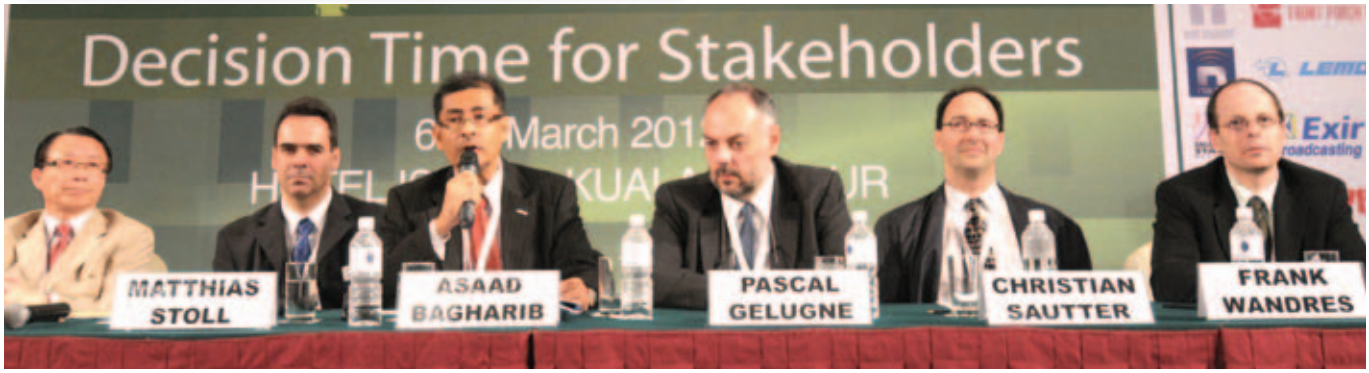
DRM to FM re-broadcasting is a technique used to provide more coverage for existing radio broadcasts. The DRM signal is transmitted with two audio services to a target area over hundreds of kilometres away. It is received by a single DRM receiver feeding two different FM transmitters and re-broadcast. This method can be used for programme distribution without the need for satellite links and for standalone solutions for remote areas, using solar energy and batteries.

The DAB+ rollout in Hong Kong is being carried out by a consortium of four broadcasters and will carry 18 digital radio services. Seven main transmitter sites have been identified and six are already in operation. Four additional gap fillers are planned for 2012. At the end of 2011, 13 channels were available on the network. Promotional activities are being carried out by the consortium to educate the public on digital radio.

The propagation model for digital radio network planning may present a dilemma for engineers as it has to be carefully chosen. Deterministic (or geometrical) models estimate the field strength directly from the path profile and require a detailed knowledge of the terrain. Empirical (or statistical) models provide estimations of field strength where there is insufficient knowledge of the terrain profile. Data is obtained from extensive measurements in different environments and this choice requires only medium rather than high resolution cartography.

Digital Radio DAB+ has just being introduced in some European countries to replace the terrestrial FM radio transmission. DAB+ networks in VHF Band III require wideband and high power transmitting antennas in order to maximize the number of programmes and coverage. The antenna solutions should be flexible to fit to various different installation requirements on loaded antenna towers and masts.

DAB was initially launched in Germany in 1995 but due to limited resources, no indoor coverage and lack of programmes it did not make much progress. When the DAB+ standard was introduced in 2010, the antenna requirements for DAB+ rollout changed, one of the main factors being the space allocation on existing masts. A broadband double-dipole antenna design was used to meet this requirement. It was especially suitable for round towers and could handle the high power required. The second type of antenna used was log-per antenna which was very low in weight and ideal for transmission along railways and highways.



Industry Debate:

All Systems Go for Decision Making

A panel comprising experts from all sections of the industry gave a clear go-ahead to the broadcasters for positive decision making towards implementation of digital broadcasting infrastructure and new services.

Commencing the debate, the question on the table was whether this was an opportune time for decision making by the stakeholders in respect of implementation of new technologies and new services.

Mike Dallimore, Vice President, Broadcast Australia, responded that in respect of digital TV and digital radio, so far the major focus had been standards and information gathering and training. The time was now appropriate for the ASEAN countries and others to decide on implementation in the near term and on the types of applications, HBBTV being among these.

Ruxandra Obreja, Chairman DRM, said that broadcasters should meet the expectations of the listeners and that keeping the listeners in the analogue domain would not be acceptable in the market. The time had come for Asia to go for digital radio, taking advantage of lower power requirements.

Rich Redmond, Vice-President of Harris, put forward the thought that the 'future is now'. He said all the key drivers have been put in place, new synergies are developing in the market and the consumers need a bigger experience. If the industry does not go for it, they will all be left behind.

Azlina Mohd Yusof, Director, Malaysian Communications and Multimedia Commission said that the regulators have made things easy for the broadcasters in many ways to implement digital infrastructure and services. Definitely the time is opportune to take decisions and reduce pressure on the spectrum. She said that the industry wants to move forward.

Presenting a perspective from commercial broadcasters, Tan Kwong Meng, General Manager, TV3, Malaysia, said that technical facilities need to create business opportunities. If implementation now can enhance business, commercial broadcasters are all for it.

Andrew Yeo, Publisher and Director, Asia-Pacific Broadcasting, observed that going digital would soon become a question of survival as equipment obsolescence would come in. The broadcasters should no longer hesitate to take decisive action.

Phil Laven, Chairman DVB, was all for taking decisions and said, "The sooner you start, the sooner you will finish the transition."

Nils Ahrens, Regional Broadcast Manager, Rohde & Schwarz, said that the planning, infrastructure development and setting up of networks was the requirement now. Describing the status of the industry, he said that equipment and the best technologies are available and broadcasters should take advantage of that.

The panel then debated a second question on whether the industry was equipped adequately to support implementation of the new technologies and new infrastructure.

Among the messages that emerged was that the development of equipment was done and the industry could meet all the needs. Affirming that the industry-wide supply base is capable of delivering the requisite inputs to the broadcasters more now than ever before, it was crucial to be successful in the transition to digital and also address spectrum issues. Indicating that the industry was equipped to implement the change, Ruxandra Obreja said that there were no problems in hardware supply and that software was upgradeable. Noting that experience of early implementers is available to the industry, the region would benefit the upgrade of technology.

Deeming it important to engage audiences, the industry is ready to support digital implementation, as had already happened in several countries in the region. The trend was towards adoption of new technology and mitigating infrastructure obsolescence. Most broadcasters have embraced digital and HDTV and implementation should not be any burden to them.

Several questions were asked from the floor which focused on some of the aspects that were raised by the debate.

Wrapping up the session, Sharad Sadhu, who moderated the debate, said that the overwhelming opinion among the industry leaders was that the time was right for the broadcasters to decide upon implementation of digital infrastructure and services. The industry was fully equipped to service the requirements of the broadcasters at all stages.

Decision Time for Stakeholders:
Building Business Models

Given the current state of maturity of the digital technologies, time is opportune for the stakeholders to take informed decisions on the way forward. A crucial component of this decision making is the ability to develop business models that respond to the market and generate returns on investments.

DVB-T2 has already passed the experimental and trial stages and infrastructure has been setup with consumer products such, as set-top-boxes, available at reasonable prices. DVB-T2's increased robustness reduces network costs while extra payload facilitates more SD and HD services. Multiple PLP enables flexible service combinations, regionalisation of content and easy management of services when infrastructure is shared between multiple operators. All in all these features provide an overall reduction in capital and operational costs.

Establishing a multi-screen video service enables broadcasters to generate revenue through a multitude of service offerings like catch-up and on-demand.

The market trend has changed. In early 2000 many people started narrow-band services over the internet, but these were of very low quality, expensive and lacked a real business model. However, with advanced technology and increased speed and penetration of broadband internet, broadcast quality video is now possible with other attractive services, opening the doors for different business models. Over-the-top at first looks like a threat to traditional TV, but with a proper approach and sound business model can be used as an opportunity for broadcasters.

DRM30 can actually be used as a solution, which is superior to AM, for wide area coverage. The quality is equal to FM and data can be transmitted simultaneously. It can act as an Emergency Warning System with a range extending to hundreds of kilometres. Energy saving can be realised, as conventional AM transmitters consume huge amounts of power.

Consumers do not care how they receive the video they want to see, as long as it reaches them on their preferred device. Broadcasters need to find solutions to how to get 'on the bandwagon' of multi-network delivery, making their content available on all platforms. With more mobile devices catching the eyeballs, adaptive rate streaming actually enables a high quality TV experience comparable to managed networks.

Connected TV enables more TV programmes to be delivered over the internet and displayed on the connected TV screen. For this to work properly one needs a fast enough broadband connection, a means of presenting the information on the screen and some means of system security and protection. Manufacturers build proprietary portals into their connected or smart TV sets but, in each case, it takes the user away from the broadcast TV content. Similar browsers and decoders are now available in many other devices like smart phones, game consoles, tablets and other mobile devices.

Setting Up Infrastructure in Emerging and Developed Markets

The major cost elements in network deployment are transmitters, site, tower structure and antenna systems. Spectral efficiencies can be increased by using MPEG 4, which allows up to 8 SD services per RF channel. The appropriate transmission modes selected can provide a trade off between capacity and coverage or transmission power. Site location and height also offer a trade off between cost of building and coverage.

Modern FM transmitters need to meet the requirements of today and tomorrow, providing long useful life, cost-effective design and operation, support of digital upgrades and a smaller footprint. Advanced LDMOS technology has reduced

RF power amplifier size while providing higher gain and better cooling efficiency. Lower capital expenditure and operating costs have been the result of these technical improvements providing remarkable flexibility and future-proof designs.

Japan completed its ASO in July last year with a household digital TV penetration of 99%. To handle and address reception complaints and to assist viewers, the government created a support group called DEGISAPO. Specialised measurement vans were used to measure signal reception at hard-to-reach areas and special antennas were installed to cover shadow areas. An effective public awareness campaign was carried out together by the government, broadcasters and manufacturers. This played a vital role in the smooth transition.

Transmitter design and performance have improved drastically over the last couple of years, more importantly, advancement in technology and greener technical specifications. With the modern designs operational costs for transmitters will go far lower as high efficiency has become a key performance indicator for a good transmitter system. New standards have allowed further reduction in use of power and operational ease, with flexible set of parameters resulting in very cost-effective implementation.

Considering efficient TV network setups, five recommendations were offered. Firstly to establish a multi-stakeholder partnership among the regulator, network operator, service provider and manufacturer/retailers. Secondly to consider a common broadcast network operator, sharing a single multiplex for a more spectrum efficient approach. Thirdly, to think of ways to shorten the simulcast phase and consider digital dividend revenues to finance switch-over costs. Fourthly, to consider total impact on all areas while selecting the technology standard and finally, not to underestimate the long term benefits of proper network planning and parameter selection.

There is a significant impact in terms of time and cost on new installations in regard to additional loads on existing towers systems. With towers there is often limited capacity available and a tower may never have been designed to take the loads now being considered. One option now available for such situations is lower wind load versions of the same types of antennas. This offers significant benefits in tower capacity and may eliminate need to strengthen towers to accommodate new DTT antennas.

Digital Implementation by Broadcasters and Industry

The last session presented some of the success stories and challenges of ABU broadcasters and the industry, in digital implementation.

Broadcasters have many ways to think green, providing more environmentally friendly implementations and reducing operating costs. Power can be optimised if the Modulation Dependent Carrier Level (MDCL) technique is utilised to reduce the transmitter's carrier signal when the audio level is low. Other methods of reducing power is to use LED tower lights and strobe lighting.

The digital switchover in France meant implementing six complete SFN networks within a short span of time. For the government, it meant a process that would ensure a smooth and seamless transition for all individuals. But the DSO did bring major changes in the audiovisual landscape, like the end of transmission monopoly, new licensing rules, wider opening of the free-to-air TV market, huge TV equipment sales, kick-off for a market of free DTH and auctioning of first "digital dividend".

One of the world's largest DVB-T2 rollouts with cross border regionalisation has been implemented in the heart of Africa, with the signal being distributed from a central location in Johannesburg, by satellite to DVB-T2 transmitter sites in 15 countries. The DVB-T2 signal is broadcast over a SFN employing Multiple PLP for local insertion of localised content.

In the UK, DRM+ was tested in a highly credible and realistic environment using the frequency and antenna previously used for an FM radio station. DRM+, it was found, provided excellent coverage in good quality at reduced power levels yet superior quality compared with FM.

K-Service or the K-player is the internet distribution platform implementation by KBS. The system encompasses live broadcast streaming, video on-demand, audio on-demand, visible radio services and other value added services like EPG, searching, voting and more. The service is optimised for different platforms automatically using adaptive bitrate streaming and can be accessed by computers, smartphones, tablets and set-top-boxes. It is currently only available in Korea with more than 5 million unique users as of January 2012. The proposed 'Asia-Pacific View' is a similar kind of implementation but targeted at the Asia-Pacific region with content from ABU members. This is intended to become a market place for the broadcasters' content which be accessed by other broadcasters and users alike.

Similar to other digital radio systems HD Radio provides audio and data services in addition to improved audio quality, slide shows, EPG, traffic information, iTunes tagging and more. The technology has been adopted as the digital radio standard of USA, Mexico, Panama and the Philippines with many other countries like Brazil, Bangladesh, and China also operating HD-Radio services. A total of over six million receiver units is currently in operation. Thirty three vehicle manufacturers have also incorporated HD Radio technology in 190 models available in the market today.

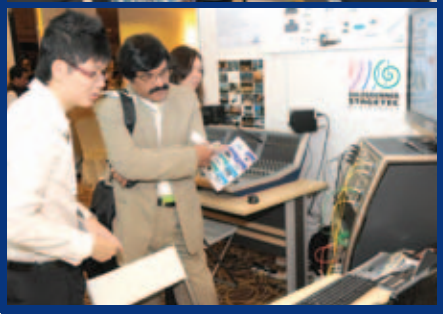
Exhibition

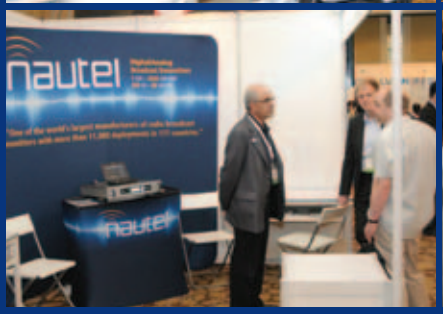
This year's exhibition was a marked improvement on the previous year's. The 54 booth exhibition provided a much better range and enhanced opportunities for the broadcasters, manufacturers and service providers to interact with each other, discuss and share expertise and experiences and to consider new products, technologies and services.

The exhibition, which spread over three halls, displayed the advances in technology and solutions from leading manufacturers, system integrators and other ancillary service providers in the industry.

The exhibition attracted 36 of our industry partners and was attended by just over 1000 professionals representing broadcasters, regulators, telcos, government officials, media faculty students and others from the industry.

Some of the key products on display included broadcast transmitters, advanced cameras and, image processing equipment, file processing equipment and infrastructure planning tools. Solutions covered, integrated workflow for content creation and broadcasting, camera solutions, frequency and coverage planning, contribution and distribution networks, digital TV/radio systems and OTT distribution over the internet.





Symposium Workshops Focused on Key Areas of Technology Implementation

ABU Management Workshop: 21St Century Management


Ajith Rohana Colonne

This workshop provided a different perspective of 21st century broadcast management. Ajith Rohana Colonne, an international consultant, shared his informative presentations with the participants. The workshop addressed areas such as decision and information sciences, ideology, managing perilous situations, decision making process and constraints, and decision making under conditions of uncertainty.

In reference to the management system of an army, he explained how military intelligence and equilibrium could be utilised in broadcasting management. Also he highlighted managing in perilous situations, with death management and decision making under uncertain conditions.

Broadcast managers both from the engineering and programme departments should conceptually understand the environment pertaining to modern management, namely Uncertainty, Ambiguity, Paradox and Chaos. These parameters may prevail over the core classical management parameters such as Planning, Organising, Leading and Controlling.

Mr Colonne's book "DNA of Roulette" on new ideas for decision making can be downloaded free from his website www.neworiginalthinking.com

DVB-T2 and its implementation

Janne Morstøl and Espen Myhre of T-VIPS presented case studies on the implementation of DVB-T2 in the UK, Sweden, Finland, France and others. SFN can enhance terrestrial efficiency and is more flexible to operate with DVB-T2. For regional content, a key differentiator, DVB-T2 has efficient methods for insertion. With the experience of DVB-T2 rollouts, it was suggested that countries considering implementing DVB-T should leapfrog to DVB-T2 considering the efficiency and advantages it offers.

Video over IP Infrastructure in Emerging, Developed Markets

Dr Chin Chye Koh of Nevion USA laid out the steps in implementing an IP infrastructure to transport media in uncompressed or compressed video, audio and data services.


Chin Chye Koh

The IP network allows more flexibility and easy real-time management, diverse path routing/switching, and robust protection mechanisms. It provides a seamless transport experience together with protection capability customised to a variety of applications, though quality requirements. Bandwidth availability and latency need careful consideration.

Sony XDCAM Workflow Solutions

Mitsuo Kano and Jacky Chung of Sony presented XMPilot, designed to operate with their camcorder and post production desks, helping to cope with increasing demand for efficient workflows. XDCAM uses hybrid disc and memory media, making it more flexible, together with the more efficient MPEG2 Long GOP codec. It provides time saving techniques for naming, logging and managing of clips for field production by interactivity with mobile devices such as smart phones and tablets.


Mitsuo Kano


Jacky Chung

Harris Advantage for DVB-T/DVB-T2 integration

DVB-T2 has a wide range of capabilities which should be utilised to their full extent by broadcasters who intend to offer more programmes, improve operational efficiency and deliver content to multiple devices. In particular, Multiple PLP provides additional flexibility and more control over the number of services. Harris provides an integrated system of transmitters, gap fillers, MPEG4 SD and HD encoders and multiplexers that can be used for deployment in both SFN and MFN networks for a complete and cost effective solution.

Green Technologies for Broadcasting

Broadcast Australia emphasises that 'Green Technology' is a good investment. A holistic approach for reducing power consumption by using renewable energy and examining

other environmental impacts of broadcasting facilities can lead to optimal outputs. What is important is that going green provides operational efficiency at lower costs while helping the environment. The BA Mt. Owen renewable-supported transmission facility is an excellent example of harnessing Green Technology which uses a hybrid (wind, solar and generator) power system to generate the required energy.

Operational efficiencies for Broadcast Infrastructures

Maurice Snell

Maurice Snell of Snell discussed the technical challenges of using a combination of generic protocols such as SNMP, and vendor-specific protocols, to provide cost-effective user configurable end-to-end control and monitoring systems. A key requirement of monitoring is to give operators tools to help rapidly identify and resolve issues that arise. A wide range of products from Snell include cost effective, integrated and easy to use GUI's giving intuitive access to monitor and control all underlying equipment.

Quality of Experience (QOE) for next generation video network

Klaven Siow

Klaven Siow of Tektronix presented this workshop which looked into quality assurance using QOE monitoring from content acquisition to delivery. QOE can be used as a technique to isolate and identify problems within the video stream giving a comprehensive set of possibilities for the cause of a problem. It does this with deep inspection of every packet across the channels frame by frame comparing each to the video and audio quality matrices. In addition, optimisation of compression bitrate can also be performed reliably.

ABU Workshop on Radio Content

Henry Doo

Vishnu Devarajan

Vishnu Devarajan of AMP Radio and Henry Doo of RTHK presented this workshop on how new media applications are impacting the way radio is experienced by the listener. The current trend is to provide radio content over internet in the form of podcasts, or else provide more information via web pages for more interactivity. Radio broadcasters are using all platforms for delivery of content and while the method is platform specific, the content genres, their formats and duration are quite different. Some real life examples were highlighted as the content creation issues that broadcasters have to face and overcome in the future.

DRM – Practical Considerations for a Successful Service and Network Roll-out

Albert Waal

Dr Albert Waal and Alexander Zink of DRM presented the DRM Disaster & Emergency Warning System, Data Contribution & Multiplex Distribution Network and Automated Service Monitoring. They focused on considerations and network setup for a successful service launch, as several countries are in that process.

Co-Existence between DVB-T/T2 and LTE: Case study in Norway

Pascal Gelugne of ATDI touched on the co-existence between DVB-T/T2 and Long Term Evolution (LTE) networks set up by telcos. The digital dividend is bringing new technologies and other wireless delivery systems closer to the broadcasting channels. Through a case study in Norway, the potential impact of Wireless Broadband Access on digital TV network was assessed and recommendations to overcoming issues highlighted.

How to successfully deploy DAB+Digital Radio: A Practical Guide on Getting started

This workshop was directed at broadcasters needing assistance in deciding upon the selection of DAB+ digital radio broadcasting. With five speakers the workshop highlighted successful DAB+ deployment in Australia, business opportunities available on digital radio, radio with pictures, visual radio, and a look at the DAB family of standards and technologies.

DVB-T to DVB-T2 Fundamentals to Planning

The DVB workshop, presented by John Bigeni and Gerard Faria, addressed basic fundamentals of the underlying key technology of COFDM modulation and how this produces a near perfect transmission. It covered key technologies which make up the DVB-T2 standard. It also covered the characteristics of DVB-T2, especially looking at its flexibility through the use of different bitrates for more robustness and the use of Multiple PLP which allows full control of the services provided.

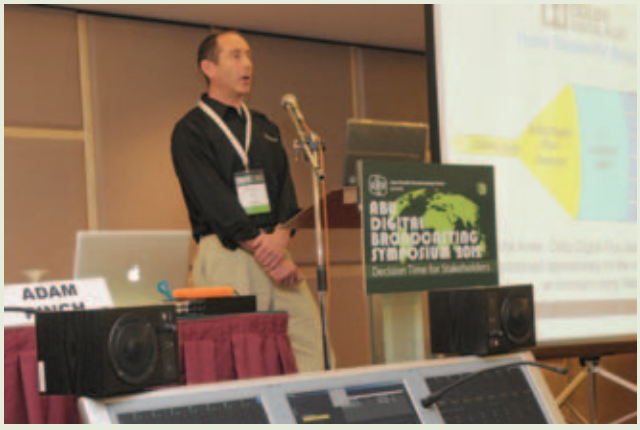
True Efficiency in Broadcasting

Nils Ahrens, Jurgen Steinheber, Li Bin and Bettina Koethner of Rhode & Schwarz presented the latest advancements in broadcast transmitter systems, including new developments in solid state technologies especially LDMOS, and improved transmitter power efficiency. Also highlighted were the methods used for measuring power efficiency and identified parameters constantly referred to in energy efficiency studies. Latest solutions available for DVB-T2 network implementation were also discussed.

HE-AAC for Digital Broadcasting Hands-on

Stefan Meltzer and Toni Fiedler from Fraunhofer IIS presented the deployment of HE-AAC as the audio codec in DTV networks such as DVB-T2. The broadcast signal chain was demonstrated with real world examples in Europe and 5.1 surround sound transmissions. Generating and handling of metadata was also discussed for scenarios using HE-AAC only, as well as in heterogonous environments (transcoding). Target bitrates versus achievable quality was explained by means of independent listening tests and demonstration with sound samples.

Multichannel Audio: Production to Playback



Adam Pinch of Dolby and his team of engineers covered a range of topics around broadcast audio, including multi-channel production, loudness, metadata, and playback. Audio metadata provides a powerful way to manage and control program loudness, dynamic range control and other features. The use of dialogue normalisation, dynamic range control and down mixing using Dolby media meter and metadata emulator was demonstrated using audio and video samples.

The DVB- T2 Trial in Singapore: Key Aspects from an Extensive Test

Holger Meinzer

Stefan Krueger

Holger Meinzer and Stefan Krueger of Media Broadcast looked at their latest DVB-T2 trial. Singapore's media regulator MDA, initiated an extensive DVB-T2 trial in 2011. Media Broadcast described how they designed all test and measurement procedures to define optimum system constellations and network performance. Trial results were discussed with the participants unveiling key aspects of SFN, Multiple-PLP and indoor coverage, which was one of the requirements from MDA.

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