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BLOCKCHAIN TECHNOLOGY ...

Improves protection & selling of copyrighted content

BY SHAWN LIEW

SINGAPORE – What started off as murmurs of passive concern has in recent months, morphed into a global effort by governments around the world to regulate bitcoin.

In the process, it has brought the concept of blockchain technology into the public consciousness, although blockchain and bitcoin are inherently different.

In a blog post, Matt Lucas, Global Blockchain Labs Enablement, CTO Europe Office, IBM Industry Platform, wrote: "When bitcoin was released as open source code, blockchain was wrapped up together with it in the same solution. And as Bitcoin was the first application of blockchain, people inadvertently used 'bitcoin' to



PHOTO CREDIT: ISTOCK BY GETTY IMAGES

While more study is required to access how blockchain technology can be applied to the broadcast and media industry, broadcasters and content owners may do well to start learning about blockchain now.

mean blockchain."

While bitcoin is essentially a cryptocurrency and worldwide

payment system, blockchain can perhaps be described as the underlying technology used for verifying

and recording transactions that are at the heart of Bitcoin.

And it is the former that is likely to have the bigger impact on society, as Lucas described: "Similar to how the Internet changed the world by providing greater access to information, blockchain is poised to change how people do business by offering trust."

With blockchain technology, the digitisation of assets can be decentralised, trustful, traceable, highly transparent and free of intermediaries, Mock Pak Lum, senior advisor at Tembusu Partners, a Singapore-based private equity firm, told APB.

Citing the NEO Foundation, a non-profit, community-based blockchain project, Mock, a former CTO of Singapore pay-TV operator

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WORLD IN BRIEF

Amazon reveals sports broadcasting ambitions

LONDON – Amazon is reportedly poised to enter a multi-billion-pound auction of English Premier League football rights. If successful in the UK, Amazon is expected to proceed to secure international rights for one of the world's most popular football leagues.

Satellite dish dropping out of Sky

ISLEWORTH – UK pay-TV operator Sky has offered subscribers the option of doing away with a satellite dish. While stressing the move does not signal an end to satellite broadcasting, Sky plans to make all its channels and content available online.

4 billion people connected to the Net

NEW YORK – A new report from social media management platform Hootsuite and creative agency We Are Social indicates that there are now four billion people globally using the Internet. Of these, three billion are active social media users

4K/UHD broadcasting gains momentum in Asia

BY JOSEPHINE TAN

SEOUL – With the aim of enhancing the quality of 4K/Ultra HD (UHD) broadcasting for local audiences, three South Korean broadcasters — KBS, MBC and SBS — alongside LG Electronics and the Allied Platform, have launched TIVIVA, a terrestrial 4K/UHD interactive service.

Available on LG Electronics' 4K/UHD TV sets,

TIVIVA offers 4K/UHD terrestrial programmes, and is equipped with the ability to recommend customised categories and programmes for each viewer by analysing metadata of content, as well as big data of audiences' viewership history.

Jean Hur, senior deputy director, international relations, MBC, told APB: "Broadcasters in South Korea and worldwide need to adapt and innovate in the current rapidly changing

broadcasting environment.

"TV is no longer a linear model, and meta-data analysis is a fundamental requisite for content analysis.

"Depth of data is necessary in order to interact with viewers. This way, we can deliver content they wish to be delivered."

Having started 4K/UHD broadcasting

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Don't block out blockchain technology – digest it bit by bit

If familiarity truly breeds contempt, then it is perhaps unavoidable that treading into the unknown fosters aloofness.

As governments around the world suddenly decide that the bitcoin market cannot be left in its current unregulated guise, a different terminology has since emerged — blockchain.

While bitcoin is essentially a cryptocurrency and worldwide payment system, blockchain is being described as the underlying technology used for verifying and recording transactions that are at the heart of bitcoin.

Perhaps more importantly, what can blockchain technology potentially bring to the broadcast and media industries?

Let's start with cost. Blockchain can potentially facilitate the sharing of Internet infrastructure to lower the cost of distribution, Mock Pak Lum, senior advisor at Tembusu Partners, a Singapore-based private equity firm, told *APB*.

Mock, who was previously CTO at Singapore pay-TV operator StarHub, explained that if users can be persuaded to share their unused bandwidth and compute capacity, content owners will not need to engage expensive content delivery network (CDN) resources to distribute content.

Blockchain can bring about the decentralisation of the Internet distribution model, says the IABM — both in terms of how content is distributed and royalties are paid. And in tandem with artificial intelligence (AI), blockchain may improve the process of identifying content for specific audiences.

Unsurprisingly, the topic of blockchain was a matter broadcasters and pay-TV operators *APB*

approached were reluctant to discuss. As Dr Amal Punchihewa, director, technology and innovation, Asia-Pacific Broadcasting Union (ABU), maintains that blockchain is in the infancy stage of deployment in the media industry, and many unknown variables still need to be addressed before blockchain's suitability can be fully accessed.

Having said that, broadcasters and content owners might do well to start learning about blockchain today, and understand what the technology can potentially bring to their media business.

Also in this issue, you can read how satellite is continuing to play a key role in the distribution of content in Asia-Pacific. In our *Satellite Special 2018* report (pages 23-36), we continue our examination of how high throughput satellite (HTS) is continuing to offer more options to deliver specific content to specific viewers, even while fixed-satellite services offered over C-band continues to retain its importance in Asia-Pacific.

Along the way, and as we edge closer to WRC-19, an age-old debate is set to be rekindled, as the International Mobile Telecommunications (IMT) begins a new charm offensive to wrest more spectrum for mobile services. But, that is another story for another time. Watch this space.

Shawn Liew

SHAWN LIEW
MANAGING EDITOR



EDITORIAL

managing editor
Shawn Liew, shawn@editecintl.com
contributing editor (technology)
Karl K Rossiter, karl@editecintl.com
news editor
Josephine Tan, josephine@editecintl.com

CORRESPONDENTS

■ India
Shirish Nadkarni, shinads@yahoo.co.uk
■ USA
Mike Feazel, mfeazel@gmail.com

PRODUCTION

production editor
Zuraini Ridzwan, zuraini@editecintl.com
junior sub-editor
Eva Meango, eva@editecintl.com
senior multimedia designer
Raymund Jaudian, raymund@editecintl.com
ad/office administrator
Irene Lok, irene@editecintl.com
accounts manager
Tan Hui Min, huimin@editecintl.com

MARKETING

director - sales & marketing
Jessie Tan, jessie@editecintl.com
manager - sales & marketing
Lynn Chee, lynn@editecintl.com

CIRCULATION & PROMOTIONS

Lynn Chee, lynn@editecintl.com

PUBLISHING

publisher/editorial director
Andrew Yeo, andrew@editecintl.com

MEDIA REPRESENTATIVES

■ China
Yang Ou
BEIJING BUNCH EXHIBITION
SERVICES LTD
Room 501/B1, Thunis Development Building, No. 11 Huixin East Street,
Chaoyang District, Beijing 100029
Tel: +86-10-6482 3808-106
Fax: +86-10-6482 3670
E-mail: yangou@bbes.com.cn

■ Japan

Mikio Tsuchiya
WORLD MEDIA SERVICES INC
3-35-1-302, Hongodai, Sakae-Ku, Yokohama 247-0008
Tel/Fax: +81-45-891-1852
E-mail: mikio.tsuchiya@worldmedia.jp

■ USA & Canada

Gary L Rhodes
SEDOR MEDIA INC
775 Park Avenue, Suite 255, Huntington, NY 11743, USA
Tel: 1-631-274-9530
Fax: 1-631-667-2871
E-mail: sedorusa@optonline.net

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APB PANELLISTS



Dr Amal Punchihewa
Director, Technology
& Innovation
Asia-Pacific
Broadcasting Union



Dr Peter Siebert
Executive Director
The DVB Project



Stan Moote
CTO
IABM



Andrew Anderson
Head of Broadcast
Operations
Seven Network
(Operations) Ltd



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The future of broadcasting starts in 2018

BY MIKE WHITTAKER

If you read industry news, you will be aware that the TV landscape is more fragmented than ever before.

However, I always take these predictions of the speed of such fragmentation with a word of caution. It is the words of Bill Gates that come to mind when I think on such predictions of the immediate demise of television: *"We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next 10."*

With that in mind, I believe that TV is booming, but the change in consumption patterns is here. In one single household, on one single night, we might expect to see mom tuning in to her favourite live-broadcast soap in the living room; dad watching last night's football match via IPTV in the bedroom; their youngest son binging on cartoons via a subscription video-on-demand (SVoD) service

on his mobile phone; and his sister sitting in front of her laptop streaming short-form video content from a free online platform.

For individual consumers, all of these channels are blending into one. Consumers do not care how they get their

favourite content — so long as they can enjoy high-quality productions, compelling narratives, and their favourite user-generated content in a way that is convenient and cost-effective to access.

We see this clearly in consumer behaviour in Asia-Pacific, where viewers are taking an "and-and" approach to how they view linear and over-the-top (OTT) content. Even though the region's OTT TV revenues are predicted to triple in less than five years, linear TV is alive and well, with 77% of APAC consumers watching an average two hours of broadcast TV per day on top of online video. Now, whether they're doing this as a family unit or individually is another question.

What does this blurring of lines mean for the future of broadcasting? Mr Gates

goes on to caution: *"Don't let yourself be lulled into inaction."* Even though the change does not always seem as fast as the hype would predict, we are clearly seeing a shift in consumer behaviours and needs. At the same time, we are offered huge opportunities to better understand what our consumers want and how they interact with our content.

Competition for consumers is growing and every player in the TV industry must put a renewed focus on making content king — because only the best stories have any chance of differentiation and pull for today's media-overwhelmed consumers. And, when I say stories I do not just mean films and drama series; I also mean how we tell the story of a great explorer or of nature, and how we tell the story (and drama) of live basketball, football or other similar events.

To ensure that storytelling is the foundation of what we do and never just an afterthought, media businesses will need to consider three key actions — leveraging emerging technology in creative ways; seeking out new, mutually beneficial partnerships; and making strategic choices for today with one eye on tomorrow.

Telling the best tales, via technology

Do not be fooled into believing that technology and storytelling are at odds with one another. In fact, technology is unlocking a new world of ways to understand how we can create compelling narratives. It is an interesting thought that data and machine learning tools are helping us to better understand what consumers most want to see, and to deliver on their preferences — whether it is more romance, more short-form content, or more features that star localised talent.

How do we marry the science of data with the purely creative process of creative compelling content? To some, this is a step too far, akin to letting the geeks take over the asylum. But is it so? For many years, formal and informal audience measurement systems have influenced what is acquired and commissioned, and when it is scheduled. This is merely an extension of this — data will help us to focus better on content.

The exciting part of having access to better data is that in the digital world we can trap this in real time; no longer do we have to wait for the overnight ratings for it to influence how we position and promote content. However, once we have this data — and it is truly big data — the key is being able to mine it for insight and then act on this across multiple platforms. For me, the excitement from this data-driven future is as much the innovation it will enable as the insight it provides.

The insight that data unlocks can be leveraged to help producers, advertisers and content curators put quality narrative content at the heart of their business;

“The future of our industry is bright. Change is coming, but we should ensure we balance this and not abandon the old in the rush for the new.”

whether in terms of developing new content, deciding which stories to share in which markets, or sharing the data with production partners to drive mutually beneficial collaborations and support the growth of the industry.

The power of partnerships

Indeed, orchestrating mutually beneficial partnerships should be a key broadcaster focus in 2018, in order to deliver the best quality, most engaging content to consumers and keep them from feeling that the TV landscape is so fragmented that it might be easier to simply switch off the set.

Traditional broadcasters now have unique opportunities to work in collaboration with partners and introduce new services to viewers, such as OTT content. In this way, a broadcaster can transform into a multi-platform video business that is positioned to capture more opportunities in the future, and provide a major value-added service to viewers who want more access to the most fantastic narratives from around the region and the globe.

Key to enabling a wider collaboration between producer, scheduler/curator and affiliate — and delivering on strategy — is the technology team. We have always had a role in providing the facilities for production and distribution, but our roles are now changing to move from those traditional areas — where cloud and content delivery networks (CDNs) make it possible to simplify our architectures and operating models — and to new technology-enabled areas of data, artificial intelligence (AI) and insight.

Strategic choices for the future

Like many players in Asia's media, broadcast and entertainment industry,



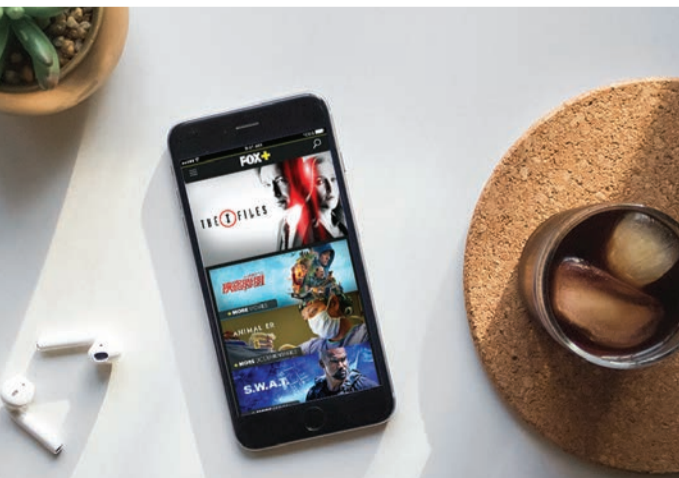
Fox Networks Group is focused on laying a solid foundation today that will enable us to be ready for tomorrow. With technology and consumer demands now evolving at lightning speed, 2018 is a key year to consider how we can innovate for the future.

For Fox Networks Group, working towards the future means not only finding new sources of data, but also investing in the next generation of analytics capabilities that enable our business to understand the broader story behind why some content shines above the rest — in effect, using technology to get back to the roots of great storytelling. And, the information we uncover is not stowed away in a spreadsheet. We make data part of the living, breathing process that informs which content we create, buy and distribute, to ensure we are consistently providing APAC viewers with the stories they love.

The future of our industry is bright. Change is coming, but we should ensure we balance this and not abandon the old in the rush for the new. In 2018, the opportunities are wide open for every player in the industry to leverage technology, collaborative partnerships and forward-thinking strategy in order to deliver the best stories to APAC viewers and push for innovation at every turn. **APB**

Mike Whittaker is executive vice-president and CTO, Asia-Pacific and the Middle East, Fox Networks Group Asia. He is also an APB panellist.

VIEW FROM THE TOP



Consumers do not care how they get their favourite content — so long as they can enjoy high-quality productions, compelling narratives, and their favourite user-generated content in a way that is convenient and cost-effective to access.

APB PANELLISTS



Louis Boswell
CEO
CASBAA



Graham Stephens
CTO
Media City
Development, Malaysia



Goh Kim Soon
Senior Vice-President
Broadcast Engineering
Mediacorp



Shad Hashmi
Vice-President,
Digital Development,
Global Markets & Operations,
BBC Worldwide Asia

What's on Screen

HBO is home to the Oscars

SINGAPORE – HBO is once again bringing the 90th Academy Awards live from Hollywood to Asia. More widely known as the Oscars, the star-studded award ceremony will be available across multiple screens on TV and connected mobile devices on HBO Asia's network of channels and online platforms.

Hosted by Jimmy Kimmel, the 90th Academy Awards will be held at Hollywood landmark Dolby Theatre on March 4.

Viewers will be able to stream all the Oscars programmes on HBO Go and watch them on HBO, as well as catch live and exclusive updates and interviews from the Oscars, direct from Hollywood, on HBO Asia's Oscars microsite, and social media platforms — including Facebook, Twitter, Instagram and YouTube.

Held this March 4, the 90th Academy Awards is available on HBO Asia's network of channels and online platforms.



iflix premieres new Indonesian original series



Oi! Jaga Lambe is an eight-episode Indonesian stand-up comedy series exclusively available on iflix.

JAKARTA – Following the success of *Oi! Jaga Mulut* and *Hoy! Bibig Mo* in Malaysia and the Philippines respectively, iflix, a subscription video-on-demand (SVoD) over-the-top (OTT) service provider, has brought the same comedy concept to Indonesia in its original stand-up comedy series *Oi! Jaga Lambe*.

Hosted by Ananda Omesh, the eight-episode series features established acts — including Kemal Palevi, Mo Sidik, Sakdiyah Ma'ruf and Wira Setianagara — alongside fresh talents, in a series of stand-up routines and riotous improvised games.

Mark Francis, global director of original programming, iflix, said: "Following the success of *Oi! Jaga Mulut* in Malaysia and *Hoy! Bibig Mo* in the Philippines, we're excited to bring the same boundary-pushing, hilarious stand-up comedy concept to Indonesia while establishing iflix as the destination for the region's most talented funny men and women."

Fox to air HK Film Awards

HONG KONG – Fox Networks Group (FNG) has sealed a two-year deal as the official pay-TV broadcaster of the Hong Kong Film Awards.

Founded in 1982, Hong Kong Film Awards is one of the most significant film events in Asia. This year, the award ceremony will be held at the Hong Kong Cultural Centre on April 15.

As the official pay-TV broadcaster, FNG will air the ceremony live on its three platforms in Hong Kong, including its linear channel SCM (formerly known as Star Chinese Movies), SCM Play app, and Fox+, its video streaming service. Viewers who missed the live telecast may also catch the awards ceremony on-demand after the show.



香港電影金像獎
Hong Kong Film Awards

This April 15, viewers can catch the Hong Kong Film Awards on SCM, SCM Play, and Fox+.

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iflix streaming live football to ASEAN fans

JOHOR BAHRU – South-east Asia is one of the regions in the world where you can find some of the most vociferous and passionate support for football, or soccer, depending on where you hail from.

To keep up with this insatiable appetite for football, subscription video-on-demand (SVoD) service iflix has announced a joint venture with Football Malaysia LLP to bring live streaming of local football to a new *Football Malaysia on iflix* channel.

This collaboration, according to Mark Britt, iflix Group's co-founder and CEO, should be regarded not as a traditional rights deal, but a game changer. He explained to APB: "We have set out to re-energise sports entertainment for fans. It is an enormous long-term undertaking in resources and logistics, which requires brave thinking and visionary people to execute.

"Together, we aim to democratise game, and make football



iflix Group's Mark Britt: iflix's collaboration with Football Malaysia LLP to live stream local football is more than just a traditional rights deal — it is a game changer.

available for the first time to fans, regardless of their geographical locations or financial status, and reconnect Malaysians throughout the country with one of their great loves — football."

The collaboration with Football Malaysia LLP comes on the heels of a similar deal in Indonesia last year,

where iflix is working with free-to-air broadcaster tvOne to stream live local football.

And perhaps this is just the beginning, as Britt believes that the rise of the Internet, along with mobile device adoption, has led to a "huge shift" in consumer behaviour. "Over the next few years, we will see unparalleled growth in media streaming, and by 2020, 75% of all mobile data traffic will be video," he added. "What this translates to is that every one of those millions of smartphones can be, and will be used as a personal TV set for people to watch whatever entertainment they want."

Arguably, live sports will be the jewel in the crown, particularly when the big boys circle. Amazon reportedly is ready to disrupt the traditional pay-TV ecosystem of sports by bidding for the rights to stream the wildly popular English Premier League — alongside Face-

S Korea a 'pioneer' in 4K/UHD broadcasting

initially in the Seoul Metropolitan area last year, South Korean broadcasters have been expanding the 4K/UHD content market both locally and globally. Lee Sang-Gyu, senior deputy director of engineering, research centre, MBC, added: "South Korea's terrestrial 4K/UHD broadcast is a pioneer in the media industry, providing not only high-quality and high-definition broadcasting service, but also transmitting various services merging 4K/UHD broadcasting with other mobile HD-quality broadcasting.

"Moreover, there have been enquiries on South Korea's 4K/UHD TV broadcasting from other Asia-Pacific countries, and we are ready to support should there be requests from other Asia countries on launching 4K/UHD broadcasting."

During the Winter Olympic Games held last month in Pyeong-Chang, South Korea, 4K/UHD broadcast was further expanded to five other regions in South Korea, said Dr Amal Punchihewa, director, technology and innovation, Asia-Pacific Broadcasting Union (ABU).



TIVIVA is a terrestrial 4K/UHD interactive service jointly launched by three South Korean broadcasters — KBS, MBC and SBS — alongside LG Electronics and the Allied Platform.

Moving forward, Dr Amal added that South Korea will progressively increase native 4K/UHD delivery by 5% annually, and reach nationwide 4K/UHD coverage by 2027.

Another terrestrial broadcaster who has successfully launched a 4K/UHD channel is Vietnam Digital Television (VTC). Calling the launch a "big change" in Vietnam's TV set market, Phan Tien Dung, CTO of VTC, revealed that the network is planning to produce 4K/UHD content in 2018 for both its terrestrial TV channel and online platform.

He continued: "VTC TV station is planning to launch a *VTCNow* app across platforms such as iOS

and Android. Like the South Korean broadcasters' collaboration with LG Electronics, VTC is also looking forward to working with smart TV sets manufacturers so that we are able to interact with viewers via the app on mobile devices and TV."

While 4K/UHD broadcasting has gained momentum in countries like South Korea, Japan and Vietnam, other countries such as Malaysia, which is still predominately engaged in analogue broadcast, 4K/UHD is still too early for terrestrial broadcasters, said Dr Ahmad Zaki Mohd Salleh, group general manager, engineering, Media Prima.

"Although broadcasters in Malaysia will be asked to migrate to digital TV in July this year, many fundamentals issues have yet to be discussed and agreed upon," he explained.

"Media Prima will continue its investments into HD facilities because 4K/UHD is still beyond our horizon for now. Keep in mind that going 4K/UHD is not merely about cameras, it involves back-end operations — such as networks, servers, editing systems — that are all required to be upgraded."

Blockchain allows 'distribution of media without boundaries'

1 >>

StarHub, added: "Given that all media assets will be digitised, the distribution and consumption of media content is well suited for blockchain adoption. With the adoption of digital identity on blockchain by incorporating biometric verification, we can determine the person in the family who is consuming the content."

Blockchain can also potentially facilitate the sharing of Internet infrastructure to lower the cost of distribution. If users can be persuaded to share their unused bandwidth and compute capacity, content owners will not need to engage expensive content delivery network (CDN) resources to distribute content, Mock explained.

The way to persuade users to share their infrastructure is through the 'smart contract', which allows for automatic transactions following the terms of the contract without further intervention.

"Users who share can automatically be rewarded with tokens. Similarly, content owners who use the shared infrastructure will have to pay tokens," Mock elaborated. "This can be done automatically through the smart contract feature, without service providers having to build expensive support systems."

The management of copyrighted content can also be improved through blockchain, where the smart contract on blockchain makes it easier to distribute payments directly to the different loyalty holders.

This, according to Mock, will make it easier to buy and deal in copyrighted content, and also encourage the production of more original content. "Piracy issues will also be reduced when the framework is in place, and there are many more applications that will then evolve. It is important for broadcasters and content owners to start learning about blockchain now," he urged.

Decentralisation is a clear feature that blockchain will bring, according to IABM. "Blockchain could impact the Internet distribution model, where it becomes more decentralised and users actually pay for distribution of the content they absorb," said Stan Moote, CTO of IABM, while echoing Mock's sentiments that blockchain will "definitely affect" ad buying, royalties on content and how profits will be distributed.

Decentralising file storage on the Internet brings "clear benefits," because no individual or group can then have full control, added Peter Bruce, director, APAC, IABM.

While governments or regulators may resist the loss of control



Mock Pak Lum of Tembasu Partners: "With the adoption of digital identity on blockchain by incorporating biometric verification, we can determine the person in the family who is consuming the content."

of ownership and regulations of contracts, digital assets and cryptocurrencies, the over-the-top (OTT) and video distribution model is changing and blockchain will "significantly" play its part.

Bruce explained: "Blockchain can allow the distribution of media without boundaries, with commercial agreements that are recorded differently, compared to the old model of renting physical videos from 'blockbusters' in which the income, and therefore tax, was accounted for by the countries' governing body the store was in."

While acknowledging the potential benefits of deploying blockchain technology across the broadcast and media industry, Dr Amal Punchihewa, director, technology and innovation, Asia-Pacific Broadcasting Union (ABU), cautioned that it is far too early to definitively put into conclusion the supposed efficacies of blockchain.

He said: "Blockchain enables transactions that are chronologically recorded in distributed records that are transparent to users, but encrypted so nobody can access to make undue changes.

"Some of the opportunities or merits broadcasters can find in blockchain, as some innovators say, are its decentralised character and tamper-resistant nature, although how long it is immune to tampering is still open to question."

As for potential uses, Dr Amal identifies fund monetisation, contract enforcement and payments. For example, while service providers currently have access to personal and sensitive data of audiences stored in headend and delivery systems, intermediaries will not be able to access selected data.

Where Dr Amal is less convinced is, the long-term effectiveness and sustainability of blockchain crowdfunding of creative productions, while he emphasised that it is far too early to judge whether blockchain will be a game changer for the broadcast, media and entertainment industries.

"Like artificial intelligence (AI), blockchain is in the very early stages of being deployed in the media industry. At the moment, it is still more hype than reality," he concluded.



Asia-Pacific Broadcasting Union' Dr Amal Punchihewa: South Korea will progressively increase native 4K/UHD delivery by 5% annually, and reach nationwide 4K/UHD coverage by 2027.



VTC's Phan Tien Dung: "VTC TV station is planning to launch a VTCNow app across platforms such as iOS and Android."



Media Prima's Dr Ahmad Zaki Mohd Salleh: "Media Prima will continue its investments into HD facilities because 4K/UHD is still beyond our horizon for now."

India leads APAC pay-TV growth in 2017

NEW DELHI – Revenue for pay-TV channel groups owned by global media companies in Asia-Pacific expanded by 4% in 2017 to reach US\$5 billion across the region, while EBITDA (earnings before interest, taxes, depreciation and amortisation) grew 9% year-on-year to reach \$1 billion, reported Media Partners Asia (MPA).

Led by large local channel businesses owned and operated by 21st Century Fox, Sony and Viacom, India accounted for 65% of revenue for regional pay-TV channel groups in 2017, followed by South-east Asia (15%), Japan (7%) and Australia (5%).



Led by large local channel businesses owned and operated by 21st Century Fox, Sony and Viacom, India accounted for 65% of revenue for regional pay-TV channel groups in 2017.

However, excluding large local pay channel businesses in India, pay-TV channel revenue for re-

gional broadcasters declined by 1% across the region in 2017, inching down to \$2.2 billion, while EBITDA

contracted by 4% year-on-year, to \$560 million. South-east Asia leads top-line contribution for this revenue segment at 33%, followed by India (20%), Japan (16%), Australasia (11%), Hong Kong (11%) and Taiwan (11%).

Nevertheless, a number of global broadcasters with investments in Asia are still seeing sustained growth in the region. MPA attributed this to: Licensing deals and strategic partnerships with online video and telecom platforms; the growth of consumer products; and nascent online video advertising.

MPA also sees leading broadcasters accelerating the develop-

ment of their own branded online video services in the region, while partnerships with streaming and telecom services can expect a proliferation in 2018.

At the same time, the underlying need for local IP and partnerships remain, as Vivek Couto, executive director, MPA, explained: "Success in a large-scale market such as India shows that regional broadcasters that invest in IP and local businesses can create a lot of long-term value."

"At the same time, businesses are starting to tap more growth from streaming platforms, including partnerships with online video and telecom services."

NHK gives the go-ahead to new three-year corporate plan

TOKYO – The Board of Governors of Japanese public broadcaster NHK has approved a three-year corporate plan for fiscal year 2018-2020.

The plan details six core public values that NHK strives to pursue, including "provide accurate, fair, impartial information", and "create high-quality cultural experiences" in order to achieve its mission as a public service media provider.

To accomplish these values, NHK has identified five major objectives: Continue to evolve as a public service media provider; contribute to local communities; look to the future; maintain the understanding of viewers; and strive to promote creativity, efficiency and trust.

Based on these values and objectives, NHK will, for the next three years, endeavour to respond to the needs and interests

of viewers in Japan and the rest of the world by utilising an array of new technologies.

While broadcast TV remains a core operation, NHK will also utilise Internet broadcasting to provide audiences with access to "accurate and multi-faceted information".

As the 2020 Tokyo Olympics draws nearer, NHK will continue to utilise 8K technology, or what it terms as 'Super Hi-

Vision'. Its international service will also be re-launched as NHK World-Japan, offering more diverse and relevant programming.

Ryoichi Ueda, NHK president, said: "The NHK Group is striving together and doing its utmost to earn greater trust among its audiences and create the foundations for a public service media provider that can convey important messages in a more profound and accessible manner."



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GOASEAN: The getaway ticket to the wonders of ASEAN

GOASEAN is a relatively new channel launched in June 2015. Can you elaborate more about GOASEAN: What are some of the strategies you have developed for GOASEAN, and how are viewers accessing GOASEAN content?

Edwin Raj: Since inception, GOASEAN has grown to become the region's leading content producer focusing on South-east Asian travel and lifestyle content. Our objective is to share the best from all 10 ASEAN countries — Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam — to the world while bringing the world to ASEAN.

Our team has produced 17 original series in our first year of operation, and has won 19 international awards in the travel and tourism space to date.

It's a feat for many, but with the sheer passion to put ASEAN on the map, we are determined to do more. To date, we are almost at 20 original series; we've diversified our business to become a multi-platform content producer, as well as a content distributor via our GOASEAN International Distribution arm to 53 countries around the world.

We have also introduced GOASEAN Creative Services, which works together with travel and lifestyle partners — such as the ASEAN Secretariat — to produce promotional videos for the ASEAN@50: Golden Celebration campaign in 2017, as well as Malaysia Airlines on a recent Malaysia Day campaign video.

Our strategy is simple: To promote ASEAN as a single tourist destination over multiple platforms to global audiences, and encourage travellers to the region. Our team has covered more than 700 destinations across South-east Asia



In 2015, GOASEAN was launched to commemorate Malaysia's tenure as chair of the Association of South-east

Asian Nations (ASEAN). With an aim to provide global audiences with a gateway to the world of South-east Asian wonders, GOASEAN uncovers a kaleidoscope of travel destinations, bringing viewers on a journey to ASEAN. APB prompts Edwin Raj, senior vice-president of GOASEAN, for more details.



“Technology will keep changing, but compelling storytelling is still human-driven ... If the content is compelling enough, it will find its way to viewers beyond boundaries.”

— Edwin Raj, Senior Vice-President, GOASEAN

over the two short years, and trust there is so much more to discover.

GOASEAN has established partnerships with Discovery Networks Asia-Pacific (DNAP), a pay-TV broadcast network, as well as two over-the-top (OTT) service providers — tonton and dimsum. What is your perspective on the current media landscape, and how is GOASEAN leveraging its content on both linear and non-linear platforms?

Raj: We recognise the ever-changing content consumption patterns, post-millennium. Anywhere, at anytime is the new lingo. This applies to our target demographics — tourists and travellers.

The travel space has been continuously disrupted by tech companies — everything is online nowadays and we want to contribute by positioning these destinations through engaging, award-winning content.

We are already in talks with

travel tech companies as well as tourism organisations to integrate CTAs (calls-to-action) that allow content consumers to book their travels to the destinations featured in our series.

It's imperative that our content is spread across these touchpoints frequented by our demographics — for example, DNAP's channels are available in 11 countries and has a reach of 14 million viewers; tonton and dimsum, combined, have up to eight million subscribers within Malaysia and their growing territories. Additionally, GOASEAN content can be consumed in-flight on selected airlines, as well as in hotels around the region.

More importantly, can you share with us your views about content production in ASEAN, and what do you think are the new technologies that can be used to enhance your team's creative output?

Raj: There are countless stories in

in Chiang Mai, Thailand; snow-capped mountains in Hkakabo Razi, Myanmar; and even Blue Tears of Tusan Beach in Sarawak, Malaysia.

Our team has just returned from a production in Jeram, Selangor, Malaysia, to discover the Sky Mirror occurrence; the only other place this happens in the world is in Bolivia.

We need more time and more research, as well as analytics captured, to develop content that offer unique propositions.

We are already applying technologies, such as Frame IO, to improve our workflow as we have multiple productions running at a time for our executive producers to manage productions better.

Technology will keep changing, but compelling storytelling is still human-driven.

Given that ASEAN is a diverse region in terms of culture and language, what are some of the challenges in creating original ASEAN content, and how is GOASEAN making these content appealing to viewers across the globe?

Raj: We see the diversification in culture and language of ASEAN as its bestseller. Most of our series communicate primarily in English as a universal language, and we provide subtitles to localise the series, if necessary. As an example, our series distributed to China comes with both simplified and traditional Mandarin subtitles.

If the content is compelling enough, it will find its way to viewers beyond boundaries.



The Eco Traveller is a GOASEAN original series that clinched the 'Sustainable and Responsible Tourism' award at the ART&TUR — International Tourism Film Festival in Portugal last year.

ABU DBS 2018 explores technologies that streamline multi-platform distribution

KUALA LUMPUR – Into its 14th edition, this year's Asia-Pacific Broadcasting Union (ABU) Digital Broadcasting Symposium (DBS) is focusing on how the media industry is developing, and the new technologies and solutions that will enable media companies to prepare themselves for the future of broadcasting.

Themed *Enhancing Multiplatform Content*, the ABU DBS 2018 comprises international conferences, focused workshops, interactive master classes, and an industry exhibition that aims to address a wide range of topics covering radio and TV broadcasting, as well as webcasting.

Dr Amal Punchihewa, director, technology and innovation, ABU, explained: "This theme is specifically chosen because the industry has come to realise that today's audiences do not depend on only one form of delivery. This is already evident in a number of researches; and during the ABU integrated broadcast broadband (IBB) and over-the-top (OTT) workshop held last September, this was debated and most of the delegates agreed."

Some conference sessions to note include the *Technologies and Standards: What's New? What's Next?* conference track on



Following a successful event last year, the Asia-Pacific Broadcasting Union (ABU) Digital Broadcasting Symposium (DBS) returns to Malaysia this year with the theme *Enhancing Multiplatform Content*.

Tuesday, March 6. Joining this session is Dr Peter Siebert, executive director of the DVB Project, who is giving his presentation entitled *Broadcast Technology in a Hybrid World*.

"Following DVB's mission statement: *To strengthen broadcasting and specify the transition to seamless hybrid broadcast-broadband services and delivery*, DVB activities will focus on improving existing broadcast specifications while providing the

necessary technology for hybrid content delivery and applications," Dr Siebert said. "DVB is working on a new digital terrestrial network architecture called WiB, a system concept which has the potential to reduce the Capex and Opex for a digital terrestrial television (DTT) network, as well as increase the overall network capacity. On hybrid, DVB is working on targeted advertising and new schemes to deliver live broadcast over OTT services."

Furthermore, DVB is holding a workshop

focusing on satellite network implementation on Monday, March 5. Besides providing hands-on demonstration of industry equipment, the workshop will discuss topics such as DVB-S2X transmission and reception, 4K/ Ultra HD (UHD) over DVB-S2X, as well as test and measurement and interactive services.

On the same day at the *Media Management: Workflow Enhancements, Cloud and Contribution Systems* conference track, Johan Vanmarke, managing director of MediaGeniX, will highlight the importance for broadcasters to think content-centric. In addition to sharing MediaGeniX's content-centric vision, Vanmarke will elaborate on the values brought forth by the company's WHATS'ON business management software platform, which is capable of managing the flow of the content lifecycle.

A new feature at the ABU DBS 2018 is the addition of an Immersive Virtual Reality (VR) Masterclass conducted by the World VR Forum (WVRF). At this session, participants will learn about how immersive technologies like VR is able to be used as an innovative tool for storytelling and immersive experience design.

The ABU DBS 2018 takes place from March 5-8 at The Royale Chulan Hotel Kuala Lumpur in Malaysia.



White Paper @ www.apb-news.com

Protecting premium sports rights in an era of rampant video piracy

The urgency behind the premium video industry's need for a forensic watermarking solution that encompasses every usage scenario in the multi-screen marketplace is no longer in dispute. In part three of this white paper series, Nagra continues the discussion on the role the NexGuard watermarking platform and forensic services plays in battling illicit streaming of online sports and other linear programming.



2018 Calendar of Events

MARCH

March 5 - 8
ABU DIGITAL BROADCASTING SYMPOSIUM 2018
The Royale Chulan Kuala Lumpur, Malaysia
www.abu.org.my

March 22 - 24
CCBN 2018
China International Exhibition Center, Beijing
www.ccbn.cn

APRIL

April 5 - 7
VIETNAM INT'L BROADCAST & AV SHOW (VIBA 2018)
Hanoi International Exhibition Center, Vietnam
www.vibashow.com

April 7 - 12
NAB SHOW 2018
Las Vegas Convention Center, Nevada, USA
www.nabshow.com

April 24 - 26
ASIA PACIFIC VIDEO OPERATORS SUMMIT (APOS) 2018
Ayana Resort, Bali, Indonesia
www.visitapos.com

MAY

May 15 - 18
KOBA 2018
COEX Exhibition Centre, Seoul, South Korea
www.kobashow.com

JUNE

June 5 - 8
IEEE INTERNATIONAL SYMPOSIUM 2018
Valencia, Spain
<https://bts.ieee.org>

June 25
APB MASTER CLASS ON IP
Singapore
www.apb-news.com/

June 26 - 28
BROADCASTASIA2018
Suntec Singapore
www.broadcast-asia.com/

June 26 - 28
COMMUNICASIA2018
Marina Bay Sands, Singapore
www.communicasia.com/

AUGUST

August 22 - 25
BIRTV 2018
China International Exhibition Center, Beijing
www.birtv.com

SEPTEMBER

September 13 - 18
IBC 2018
RAI Amsterdam The Netherlands
www.ibc.org

OCTOBER

October 9 - 11
APSCC 2018
Venue to be confirmed
www.apsc.or.kr

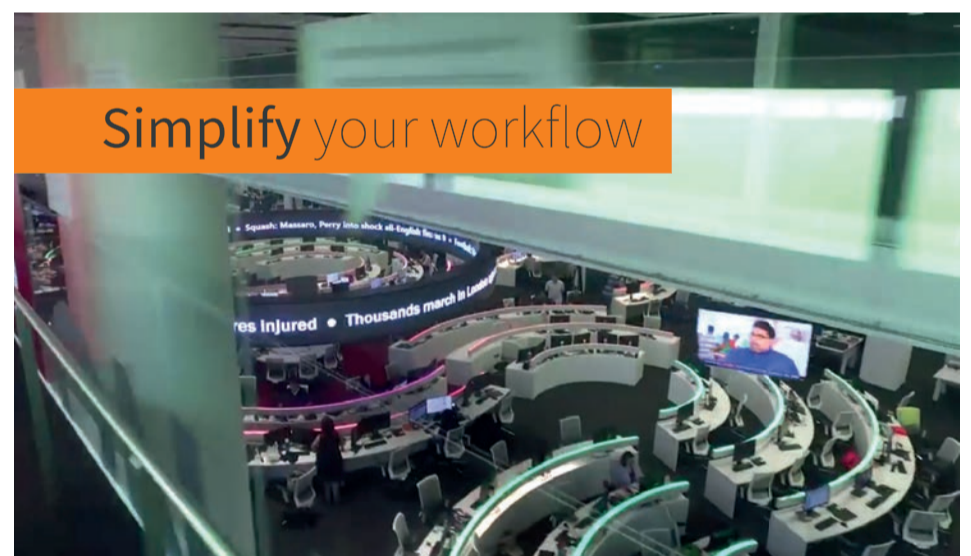
October 9 - 11
IEEE BROADCAST SYMPOSIUM (BTS)
Keybridge Marriott Arlington, VA, USA
www.bts.ieee.org/

October 25 - 27
BROADCAST INDIA 2018
Bombay Exhibition Centre, Goregaon, Mumbai, India
www.apsc.or.kr

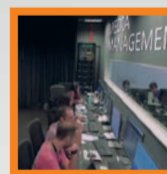
October 30 - November 1
CASBAA CONVENTION 2018
Hong Kong
www.casbaa.com

NOVEMBER

November 14 - 16
INTER BEE 2018
Makuhari Messe, Tokyo, Japan
www.inter-bee.com



Simplify your workflow



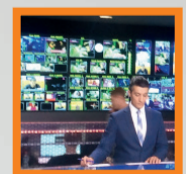
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APB CREATION

NewTek software-defined hardware devices offer more options

NewTek has announced new features for its Connect Spark converters and NDI pan-tilt-zoom (PTZ) camera. The latest version of Connect Spark includes multi-camera virtual PTZ capability, multicast support, ability to connect across networks, LTC time code support, as well as improved audio. NewTek's NDI PTZ camera, said to be the "world's first" PTZ camera able to deliver video, audio, tally, PTZ control and power over a single Ethernet cable, is now updated with multicast support and "vastly enhanced" picture quality, NewTek informed.

Core SWX unveils Nano-M battery

Exclusively designed for Panasonic cameras, Core SWX's new cine battery, the Nano-VBR98, is a 7.4V battery pack with a 12V power tap (2A max load). It has a capacity of 98Wh and weighs 0.9

pounds (0.4kg), and is equipped with a four-stage LED power gauge and a power tap.

The Nano-VBR98 is also the first battery pack to offer Core's patent-pending SmartTap protocol, which will allow future integration with devices to utilise the smart battery data in the pack.

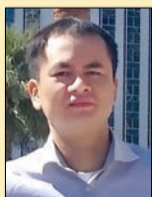


Next Month @ Creation
4K/Ultra HD Acquisition

PANELLISTS



Dr Ahmad Zaki Mohd Salleh
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Vietnam Digital Television



Mike Whittaker
Executive Vice-President
and CTO, Asia-Pacific and
the Middle East,
Fox Networks Group Asia

Content that speaks multiple languages

Key advancements in subtitling and closed captioning, including AI and machine learning, are enabling content owners to bring their content to global audiences. **Shawn Liew** reports.

For broadcasters and media companies delivering content globally on a multitude of platforms, subtitling and closed captioning remains one of the most important, and challenging, broadcast functions to execute.

Delivering closed captioning at scale is costly and the manual undertaking can be burdensome to production teams, David Kulczar, senior product manager, Watson Video Analytics, IBM Watson Media, points out.

Another major challenge with closed captioning, he tells *APB*, comes from a language and compliance standpoint. "Language is nuanced in a way that is sometimes difficult to capture and deliver in an automated caption. Programmes require context, and this is where machine learning can be incredibly valuable in increasing precision over time."

Kulczar cites the example of the 2017 Tennis US Open, where IBM Watson Media powered closed captioning of the event, and was able to navigate nuanced tennis lingo. "With a power artificial intelligence (AI) and machine learning combo, Watson differentiated between 'love' the emotion, and 'love' within the context of tennis."

Compliance, he adds, is another area that is "tricky" to navigate globally. "Regulations surrounding captioning vary between industries, geographic locations and delivery methods, making it challenging to provide compliant captioning."

With regards to compliance constraints, IBM's offering is targeted as a tool to help companies reach compliance more efficiently — rather than as a tool that certifies compliance. Because of this, IBM's products are not directly impacted by regional compliance regulations, although the company constantly reviews how its tools can better help customers adhere to compliance regardless of region.

Product features such as Smart Layout

“In terms of ensuring quality, we’ll see machine learning become increasingly integral in improving the accuracy of captioning over time.”

**— David Kulczar,
Senior Product Manager,
Watson Video Analytics,
IBM Watson Media**



empowers media companies to more easily adapt generated captions to meet specific compliance standards," Kulczar highlights.

Besides Watson Captioning, IBM Cloud Video recently introduced the ability to convert video speech to text, an indication, perhaps, of a larger push towards automation in production processes for media and entertainment? Agreeing, Kulczar suggests: "AI and automation are powerful tools for saving time and expediting resource-intensive tasks within production workflows, and we'll definitely see more investment in the area in the coming years.

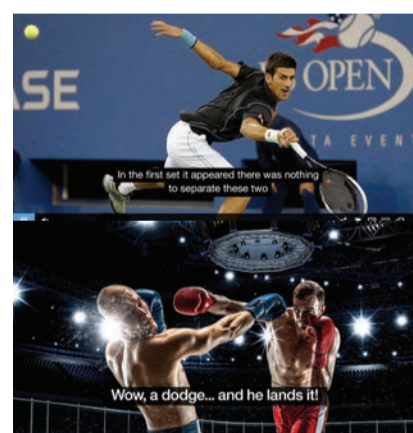
"In terms of ensuring quality, we'll see machine learning become increasingly integral in improving the accuracy of captioning over time."

Specifically with Watson Captioning, IBM wanted to ensure that the captioning experience was catered to media companies' needs. One of its standout features is a customisable glossary, which allows users to input a specific set of words and phrases that may be unique to their company or industry. "With the glossary in place and machine learning backing the solution, our customers can generate precise captions from the get-go that become even more accurate over time," says Kulczar.

As far as *bona fide* game-changers in the broadcast, media and entertainment go, does AI possess the potential to trump all comers? "Until recently, generating closed captions was quite a manual undertaking, and a costly one at that," Kulczar says. "Now that AI has streamlined the process, production teams are freed up to work the editorial aspects of the production process."

Another area in which AI is transforming captioning, he believes, is within live broadcasting. "With AI, broadcasters have the ability to generate closed captions in near real time, something that was previously a major pain point."

This is important, Kulczar explains, because intelligent captioning helps broadcasters to streamline their own



IBM has launched Watson Captioning, a new standalone offering that leverages AI to automate the captioning process, while ensuring increased accuracy over time through its machine learning capabilities.

were created to help with many of the compliance differences across regions, and in a bid to further remove the frictions associated with these processes, IBM launched Watson Captioning last month. This is a new standalone offering that leverages AI to automate the captioning process while ensuring increased accuracy over time through its machine learning capabilities. "By adding a layer of searchable, textual data to video libraries, Watson Captioning

Another area in which AI is transforming captioning is within live broadcasting.



With the tagline of 'Worldwide Subtitling Made Easy', Cavena Image Products wants to serve as a technology partner to operators distributing video and subtitles and/or closed captioning.

workflows, and deliver reliable captioning to audiences. "Caption is a vital part of media and entertainment, and ensuring proper access to accurate captioning helps optimise the viewing experience for diverse audiences worldwide," he concludes.

One company that believes automation in closed captioning and subtitling still depend on the function in question is Cavena Image Products. "When it comes to subtitle file generation, the market demands high quality," says Henrik Moberg, managing director, Cavena Image Products. "Automated subtitling and closed captioning has been big news for the past 10 years; maybe with AI, it is now slowly gaining ground."

While subtitling service providers rightfully, are constantly looking for the most optimal ways to create and generate subtitle text files, this should not be at the expense of quality, Moberg cautions. He cites the example of Asia: "When it comes to interfacing current playout systems with streaming platforms, a tightly integrated system that deals with Asian character sets is essential. This is why the Cavena protocol has become the *de facto* standard in Asia."

A Swedish company, Cavena has been building subtitling systems for broadcasters and other users for the past 25 years, and is dedicated to building "functional and reliable" subtitling systems for translators, translation facilities and broadcasters. Through the addition of a suitable transmission protocol, the Cavena system can also be adopted for subtitle transmission with video over IP.

Malaysia's Astro and Hong Kong's TVB are some of Cavena's broadcast customers in Asia, where there are no constraints resulting from regulations, offers Moberg, who also describes

how Asia-Pacific skipped the old European teletext in heritage and went completely with DVB. Today, there are multiple operators distributing video content with original audio, and a number of different languages available in the form of subtitles.

He continues: "If the spoken language of the audience is large enough, there may also be audio dubbing. And even if I personally do not like to see James Bond speaking anything else than English, dubbing or subtitles is driven by market demand, and that is the way it is."

With the tagline of 'Worldwide Subtitling Made Easy', the message is clear, although, delving deeper, Cavena is about serving as a technology partner to operators distributing video and subtitles and/or closed captioning. "We assist with simplifying workflows with any subtitle file, on any platform," Moberg emphasises. "Non-Latin characters between different operators is a challenge, where we assist with our knowledge of complex Asian character sets, right down to the details of each font and character. Non-Latin characters for over-the-top (OTT) platforms is a core competence for us."

Closed captioning and subtitling are key tools for content providers to reach global audiences. However, translation of captions and subtitles will be vital to reach a wider audience, particularly in Asia-Pacific, suggests Hiren Hindocha, president and CEO of Digital Nirvana. "If you are not translating captions, you are missing out on a larger audience across the region. Integration of multilingual closed captions or subtitles on videos can expand viewership globally, especially in this part of the world."

Where Asia-Pacific is concerned, he points out that there



"When it comes to interfacing current playout systems with streaming platforms, a tightly integrated system that deals with Asian character sets is essential [in Asia]."

**— Henrik Moberg,
Managing Director,
Cavena Image Products**

are audiences who are less proficient in English, and thus are watching their favourite local programmes with English closed captions or subtitles. Conversely, they may also be watching English programmes with local-language closed captions or subtitles. As for video sharing platforms such as YouTube, the secondary-language translations of captions not only help the videos reach out to a wider audience, but also improve searchability and discoverability, as YouTube indexes secondary language captions and subtitles.

With so much content now residing on streaming services such as YouTube, Amazon, Netflix, Hulu, Vimeo and so on, automated caption services can help bring global awareness to content, says Hindocha.

He continues: "Captioning opens avenues for content providers to reach a global audience, and it creates a larger audience through online viewing."

"In environments where users on laptop and mobile devices don't want to or can't turn on their volume, closed captioning allows them to watch a show sound-free and increases the providers' audience."

Another factor driving the use of closed captioning is the creation of metadata, according to Hindocha. Closed captioning increases the searchability of an asset and for content owners, it increases the visibility of their videos. For users, they are able to locate the content they want with ease.

"Automated speech-to-text conversion, coupled with state-of-the-art workflow and experienced

captioners, reduces the time and cost to publish, and provides better search engine discoverability — while complying with all legal guidelines," says Hindocha, who is also a champion of cloud-based closed captioning.

With cloud-based caption synchronisation services, media clips are scanned for unsynchronised captions and sent to an application for automatic synchronisation and format conversion. This technology coordinates all pre-recorded and online video content through an automated process over the cloud, providing a suite of options for clipping, data transfer and caption formats, as well as integration directly to the customer's video platform.

"As cloud-based technology does not lock a provider into a specific vendor, users can integrate this technology into their existing workflow via APIs," says Hindocha. Digital Nirvana provides a cloud-based closed captioning service that uses audio fingerprinting to automate near-live synchronisation of live broadcast options, with the ability to revise the text.

The company's new automated closed captioning and subtitling service also includes pop-on and roll-up captioning services for all technology platforms, and offers high-quality caption generation for all pre-recorded and online video content through an automated process over the cloud. The service is designed to handle multiple SD and HD video formats, as well as a wide range of caption file formats, and in addition to its multi-format capability, Digital Nirvana's enterprise-level workflow is equipped

with checkpoints to ensure content and caption quality.

Video and audio fingerprinting technology also improves the ability to find clips from a huge library, while Digital Nirvana's caption lookup, along with its synchronisation process, offers advantages to production houses and streaming video providers to sync captions after editing content for air in multiple countries. "As the original captions are retrieved using the lookup process, there's no need to re-do the entirety of their corresponding subtitles and captions," Hindocha explains.

He emphasises how content owners are becoming increasingly aware of the reach and return-on-investment (ROI) of their content with subtitles in various languages. This serves as a catalyst to provide textual representation for their video content, in contrast to prior practices, where entire movies were dubbed into another language at a high cost for presentation to other markets.

"With the increased use of subtitles, we're seeing content gain traction in different regions," Hindocha says, while noting the evolution of closed captioning. "It steadily evolved from conventional methods to voice writing, to what is a far more automated process currently."

"The applications of closed captioning have also evolved, as it now improves the discoverability of video content and the cognitive modelling (simulating human problem solving in a computerised model) for automated analysis of broadcast content," he concludes. **APB**

"With the increased use of subtitles, we're seeing content gain traction in different regions."

**— Hiren Hindocha,
President and CEO,
Digital Nirvana**



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Closed captioning increases the searchability of an asset and for content owners, it increases the visibility of their videos. For users, they are able to locate the content they want with ease.

ZEISS provides 'perfect tool' for visual effects

Digital technologies have transformed traditional filmmaking with innovative technologies in both production and post production, paving the way for a more versatile, cost-effective and advanced workflow.

The ZEISS Compact Prime CP.3 family is the latest offering from ZEISS to support creative and progressive filmmaking with an affordable, future-proof and premium quality lens set, while providing metadata-capable technology.

Visual-effects specialist, producer and director Scott E Anderson, who tested the CP.3 XD lenses for his *CASE 10-86* project, reveals more.

What are your thoughts on the quality of the images created by the CP.3?

Scott E Anderson: The images the ZEISS CP.3 lenses create are pretty amazing. When I first talked to ZEISS we were talking about the new blacks, the sharpness improvement and what we would see. I have always liked the ZEISS look, and have shot a lot using ZEISS lenses from various eras on my still cameras. I even retrofitted some of my favourite ZEISS lenses to work on my modern digital cameras. I like the look — it has that signature look and feel.

In the Compact Prime line, it stepped way up from where the CPs started. There is nothing we did on *CASE 10-86* that I was not just pleased with in the ability of the lens to capture the range of looks we were trying to get. We could only do so much in a couple of minutes of footage, but we tried to show the colour, the contrast and a couple different tones. The lenses just definitely delivered and the actors look great. As a director I was picturing something specific in my head and I was very happy with the final result.

Does the quality of the metadata meet your standards?

Anderson: The metadata seemed to deliver exactly as promised. We show the lens distortion on set, even pop it on and off through our monitor. For me, this was more out of curiosity as I know what I will see. But it definitely helps when having a client on set, or a creative who does not know lens characteristics like I do.

To me, having the combination of the focus information and the

digital grid — the de-warping information — is going to be the most critical thing. Having that lined up and synced up perfectly is great for us. Seeing how it is laid out and our ability to get it from shooting into post is a tremendous workflow improvement. I am looking forward to when it gets plugged in through all the different connectors and all the different manufacturers. But I think we are off to a good start.

How does the eXtended Data technology in the CP.3 XD help to save time?

Anderson: On independent film productions, where they really do not have the time or the resources, having the eXtended Data available makes a big difference. It also makes it much more efficient for me to walk in and quickly help them out. I know that we do not need an extra half a day of measuring that they do not have.

It will also help us with fix-it-shots. A lot of time on some of the films we see, they were not planning on a shot or a new idea came up and they want to add something to a shot or a plate that was not really on the original target list. Having that lens info in the metadata is a safety net, one that helps us in ways that are not obvious to everyone on the day.

As *Case 10-86* was a test project, we tried to follow a process that would match that of the ZEISS CP market. We had a smaller crew, and a very limited VFX (visual effects) team. Here, it was a great advantage having the metadata captured by our onset DIT (digital imaging technician), and fed to VFX.

In VFX, the data for the foreground plates would be used in our camera tracking and in making the other elements fit into the foreground better. In looking at our shots, our hero element will drive the lens distortion, and any lens shading.



The ZEISS Compact Prime CP.3 XD lenses not only capture lens data in real time, but also eliminates the need to measure lens characteristics, thanks to ZEISS eXtended Data technology.

As before, that affects both the digital imaging and compositing. Because we have the metadata and from that the characteristics of the lenses, we can apply that in reverse to our elements that are going in our hero composition, making it frame-accurate and just easier to do.

It gives us more time to work on the creative side of things. The creative aspects of filmmaking are where we want to put our time and efforts, not on the technical aspects that no one sees.

How was the overall experience directing and managing the VFX for CASE 10-86?

Anderson: Creatively, it was a lot of fun. We basically went from shoot to NAB in seven days. As far as the technical workflow for the film, there are a few more details.

We got the metadata both through a combination of our camera stream and the Ambient MasterLockitPlus. I think, eventually we will be able to get everything through either of those. This is great, because we can have the metadata included into our DPX files or RAW files via either system, depending on the camera set-up. It was also nice that a lot of the different grading tools were already showing

the ability to de-warp and control the shading on set. This is great when you have questions to be able to quickly double check.

What we are trying to do with *CASE 10-86* was to create something on a level of an independent production. Not a lot of productions have a huge budget for the type of work that I am known for. For this project, we were also working on a very tight time limit. We were therefore working with a lot of composites; we wanted to match the characteristics from lens to lens and make our elements within one shot all fit together.

It was great fun. It is the kind of filmmaking I got in the business for. It is the kind of film a lot of our clients do and I think we really got to play some great new hardware — ZEISS CP.3 Lenses. I got to play with some fellow filmmakers here at ZEISS and got to put together a piece that was both creatively interesting and really demonstrated a lot of what we are hoping to achieve with these lenses. □

*To read the full article, go to <http://lenspire.zeiss.com/en/zeiss-extended-data/>

For more information about the CP.3 XD, go to www.zeiss.com/cine

The creative aspects of filmmaking is where we want to put our time and efforts, not on the technical aspects that no one sees.

Riedel's successful 2018 Winter Games

This is not Riedel's first Winter Games. Can you tell us about your previous engagements?

Marc Schneider: We are proud of our track record supporting large-scale multi-sport events, including local, regional, continental and global Games. We have provided everything from wired and wireless digital intercom systems such as Artist, Performer and Bolero; to audio-, video-, data-, and signal-distribution networks such as MediorNet and RockNet.

We have also provided CCTV accreditation and general IT solutions. Among the stakeholders are local event organisers, production companies, host and right-holding broadcasters, international press, timing and A/V suppliers, and many more. These customers value Riedel's vast experience with large-scale events and our ability to deliver outstanding solutions within their time frames and budgets.

What is your receipt for success in supporting large events?

Schneider: With events that have many



Marc Schneider, senior director, global events, Riedel Communications, discusses the company's preparations leading up to the 2018 Winter Games.

moving parts, it is critical to maintain good working relationships with key decision-makers. We also never underestimate the advance work that is necessary to support a global project. Factors such as unfamiliar event formats, complex purchasing procedures, and compliance with local governance, rules and regulations mean that each project requires an individual approach. And always, you are only as good as your last project; this industry is unforgiving if there is a failure.

Can you tell us more about the major challenges of supporting these events, especially regarding the fact that you

often have to go into unknown territory?

Schneider: After 30 years of experience, adapting to the unknown — including different cultures and mentalities — has become an integral part of our approach. We are deeply motivated by curiosity and a commitment to excellence, which makes these projects incredibly rewarding. Of course, every region presents unique obstacles, but doing our homework in the ramp-up to the event is crucial for avoiding major surprises when we start on-site delivery.

We have also learnt to be flexible and adapt our services based on lessons learnt from previous outings. For the 2018 Games, for instance, we are adopting a new delivery model that makes us less dependent on others to finish their installations and gives our teams more time to get the work done on schedule.

The 2018 Winter Games will be the most digital ever, with huge quantities of content to be delivered online. Will this affect

your workflows?

Schneider: Embracing new solutions and technologies and adapting with the industry is in our DNA. A case in point, Riedel was a pioneer in moving from analogue to digital, and today there is barely any analogue kit left in our inventory. We are absolutely ready with the right technologies to support the world of digital media production and distribution, both today and tomorrow. Of course, working with humans still requires an "analogue approach" to providing guidance and delivering safety and support to athletes, spectators, media representatives, federations, and every other member of the team.

What new technologies, if any, will you use for the 2018 Games?

Schneider: When approaching one of the largest multi-sport events in the world, it is important to balance the risks of implementing new products and services against their potential benefits. At this year's Games, we will be using some of our newest products, such as Bolero, MediorNet Multiviewer, and Smart Panels. All of these have been field-proven for reliability and are in current use in broadcast, event production, motorsports, theatre, enterprise, industrial and government applications around the globe. That said, we will also be secretly testing some exciting new innovations in South Korea in non-critical areas — things we will be revealing at next year's trade shows.

50 years on, Clear-Com still connecting people



As Clear-Com celebrates its 50th anniversary this year, Bob Boster (left), president of Clear-Com, tells **APB** how five decades of intercom innovation continues to connect people from across various industries, including broadcast.

Clear-Com is celebrating its Golden Jubilee this year. What are some of the key changes that have taken place across the pro-audio industry over the last 50 years, and what do you expect to change over the next 50?

Bob Boster: The period of creativity which sparked the development of Clear-Com 50 years ago was the beginning of an incredible era of technological advancement. Micro-electronics development allowed all kinds of interesting innovations, culminating in the invention of the Internet and mobile telephony.

These same changes created an explosion in professional audio, and now everyone has a world-class audio and video production suite at their fingertips on their phone. This has dramatically lowered the barrier to entry for all kinds of people to produce content of all sorts.

Clear-Com has focused on communications tools that allow people to intercommunicate during live productions and events.

“The biggest areas of dynamism in our business are IP technologies and wireless ... We are still manufacturing solutions which are backward-compatible to our initial offerings 50 years ago.”

We take a lot of pride in the different kinds of events we facilitate like major news broadcasts, concerts and sporting events, and specialised real-time team collaborations of all sorts. In the next 50 years, we believe we will still be coordinating communication between people who are working together collectively to accomplish amazing things — it is just the ways in which we connect them that are likely to continue to change.

Broadcast is also one industry that Clear-Com has grown to serve over the years. Which key technology developments do you expect to have the greatest impact on what the company can offer the broadcast industry in 2018 and beyond?

Boster: The biggest areas of dynamism in our business are IP technologies and wireless. Both these areas are undergoing a lot of change — that said, it is important to point out we are still manufacturing solutions which are backwards compatible to our initial offerings 50 years ago. There are not many companies that can say that, and we take pride in that fact. These days, we find that most of our broadcast customers do not want to be experts in communications, so ultimately our biggest contribution is knowing how to deliver the kinds of capabilities they require, and serving (along with our partners) as consultants or collaborators with them in designing and deploying the solutions they need to do their jobs.

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Signiant receives cybersecurity recognition from DPP

Signiant has received the 'Committed to Security' mark from the Digital Production Partnership (DPP), demonstrating its ongoing commitment to cybersecurity practices for both production and broadcast environments. Launched in October 2017, the DPP's Committed to Security Programme is designed to help suppliers demonstrate their commitment to security practices, and offers a common framework that showcases to their customers their ability in addressing cybersecurity. Ian Hamilton, CTO of Signiant, added: "A strong understanding of the ever-evolving threats enables us to effectively apply appropriate security functions, such as authentication, authorisation, data integrity, data confidentiality and non-repudiation."

TMD partners Mediaproxy for fast access to large compliance archives

TMD has collaborated with Mediaproxy to create a "practical and efficient" integrated content management workflow solution. As a developer of compliance recording systems for broadcasters worldwide, Mediaproxy's technology supports recording of extended content, such as sports events and legislative proceedings. Moreover, the partnership with TMD will allow content, typically off-air programme recordings and metadata captured by Mediaproxy LogServer, to be automatically added to the TMD Mediaflex-UMS database.

Next Issue @ Management
Content Security Solutions

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Fintan Mc Kiernan
CEO
Ideal Systems
South-east Asia



Patrick So
Regional Manager
Asia Pacific
Magna Systems & Engineering



Craig Johnson
Managing Director -
Media
Nielsen

Managing evolving digital disruption

Following the emergence of over-the-top (OTT) and video-on-demand (VoD) services, media companies are engaged in a race to get their content quickly delivered across multiple platforms and devices. **Josephine Tan** finds out more on how different storage approaches enable them to retrieve content rapidly, accelerating time to market.

Three transformational elements — the democratisation of content creation, the rise of mobile devices, and the expectations for on-demand services — have arisen as a result of the transition away from film to digital media. And in the digital era of media and entertainment, media companies ought to look towards technology not as a new opportunity, but as a "necessary engine" of the media industry, where success is often decided by how efficiently that engine can be leveraged, Scott Sinclair, senior analyst of Enterprise Strategy Group (ESG), suggests in the *Dell EMC: Enabling the Digital Era in Media and Entertainment* white paper.

With the transformation to digital, the media and entertainment industry has become a technology industry built upon digital products, digital workflows and digital-based economics, Sinclair adds. "Understanding how to build a framework for success in this digital era requires internalising three core concepts: Data has mass, data is more costly to move than to store, and advances in IT innovation have shifted the cost paradigm."

As the media industry continues striving for greater realism, with higher resolutions, greater depths, richer colours and more computer-generation elements, he stresses that the amount of digital content created in turn increases, resulting in higher capacities and higher costs.

"For example, a 2K video shot at 24fps can generate 120GB per hour, even with 5:1 compression. When increased to 4K/Ultra HD (UHD) at 24fps with the same compression, the camera generates about 470GB per hour," Sinclair explains. "What matters is not the 470GB per hour; it is the fact that the shift in resolution generated a four-fold increase in data."

“With the rapid changes in media formats, both internal production and delivery to consumers, it is more important than ever to design the technology platform around scale-out storage solutions — covering both file and object storage.”

— Charles Sevier, CTO, Asia-Pacific and Japan, Dell EMC



Dell EMC Isilon is a scale-out network attached storage (NAS) platform that allows users to store, manage and protect their data with "efficiency and scalability".

To enhance digital media and entertainment operations for moving of data and storage within the IT infrastructure, he recommends three approaches — optimise the amount of copies of data stored, minimise the number of times data moves from one location or system to another, and measure and reduce the amount of time that users wait for access to content.

Established in 1991, Animal Logic is a design, animation and visual-effects studio based in Sydney, Australia. The company also has an office located in Los Angeles, USA, and has expanded its operations into Vancouver, Canada, with the opening of a second animation studio in September 2015. Its portfolio comprises several Hollywood blockbusters, including *The Great Gatsby*, *Guardians of the Galaxy Vol. 2*, and *The Lego Movie*.

Particularly for the production of *The Lego Movie*, Animal Logic required a solution that is capable of managing the vast amounts of data created during the making of the film, which needed 345TB of data capacity at its peak. To enhance its storage requirements, the animation studio approached Dell EMC for production storage, and installed Dell EMC Isilon, a scale-out network attached storage

(NAS) platform.

Alex Timbs, head of IT, Animal Logic, explains: "Although there's a lot of common ground, productions will use different techniques and these have an impact on storage requirements. That's a big part of the reason why we moved to Dell EMC Isilon in the first place, and why we've stuck with it."

"We have the ability to buy what we need, when we need it, in small increments instead of having to do a very large storage upgrade with other vendors. It's been a perfect fit in our industry because it's more modular and versatile."

Dell EMC Isilon storage includes a choice of all-flash, hybrid or archive nodes, allowing users to store, manage and protect their data with "efficiency and scalability". Powered by Intel Xeon processors, the storage solution is designed for demanding enterprise file workloads while accelerating workflow productivity.

Charles Sevier, CTO, Asia-Pacific and Japan, Dell EMC, tells APB: "With the rapid changes in media formats, both internal production and delivery to consumers, it is more important than ever to design the technology platform around scale-out storage solutions — covering both file and object storage. Long-term archives should maintain the original fidelity of the content to improve the future value — so that repurposing HD content to 4K/UHD or 4K/UHD to 8K is viable using up-res transcoding solutions."

To ensure scalability, reliability and ease of storage management, lower latencies and consistent bandwidth

archive approaches in



Above: Designed for video editing and collaborative workflows, Asrun Media's NESTO storage solution is equipped with a HTML Web user interface to provide management of the system.



Left: Mariano L Monteverde, managing director at Asrun Media, says that technologies such as 4K/UHD, HDR and HFR result in greater quality and larger files, thus impacting media companies' storage workflows as it requires higher capacities and speeds, as well as lower latencies and consistent bandwidth.

are also key considerations, in addition to storage capacities and speed, when it comes to managing 4K/UHD, high dynamic range (HDR), and high frame rate (HFR) files, says Mariano L Monteverde.

Monteverde is managing director at Asrun Media, a Hong Kong-headquartered company that offers media software technology designed to empower media and entertainment businesses to reach out to their potential audiences in the most effective way.

He elaborates: "Users need to rely on the capacity of hard-disk drives to store high-quality video at an affordable price. However, on a shared storage with several concurrent users or client applications, random reads and writes lower the performance of the spinning disk.

"On the other hand, Solid State Disks (SSDs) are able to meet the 4K/UHD demand under high workload scenarios; but a shared storage based on all-flash may be cost-prohibitive, even for dozens of TBs."

But as these technologies may have moved faster in development rather than adoption, Monteverde highlights that it is critical for media companies to evaluate the file formats that are most desirable to adapt to their needs, especially in 4K/UHD editing environments.

"RAW DPX sequences at 16-bit may be excessive for some broadcasters in production environ-

ments, and Apple ProRes and Avid DNxHR may be a good alternative. For distribution, either XAVC or HEVC/H.265 seems a reasonable option, with the advantage that XAVC can be easily used in post production," he adds.

Asrun Media, offers NESTO, a NAS system that is able to support 4K/UHD video editing and collaborative workflows. The solution, according to the company, combines the flexibility of unified storage, the performance and efficiency of solid-state flash drives, as well as the capacity of hard disks, and is packed with the NESTO HTML Web user interface to provide management of the system.

Some features of NESTO include hybrid storage pools for increased performance and capacity scalability, snapshot and replication for backups or disaster recovery, as well as thin and thick provisioning that is able to define multiple datasets, and distribute free space dynamically using quotas for each dataset. Thin provisioning refers to the method of optimising the efficiency with which the available space is utilised in storage area networks (SANs), while thick provisioning is a type of storage allocation in which the amount of storage capacity on a disk is pre-allocated on physical storage at the time the disk is created.

Monteverde elaborates:

"NESTO relies on higher amounts of cache, and write-boost cache. Using solid state technology to have extra cache capacities, data is first written into these SSDs, allowing extra time to write the media files into the hard disk-based RAID. By doing this, we can assure the hard disks of the RAID operates at full potential, achieving higher rates of sustained throughput that translates into more concurrent streams."

In addition to managing multiple formats, media companies are also engaged in the race of getting their content distributed across multiple platforms and devices. This has brought forth three different approaches — tape, file and cloud — towards their storage workflows.

Due to technologies such as HDR and HFR, delivery platforms such as over-the-top (OTT) and video-on-demand (VoD), and the ever-increasing use of media in many different forms, storage demands in the media and entertainment market are continuously growing, declares Dirk Thometzek, product manager, storage solutions, Rohde & Schwarz (R&S).

Coming from a production point of view, Thometzek explains that it is not efficient for media companies to build islands of storage according to the specific needs of one application, as technical requirements and tools may change from one project to another. He continues: "In an ideal world, media and entertainment storage will become one big repository where media data will remain accessible using a constant URL, no matter if the underlying hardware tier is solid-state, spinning disk, or tape-based for deep archive.

"However, performance and different tiers will need to be different to support applications

Media companies are engaged in the race of getting their content distributed across multiple platforms and devices. This has brought forth three different approaches — tape, file and cloud — towards their storage workflows.

with changing requirements. For instance, mastering 4K/UHD for interoperable master format (IMF) requires very fast storage and moderate capacities, whereas editing for news in HD or SD requires large capacities to allow access to mid-tier archive material."

The key will be to get a blend of performance and capacity that can fit and adapt to the needs of the workflows at any given moment, Thometzek adds. "Redundancy and maintainability is also self-evident in order to ensure the on-time delivery of content, and the protection required for business-critical media assets."

As for cloud storage, it represents "a big opportunity" for media production facilities to embrace the change towards Opex models. He also adds that bandwidth limits, ingress and egress costs, misunderstandings regarding cybersecurity and variable pricing structures can make it difficult for operators to determine the efficiency of using a cloud-service provisioned by a service provider.

Thometzek concludes: "Off-premise, private data centre approaches, depending on the technical design, currently seem to offer a more reliable overall concept, although high-bandwidth premium content preparation will require an efficient on-premise storage system for many years to come."

As a provider of distributed file systems and object storage solutions, Dell EMC has been seeing many of its customers deploying the Isilon scale-out file storage for

content creation, management and delivery to broadcast and OTT platforms, says Dell EMC's Sevier. "Increasingly, those customers want to move away from tape archives because of the problems associated with that format — slow and limited access, data security and costs."

To empower media companies with both traditional and next-generation workflows, Dell EMC has introduced Elastic Cloud Storage (ECS) cloud-scale object storage as an alternative to the risks of tape storage and public cloud services. As a partner solution to the Isilon storage, ECS can be deployed as a turnkey storage appliance, as a software solution running on industry-standard hardware, through public cloud solutions via Virtustream, or as a Dell EMC-hosted ECS-as-a-Service.

"Cloud storage offers flexible and ubiquitous access to content, allowing IT administrators to manage all aspects from a single plane of glass," Sevier adds. "Considering costs, security and sustained high-bandwidth access to content, we find most large-scale media customers prefer to build their own cloud storage. This provides a mix of low-cost, high-security and guaranteed data management with a solution that can be directly integrated into the high-bandwidth production and delivery workflows."

While the key is still to enable the delivery of content across multiple platforms, media companies can streamline their workflows in a sustainable way by combining tapes, disks and the cloud, Asrun Media's Monteverde says.

"Multi-format delivery to a broad range of devices may be provided as a service by the CDN or OVM provider, reducing the storage capacity needs. Even when distributing to several countries, the number of versions of the content may increase as dubbing or censoring may be necessary. Hence, the implementation of asset management systems enable media companies to manage these processes while having more efficient use of tape libraries," he concludes. **APB**



"In an ideal world, media and entertainment storage will become one big repository where media data will remain accessible using a constant URL, no matter if the underlying hardware tier is Solid State, spinning disk or tape-based for deep archive."

— Dirk Thometzek, Product Manager, Storage Solutions, Rohde & Schwarz



Ross Video has introduced the Ultrix-FR5, a 144x144 version of the company's Ultrix routing and signal processing platform.

Ross Video's Ultrix-FR5 finds first home

Ross Video has announced Riverside Studios as the first user of its new Ultrix-FR5 routing/AV processing platform.

Explaining the choice of Ultrix-FR5 in its forthcoming new facility in Hammersmith, London, Duncan Stewart, technical director, Riverside Studios, said: "We wanted to go with 12G for the new facility because we regularly use freelancers in the UK and the talent base is obviously very comfortable with SDI. 12G is the logical way for us to handle signal routing for 4K/Ultra HD (UHD).

"Our key priorities included multiviewers, audio processing and clean switching, so the Ultrix looked impressively specified, but we clearly needed something larger than the existing 1RU and 2RU versions of the product. It was therefore very exciting to meet with the team at Ross and discover that the 144 version was next on the roadmap and would fit the timescales for the new facility."

Launched this January, Ultrix-FR5 is a 144x144 version of Ultrix, Ross Video's routing and signal processing platform. Packed within a compact 5RU chassis, Ultrix-FR5 delivers a routing platform integrated with multiviewers and FrameSync capabilities. Using 12G chipsets throughout the entire router, Ultrix-FR5 allows users to switch from 270Mbps to single-link 12G 4K/UHD signals within the same chassis. Its internal architecture deploys an FPGA-based design, allowing users to add software-defined processing capabilities, and others, by the order of software licences.

Describing Ultrix as a "dis-

ruptive platform", Todd Riggs, marketing product manager for infrastructure, Ross Video, said: "We've thoroughly enjoyed working with progressive customers like Riverside who aren't afraid to think a little differently. Even the best products need one customer to be the first and we're delighted to be involved with a project as prestigious as Riverside.

"We also have a major US network that has just committed to the Ultrix-FR5 and my inbox suggests we're going to see very high levels of interest in this product in the coming months."

Also involved in the Riverside project was ES Broadcast as equipment supplier, and as systems integrator alongside ATG Danmon. Over a period of 18 months, ES Broadcast and Riverside decided to adopt a 12G 4K/UHD hybrid technology workflow, which will make the new Riverside studio one of the "most advanced" facilities in London — while retaining the operator familiarity that SDI brings, concluded Ben Murphy, managing director, ES Broadcast.

Leader simplifies HDR television production

Leader Electronics' LV5490 4K/Ultra HD (UHD) high dynamic range (HDR) waveform monitor is now providing full direct support for ITU-R BT.2408-0 *Operational practices in HDR television production*. Published last October, the ITU document provides initial guidance to help ensure "optimal and consistent" use of the Hybrid Log-Gamma (HLG) and Perceptual Quantiser (PQ) techniques specified in ITU-R BT.2100.

The LV5490 4K/UHD HDR waveform monitor supports pre-configured settings to ensure the reference levels are correct for both PQ and HLG production. A 75% HLG, or 58% PQ, marker is also displayed automatically on the waveform monitor graticule. This represents the reference level, enabling the vision engineer to ensure that any object placed at the centre of interest within a scene occupies the appropriate signal range and that sufficient headroom is reserved for specular highlights.

Also now added to the LV5490 is system gamma Optical-Optical Transfer Function (OTR) functionality for HLG and Sony's SR-Live for HDR production technology.

Leader's LV5490 offers 4K/UHD, 3G, HD and SD test and measurement features in a half-rack-width by 4U portable unit with a full HD 9-inch front-panel monitor. It provides all the capabilities needed to implement the full potential of HDR in both HD and 4K/UHD, said Leader Electronics.

Signal displays such as video waveform, chroma levels, colour vectors, bar graphs, noise, video patterns, quad-3G phase, data tables, camera picture output, colour chart, multi-channel audio levels and surround-sound vectors can be viewed simultaneously in a user-customisable layout.

If a specific element requires detailed attention, this can be selected quickly for viewing at higher resolution or full screen.

The Leader CINELITE HDR tool-set also comes as a standard feature of the LV5490, allowing easy assessment of relative exposure and overall luminance during production. A focus-assist option allows highly accurate on-set adjustment of camera focus to match the ability of 4K and UHD formats to handle very precise image detail, Leader Electronics concluded.



Recent enhancements to Leader Electronics' LV5490 waveform monitor make it easier for users to work with HDR formats.



Vizrt brings German football to life at Sky Sports Cube

Sky Sports Cube is a state-of-the-art 4,600sqm studio built by Sky Sports Germany in Munich, and which is designed to re-design workflows for the broadcaster.

For the past 17 years, Sky Sports outsourced its sports programmes in the German market and produced live programmes with traditional tools and workflows. Sky Sports Cube allows Sky Sports to bring production in-house, thus creating the flexibility to build a workflow tailored to their specific needs.

Alessandro Reitano, VP sports production, Sky Sports Germany, explained: "It was very important to have end-to-end control of our products. The workflow is really unique and the show is something between entertainment and live sports. Being away from traditional workflows is allowing us to change

the set design immediately."

With Sky Sports Cube, there is a three-storey studio complex and three fully-contained studios, each with their own newsroom

equipped with Vizrt production tools. At the heart of the new end-to-end workflow is the Viz One media asset management (MAM) system and Viz Mosart studio

automation system.

The MAM archive has a 1,000TB capacity, where all the recordings of the football games are stored, and retrieved via the

search capabilities provided by Viz One. The entire live production is controlled by the Viz Mosart automation system, which allows the director to manage and easily control the production from one location.

Sky Sports Cube also includes a 600sqm studio equipped with a 35m-long LED wall, which provides multiple perspectives from the stadium to the studio for in-depth analysis. Viz Multiplay, which controls the video wall content in the studio, allows Sky Sports to show different videos, analyses and interviews on every screen.

Reitano concluded: "Vizrt for us is a long-standing partnership. Every major project we work on includes Vizrt because it isn't a matter of whether we will use Vizrt — it's only a matter of how we want to use Vizrt."



A video wall in Sky Sports Cube in Germany provides multiple perspectives from the stadium to the studio for in-depth analysis.

Lawo supports NBC Olympics' production of Winter Olympics

NBC Olympics, a division of the NBC Sports Group, has selected Lawo's Virtual Studio Manager (VSM) broadcast control and monitoring solutions, as well as IP Commentary systems, for production of the XXIII Olympic Winter Games, which took place from February 9-25 in PyeongChang, South Korea.

The VSM system used at NBC Olympics' production facility at the International Broadcast Center (IBC) in South Korea provided NBC with more flexibility and operation enhancements during its production of the Winter Games. VSM was the overall control system for NBC Olympics' core routing and tally management, connecting to multiple third-party devices on an IP backbone.

NBC significantly increased the number of graphical user interface (GUI)-based VSM panels, which were accessed from various monitors and tablets provided throughout

NBC Olympics' various production facilities. VSM also provided remote Tally information between the IBC in South Korea and NBC Sports Group's headquarters in Stamford, CT, USA.

NBC Olympics also deployed an enhanced Lawo audio-over-IP Commentary System along with several Lawo V_pro8 video processors to manage their coverage from Stamford. Lawo worked with NBC to develop an enhanced version of the Lawo Commentary Unit (LCU) to meet NBC's production goals.

The V_pro8s received video feeds from South Korea, de-embedded the audio and then inserted into Ravenna and MADI streams that ultimately fed the Lawo LCU commentary system. New for this year's production was NBC's use of the Commentary System at the IBC and remotely at the Ski Jump and

IHSE continues to address needs for broadcast KVM

Keyboard, video and mouse (KVM) solutions provider IHSE has added new extenders to its Draco ultra series. The new Draco ultra KVM extenders are capable of handling HDMI 1.3 and 2.0, SDI DisplayPort and DVI-I signals, and can convert SDI sources for display on standard computer monitors. "Digital audio signals can also be de-embedded and output as analogue audio to other devices, such as external speakers or headphones," Terence Teng, managing director, IHSE APAC, told APB.

He continued: "There are many applications within the broadcast environment in which these types of signals need to be transmitted — in monitoring signals through a broadcast facility, in previewing content as well as connecting to and operating broadcast and post-production devices, including Avid Pro Tools, EVS servers and

Vizrt systems."

He added that signals can be switched through a Draco tera KVM switch, allowing any user to access any source from any convenient location in the facility. Particularly, the cross-conversion feature that allows conversion between digital formats (HDMI, DisplayPort, DVI) and SDI can be "very useful" in providing access to these types of signals on different monitors — ones that are not specific to the source of format. For example, an SDI source can be viewed on a standard computer monitor.

IHSE's Draco ultra range is also based on the Lightweight Image Coding (Lici) video codec, which IHSE developed in cooperation with the Fraunhofer Institute for Integrated Circuits (IIS). Teng explained: "Quite simply, the Lici video codec is an extremely high-quality encoder/decoder that allows high-bandwidth signals to be compressed without introducing visible artifacts, which is a crucial pre-requisite in the broadcast environment."

"It was the first codec on the market to extend video at 4K 60Hz full-colour 4:4:4 resolution, and was driven by the demand for visually loseless image data transfer over existing infrastructure cabling, or over limited bandwidth links, without latency."

On the back of a successful 2017, IHSE expects to see a growing requirement for KVM in Asia. Last year, some of IHSE's major KVM installations into major broadcast organisations included Mediacorp, Zhejiang Radio and TV, as well as Chukyo TV. IHSE also provided the KVM systems for NEP's new fleet of 4K/Ultra HD (UHD) outside broadcast trucks.

"The trend towards all-IP workflow models is growing and new facilities that will be constructed will require KVM technology to enable operators to manage and manipulate those workflows," Teng concluded.



IHSE has added new extenders to its Draco ultra series, which are capable of handling HDMI 1.3 and 2.0, SDI DisplayPort and DVI-I signals.



Lawo's VSM solution was the overall control system for NBC Olympics' core routing and tally management during the recent Winter Olympics in PyeongChang, South Korea.

flexibly to the system, for our HD and 4K/ Ultra HD (UHD) high dynamic range (HDR) programming.

"The seamless integration of Lawo's audio and video hardware was easily integrated into our existing systems, and provides NBC Sports with a complete end-to-end solution."

Curling venues, forming a fully cohesive commentary workflow.

Additionally, several Games venues in South Korea were connected to the NBC Olympics compound within the IBC through Lawo's V_remote4 units, which provided connectivity and processing for network audio and video signals delivered via IP connections from the remote sites.

Timothy Canary, vice-president of engineering, NBC Sports Group, said: "Lawo has worked closely with NBC Olympics to add new features and additional operational

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APB

DISTRIBUTION



Teradek streams official torch relay for Winter Olympics

Teradek's Bond II cellular bonding video encoder was deployed for the flame torch relay leading up to the Winter Olympics in Pyeongchang, South Korea. Providing Internet redundancy for live streaming, the Bond II combines up to 6x USB 4G/LTE modems into a single Internet connection so that if any single Internet source goes down, the others will provide automatic failover and keep the stream running.

4K/UHD HEVC live coverage for Winter Olympics

The recent Winter Olympics in Pyeongchang, South Korea, saw LiveU, for the first time, provide 4K/Ultra HD (UHD) HEVC/H.265 live video coverage. LiveU supported global broadcasters from over 40 countries with a record number of bonded cellular units, including the LU600 portable transmission solution. The company first covered the Summer Games in Beijing in 2008 and has been providing live video coverage at every major international sports event since. Later this year, LiveU will also support the 2018 FIFA World Cup in Russia.

Next Month @ Distribution

DTH Delivery

PANELLISTS



Martin Coleman
Executive Director
Satellite Interference
Reduction Group



Amitabh Kumar
Director, Corporate
Zee Network



Shalu Wasu
Managing Director
Eleven Sports Network

Time to switch off analogue TV

APB chats with Dr Peter Siebert, executive director of the DVB Project, on the merits of DTT, and how a new digital terrestrial network architecture can potentially hasten the demise of analogue TV.

In the April 2017 issue of *APB*, the argument put forth was this: if broadcasters were to harness the full benefits of emerging technologies such as 4K/Ultra HD (UHD), 8K, virtual reality (VR) and IP, all roads start with digital.

Today, that position has not weakened; on the contrary, the case for broadcasters to complete the transition to digital terrestrial television (DTT) is perhaps stronger than it has ever been.

While broadcast TV started with analogue terrestrial transmission, which for a long time was the preferred way to receive TV signals, many countries have now switched off analogue signals and commenced digital terrestrial transmission, notes Dr Peter Siebert, executive director of the DVB Project.

He tells *APB*: "Digital can offer more choices, better video and audio quality, and because of additional metadata, greater ease-of-use. Whereas these advantages apply to all delivery schemes, there are additional benefits for the terrestrial platform.

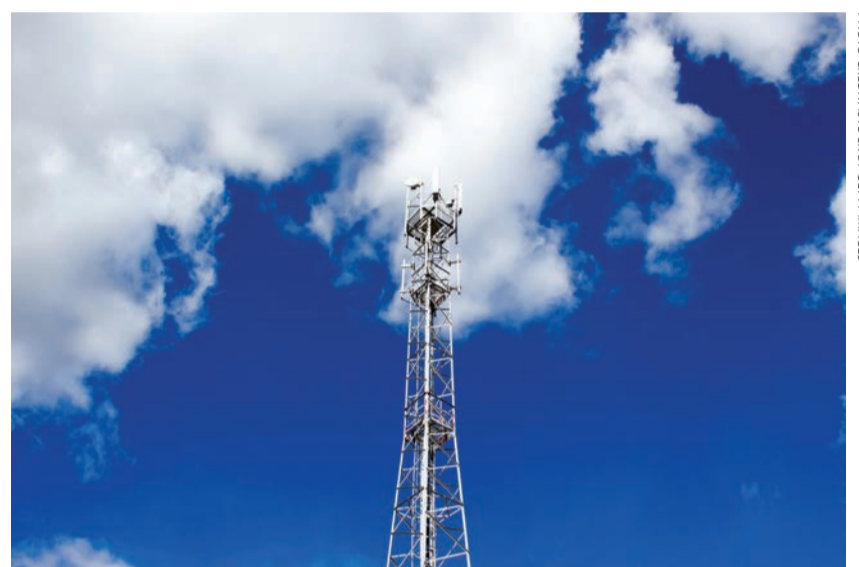


PHOTO CREDIT: STOCK BY GETTY IMAGES

Despite what appears to be compelling arguments for broadcasters to complete a full transition to digital terrestrial television, the analogue switchover remains largely uncompleted in regions such as Asia-Pacific.

"It is the easiest to set up for the end-user — no cable connection is necessary and no satellite dish needs to be installed and pointed. For portable in-door reception, a simple rod

antenna may give reception in any room of the household, without the need for heavy indoor networking. Furthermore, DTT is the only broadcast platform supporting mobile

No one-size-fits-all for DTT

There is no single architecture that stands out as the best fit for all digital terrestrial television (DTT) network deployments. The onus is on operators to carefully consider a number of commercial and technical parameters before making their choice, advised Hans Massart, market



director, broadcast, Newtec.

He told *APB*: "These include the commercial parties involved in the project, the commercial constellation, any legal constraints, the geographical situation, the terrestrial access to the towers, the future prospects of the deployment and any time constraints or obligations imposed by regulators."

However, for every DTT deployment, the total cost of ownership of the distribution network (playout towards the towers) needs to be considered as a whole, as does whether there is a universal service obligation (USO) in place. Massart

"There is no single architecture that stands out as the best fit for all digital terrestrial television (DTT) network deployments."

— Hans Massart, Market Director, Broadcast, Newtec

explained: "For commercial operations, there is often more content available, which allows a complete satellite transponder to be filled. At the same time, there may be no obligations to cover 100% of a geographical area or 100% of a population [as stated in a USO]."

Efficiencies, thus, can be improved by making use of technologies such as multi-stream, DVB-S2X and DVB-S2X channel bonding, he added.

For deployments where analogue distribution is replaced by digital distribution, such as for state broadcasters, there may be an obligation to fulfil the full terms of a USO. "In this case, often the reach of the DTT distribution is complemented by direct-to-home (DTH) to fill the gaps," said Massart. "In order to improve space segment efficiency, the DTT and DTH carriers are overlaid. Today, these deployments are limited by specifications of standard DTH set-top boxes, for example, 8PSK and a roll-off of 15% rather than 5%."

He also identified an integral con-

Tips for building a working DTT infrastructure

There are many factors that will influence the complexity, cost and time to deploy a digital terrestrial television (DTT) network.

Harmonic, which has worked on more than 80 projects in over 60 countries globally, recommends that broadcasters take into account these key considerations:

- What is the % population coverage target? This will have a huge impact on the number of transmitters to be deployed in a country.

- Is indoor reception a goal? Is reception on a portable device an objective? Is receiving DTT in a car an objective? All these points impact the modulation parameter choice, as well as the number of broadcasted channels.

- Is it a multi-frequency network (MFN) or single-frequency network (SFN)? This will have an impact on the cost of the signal distribution network and the edge/

tower devices, especially if regionalisation is required.

The regionalisation of the various channels — is it a full channel replacement, local news only, or local ad insertion?

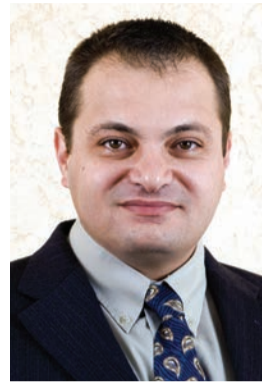
- What is the distribution network to the towers? It could be satellite or IP, and so on.

- Is it free-to-air, free-to-view or a pay-TV network?

- In the case of satellite distribution, does the operator also want the DTT distributed signal to be received from satellite, as well as over DTT, to offer 100% population coverage, as required by some regulators?

According to Yan Mostovoy, director, contribution and distribution solutions, Harmonic, the company has had the biggest DTT market share since 1998. In many of these DTT projects, Harmonic has gone beyond playing the role of just a technology

Harmonic has had the biggest DTT market share worldwide since 1998, with more than 80 projects in over 60 countries, revealed Yan Mostovoy, director, contribution and distribution solutions, Harmonic.



vendor, and has also acted as an advisor, he added. “We provide our customers with an end-to-end DTT solution that includes the most advanced features and technologies, such as headend processing and efficient distribution with any types of regionalisation needs, for any types of distribution

network and for both MFN and SFN signals,” he told APB. “We also participate and contribute to DVB-T/T2 standardisation efforts, and are active in developing unique features and capabilities for DTT, which puts us in a leading position against our competition.”

And while Mostovoy agreed that Asia-Pacific may be lagging behind other regions when it comes to deploying DTT, he pointed out that out of 46 APAC countries, states or islands, 26 are successfully delivering DTT services in one way or another.

“The region is diversified in adopting DTT standards,” Mostovoy also observed. “China has deployed DTMB, South Korea ATSC, Japan and the Philippines ISDB-T, and the rest, DVB-T/T2. Harmonic was involved in many of the DTT projects in the region, particularly those in Thailand, Singapore, Indonesia, Malaysia, Vietnam, Taiwan, China and Australia.”

reception, at least as a best effort service.”

Where Europe is concerned, the analogue switch off (ASO) has been a long gone conclusion in many countries. Some have gone further by making a second DTT transition, going from DVB-T and MPEG-2 to DVB-T2 and H.264 or HEVC/H.265, Dr Siebert points out.

He highlights Germany as a case in point, where 2017 saw the introduction of the country’s second-generation DTT system, which utilises DVB-T2 and HEVC/H.265 to bring HD and more services to the end-user. “To plan the transition, the relevant

stakeholders came together in a round table approach,” Dr Siebert describes. “A wide range of interest groups participated in the planning: public and private broadcasters, network operators, the consumer electronics and retail industry, German regulators and even consumer organisations representing the interest of the end-users.”

All relevant aspects were discussed and agreed during the round table discussions, including: business cases, frequency planning, transition scenarios, transmission parameters, AV coding, receiver specification and perhaps of most relevance, financing and time schedules.

Compliance of the TV receivers and sets to the new specification was then demonstrated by a logo, defined and administered by the round table. This was closely followed by an intensive marketing campaign informing end-users about the changes to come.

Within a nine-hour period on March 29 last year, the switchover to the new system took place without any major flaws, Dr Siebert reports. “There are, of course, many ways for the transition to a new system, and Germany can only serve as an example,” he emphasises. “Nevertheless, there may be elements of the German approach that could be considered for other regions, such as Asia-Pacific.”

According to the Asia-Pacific Broadcasting Union (ABU), as of January this year, only a meagre five countries in the Asia-Pacific region have completed a full ASO. Calling this a “surprising statistic”, Dr Siebert says: “Only a handful of countries [in APAC] have gone through ASO, while others appear to be struggling with their DTT transition, even as people in the region have continued to embrace digital broadcast TV.”

While he acknowledges that each country in APAC needs to define its own road to DTT and ASO, there appears to be no major obstacles standing in the way of the DTT transition. “Digital services via cable and satellite are popular, and as well, there are commercial DTT networks in many countries in APAC,” Dr Siebert explains. “There is certainly no shortage of inexpensive receiver equipment based on DVB specifications (the majority of countries in Asia-Pacific have chosen DVB standards for their DTT transition), and the region has plenty of experienced engineers with the know-how to

WiB, or Wideband Broadcast, is a new DTT architecture with the potential to reduce Opex and Capex for a terrestrial network, and to increase the bandwidth for a given set of frequencies.

set up DTT networks.”

In today’s digital age where viewing habits continue to evolve, it is imperative that broadcasters are armed with the mechanisms to interact, get analytics and build loyalty among audiences — all of which are difficult to achieve without going digital, because analogue transmission lacks return paths that can be integrated with modern broadcast services.

For broadcasters who are running digital services alongside analogue ones, they need to give due consideration to the actual costs of running simulcast operations — is this truly economically viable and sustainable over a long period of time?

A new digital terrestrial network architecture, however, may well allow broadcasters to make a more cost-effective transition to DTT. WiB, or Wideband Broadcast, is a new DTT architecture with the potential to reduce Opex and Capex for a terrestrial network, and to increase the bandwidth for a given set of frequencies.

Dr Siebert details: “Before WiB, the typical approach for terrestrial network planning is to not reuse the same frequencies for adjacent transmitters, because, except for single frequency networks (SFNs), the receiver would see the signal as noise”

The WiB approach, however, is based on the concept that all transmitters in a network use all available frequencies, which means that there will be interference

from adjacent transmitters. “To compensate for the interference, a very robust modulation scheme like QPSK needs to be used, resulting in a lower data rate in the typical 8MHz channel,” Dr Siebert continues. “Consequently, the bandwidth needs to be increased to wideband channels beyond the usual 6MHz or 8MHz bandwidth. Furthermore, additional interference reduction measures, like directional antennas or Layer Division Multiplexing (LDM), are needed.”

To further analyse the potential of WiB, the DVB Project has set up a special Study Mission Group (SMG). And while the DVB Project’s work on WiB is at an early stage, first simulations have demonstrated that with WiB, transmission power can be reduced by up to 90%. “This would result in significant Capex and Opex cost savings for terrestrial networks. Furthermore, it seems to be possible that the overall capacity of a network could be increased with the new concept,” Dr Siebert reports, while highlighting that more research is required to identify and confirm WiB’s full potential.

“Assuming that the current prediction on reduced power and increased capacity are confirmed, WiB will be the first technology after DVB-T2 to significantly improve DTT networks, and could play a major role in spectrum discussions and network planning in the years to come,” he concludes. **APB**

sideration of any DTT deployment today, as being the need for bidirectional IP connectivity with all towers and remote sites. “This IP network opens the door for central network management and control, resulting in a significant Opex savings for both the distribution and contribution portions of the operation.”

Beyond the transmission equipment itself, each and every device, device parameter or functionality at the tower sites can be reached: off-air probes, windspeed monitors, thermometers, oil level tanks of diesel generators, CCTV and so on.

A full-scale IP bidirectional network also allows a single Network Operations Centre (NOC) to correlate alarms or monitor trends and, therefore, make responses proactive instead of reactive. Massart elaborates: “The significant Opex savings come from not having to dispatch skilled personnel continuously for

each and every event. “Travelling to towers high up in the mountains or in winter conditions or, in some remote cases, to islands by helicopter, is a costly undertaking, which can be avoided by full remote control.”

This IP pipe can be provided by a VSAT network, such as the Newtec Dialog platform, which provides a feature that allows the VSAT Forward IP pipe to be merged into the video distribution stream while preserving compatibility with the DTT/DTH overlay. Capex savings are also possible as this merged carrier can be received by a single VSAT modem generating the video distribution carrier, with the T2-MI streams for DVB-T2 distribution, as well as setting up the local IP network.

“Smart solutions such as Newtec Dialog allow convergence of the video distribution and IP networking components, resulting in Capex savings on tower level, as well as Opex savings,” Massart concluded.

2017 a year of streaming successes for Globecast

Global solutions provider Globecast has hailed 2017 as one of streaming successes after it completed a range of projects, including golf's Ladies European Tour (LET).

Globecast began working with LET's TV production partner U.COM Media in 2016, and extended the partnership across 2017. Globecast provided several services for each of the season's events, including supplying the satellite capacity covering the distribution of each event, which was in turn down-linked in London.

The content was then transcoded and streamed live to YouTube. In tandem, the live stream was delivered to a cloud-based

editing platform, where the content was clipped and repackaged for distribution on social media networks. Since then, Globecast has also begun offering this service with the availability of its liveSpotter short-form video-on-demand (VoD) content clipping technology.

Simultaneously, Globecast turned the live transmission around for delivery to multiple satellites for full global coverage. It also provided a file-transfer service, enabling U.COM Media and its affiliates to download all the content from Globecast's FTP site for further use.

Liz McParland, commercial

director, contribution, Globecast, said: "Our customers want a broadcast-like, HD-quality experience for their streaming viewers. It makes a lot of sense to customers to take advantage of multiple services at the same time from us.

"If we are already processing their content, it is really straightforward for us to then transcode it for live streaming and prepare it for file transfer. Of course, with some customers, we also provide complete production services."

McParland also suggested that the content distribution market has changed, particularly, if not exclusively, with sports. "Streaming is such a valuable way to reach audi-



Since 2016, Globecast has been providing several services for golf's Ladies European Tour (LET), including supplying the satellite capacity covering the distribution of each event.

ences for niche content, potentially then driving linear TV distribution, though in its own right, streaming can achieve big audiences," she continued. "Even with Tier 1

content, streaming is very powerful as a promotional tool, creating a buzz and driving interest — the key is providing a quality audience experience."

Who are the top teleport operators of 2017?

The World Teleport Association (WTA) has published its annual rankings for the Top Teleport Operators of 2017. The annual ranking of companies by revenue and revenue growth are compiled by surveying teleport operators around the world, as well as referencing the published results of publicly-held companies.

The Global Top 20 ranks companies based on revenues from all customised communications sources and includes operators of teleports and satellite fleets.

In order from largest to smallest, the Global Top 20 of 2017 are:

- | | |
|--------------------------------|--------------------------------------|
| 1. SES | 11. Encompass Digital Media |
| 2. Intelsat | 12. Hispasat |
| 3. Eutelsat | 13. Arqiva |
| 4. Telesat | 14. Optus |
| 5. EchoStar Satellite Services | 15. SpeedCast |
| 6. Global Eagle | 16. Russian Satellite Communications |
| 7. Telespazio | 17. Globecomm |
| 8. Globecast | 18. AsiaSat |
| 9. Singtel Satellite | 19. Measat |
| 10. Thaicom | 20. Telenor Satellite |

Of this list, Global Eagle, Globecast, Encompass Digital Media, SpeedCast and Globecomm do not operate satellite capacity.

NEP Group enters the race with Equinox

When the broadcast rights for horse racing on British television recently switched channels, outside broadcasting (OB) specialist NEP Group seized the opportunity to create what it calls "one of the UK's most advanced OB trucks".

Named Equinox, the truck is capable of meeting every requirement for the live broadcast of race meets, without additional support, added NEP Group. While at the heart of its technical infrastruc-

ture is the intercom expertise of OMNEO IP technology, Equinox is also built specifically to meet the challenges of broadcasting British horse racing.

Paul Fournier, head of sound for NEP UK, explained: "The broadcaster wanted to run the truck in a very specific way, so we built this truck to deliver everything they wanted to achieve.

"Rather than having to accommodate a separate voice track/

recording replay truck, everything is done out of this single vehicle, and the use of IP simplifies how everything works."

Inside Equinox, an RTS ADAM modular matrix frame equipped with a 64-channel OMI OMNEO matrix interface card offers up to 272 ports, providing a Dante backbone for the OB truck's communications workflow. In addition, the frame hosts five AIO-16 analogue interface cards, a MADI-16 Plus interface card and two TBX-Tribus cards for connecting Equinox with other trucks in the NEP fleet. Ten 32-key KP-5032 keypanels have been integrated into the vehicle, alongside a further 31 16-key KP-4016 panels.

Elaborating on the benefits of working in an audio-over-IP environment, Fournier said: "OMNEO, which facilitates the use of Dante audio, has really taken off in the broadcast world over the past two years. The choice of OMNEO means that we benefit from vastly reduced cabling — all a KP-5032 or KP-4016 keypanel needs is a Cat-5 Ethernet or a fibre connection.

"Even if we have a long-distance run over kilometres, we can fibre it. In fact, many of the horse-racing grounds serviced by Equinox are now being retrofitted with permanent fibre, so if you need to position a panel somewhere on site, then it's easy to do so."

The use of Dante audio also makes it easy to provide preview boxes for the director and producer — by simply pinning them in the Dante audio network through the RTS system, Fournier maintained. "Because we have Dante cards in our desks, there's no patching involved — everything just appears on the network, so you can pick it up, make an IFB out of it and pass it on."



The NEP Group's new Equinox OB truck is being used to broadcast live horse racing in the UK.

TeamCast enhances support for ATSC 3.0 LDM feature

TeamCast's Vortex II exciter now supports Layered Division Multiplex (LDM), an optional technology of the new ATSC 3.0 Physical Layer standard.

LDM allows the transmission of two signals over a single RF channel — one signal (the Core Layer) addresses receivers with difficult receiving conditions, while the other signal (the Enhancement Layer) targets receivers in good receiving conditions.



TeamCast's Vortex II exciter now supports Layered Division Multiplex (LDM), an optional technology of the new ATSC 3.0 Physical Layer standard.

Prior to this update, Vortex II was already in use across the US for powering ATSC 3.0 pilot projects and many other projects linked to the Spectrum Repack in the country. Several pilot projects are now in place to evaluate LDM in the real world, reported TeamCast. This includes a project sponsored by the National Association of Broadcasters (NAB) and the Consumer Technology Association (CTA) in Cleveland, Ohio, USA. The Comark transmitter there was recently upgraded with a Vortex II and is now ready for field evaluation of LDM.

Eric Pinson, business unit manager, TeamCast, said: "We're excited to continue to empower the field testing of the amazingly rich ATSC 3.0 technology with our Vortex exciter. The introduction of LDM as a simple software upgrade demonstrates that this exciter is continuously evolving in the direction broadcasters may expect, as a future-proof investment, even beyond its dual ATSC 1.0/3.0 feature."

SATELLITE

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amidst disruptions in APAC's
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Hitting the sweet spots amidst disruptions in APAC's satellite marketplace

Like its terrestrial broadcast counterpart, the satellite broadcast industry is experiencing a wave of disruptive changes brought forth by emerging technologies, new entrants in the video marketplace, and the way content is being consumed today. While HTS, provisioned over Ka- and Ku-band, can potentially offer more options to deliver specific content to specific viewers, fixed-satellite services offered over C-band will continue to retain its importance in Asia-Pacific. **Shawn Liew** reports.

Broadcasters today are demanding satellite capacity that is more flexible and can morph to meet the demand for 'anywhere, anytime' viewing. This, in turn, is creating a decline in fixed global geostationary earth orbit (GEO) satellite distribution of TV programming, observed Karl Rossiter, contributing editor (technology), *APB*.

He added: "The global trend and customer demand for HDTV and 4K/ Ultra HD (UHD) TV are increasing distribution costs, as well as taxing satellite capacity and compression limits.

"The demand for satellite data throughout continues to double each year, putting enormous pressure on satellite designers and manufacturers who often have to work 10 years ahead."

HTS take centre stage in disruptive and changing landscape

With the introduction of smart TVs, voice activation, digital assistants, smartphones, mobility and the now familiar names like Netflix and Amazon, it is clear that the landscape has changed irrevocably.

Rossiter believes that medium earth orbit satellites are increasingly becoming economic, sustainable and fashionable, and are supporting the growth of broadband competition and cloud delivery. He predicted: "2018 will see the introduction of more 'hybrid' services where strands of different technologies are combined to meet audience demands and expectations."

High throughput satellite (HTS) is the major trend for communications/ broadcast satellite in Asia-Pacific, and will remain so in the near future, suggested Hiromasa Nakaguro, general manager, Space Systems Division, Mitsubishi Electric Corporation.

"HTS has enabled operators to cope with the competition from terrestrial networks on the "cost per bit" race, by supplying large communication capacity, he continues. "Although the majority of the satellite service revenues in APAC are generated by broadcast services, we



Satellite remains one of the key platforms to reach out to large population segments in Asia-Pacific. While HTS is offering more options to deliver more options to deliver specific content to specific viewers, fixed-satellite services offered over C-band is likely to retain its importance in Asia-Pacific

believe that there will be a steady growth for video, cellular backhaul, and airline connectivity demands supported by HTS, as the middle-income population in the region increases."

Based on the company's heritage DS2000 platform, Mitsubishi Electric is currently developing an enhanced satellite platform called New DS2000, which will double the spacecraft capacity up to 25kW to meet HTS payload needs.

New DS2000, according to Nakaguro, will enable Mitsubishi Electric to provide customers with multi-beam HTS payload of over 100 beams and a digital channeliser capable of bandwidth and power flexibility, as well as digital beamforming.

"This enhancement will give more power and capacity for 4K/UHD payloads, and enable our customers

to cope with ever-changing market demands," said Nakaguro.

Equally optimistic about what HTS can bring is Newtec, who sees the continued growth of HTS opening up new opportunities and capabilities in numerous verticals across Asia-Pacific. Sjoerd De Clerck, vice-president, sales, Asia-Pacific, Newtec, shared: "Asia's vast land mass, which includes many rural and isolated areas, means terrestrial broadband is not always an option when deploying high-speed services. This makes HTS ideal for service providers looking to offer competitive broadband packages.

"Furthermore, HTS' wide beam feature allows service providers to deliver connectivity to a specific area or location, enabling them to tailor their data services."

Newtec believes that for HTS to succeed, the innovation in space must be matched on the ground. Last year, the company unveiled HTS-optimised DVB-S2X wideband products as part of its Newtec Dialog multi-service platform.

Designed to support the "massive scalability" required by HTS networks, this hub architecture provides higher throughput and density in a robust, carrier-grade package, and is already being used in several HTS projects.

Tussle for C-band spectrum re-emerges

For direct-to-home (DTH) operators, HTS offers the opportunity to deliver niche TV content to specific audiences in target locations.

The downside, particularly in Asia-Pacific, is the requirement of costly



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Trends and forecasts for satellite video services in APAC

BY DIMITRI BUCHS

After strong growth in recent years driven by the launch of new pay-TV platforms, the development of free-to-air (FTA) offerings and the take-off of HDTV, consolidated capacity utilisation across Asia-Pacific has slowed down in the past couple of years, with growth mainly coming from South Asia, led by India.

Overall, regional growth slowed as several platforms decreased their number of channels, with some of them also ending their services due to mounting terrestrial FTA and over-the-top (OTT) competition. In parallel, only a limited number of new platforms were rolled out in the past couple of years, one of the latest being Solar DTH in the Philippines in 2017. 4K/Ultra HD (UHD) has also remained relatively limited so far, contributing to the lack of dynamism of the market. As of February 2018, 17 4K/UHD channels were broadcast by satellite in Asia-Pacific.

South Asia

Growth should mainly be supported by competition in pay-TV, as well as by the possible launch of several new platforms, including in Pakistan, where direct-to-home (DTH) licences have recently been auctioned. In the short term, growth should largely depend on the availability of additional capacity to distribute new TV channels. In the longer term, growth is expected to result from large HD roll-outs and the first 4K/UHD roll-outs. High throughput satellite (HTS) could also be used for TV broadcasting. In terms of primary market risks, consolidation within the DTH market would have a significant impact on capacity usage. A change in the regulatory framework could also impact the market.

South-east Asia

Growth should mainly be supported by satellite pay-TV platforms. New platforms could be launched in a few countries, as most countries in South-east Asia are still at an early stage of pay-TV development, and as several market players are still in a fragile position, notably in Indonesia. Demand should also be driven by the development of HDTV, as well as the digitisation of ground networks. Further, some platforms in countries (such as Indonesia) with a high number of active services may consolidate their activities or end-services, especially once growth in subscribers and revenue slows down.

North-east Asia

Despite the negative impact of the end of SD/HD simulcasts for DTH platforms in the short-term and the development of OTT, the regional market is expected to benefit from different factors. The main driver after 2020 should be 4K/UHD. Following the roll-out of the first channels in 2014, the region is expected to be one of the world pioneers for the development of both 4K/UHD and 8K (from 2020). A total of 110 4K/UHD channels are expected to be broadcast in North-east Asia in 2025. HD, despite the already advanced development stage of the format, should continue to drive the market, with roughly 100 channels added by 2025.

China Area

The region, particularly mainland China, offers numerous opportunities for satellite pay-TV. Our initial assumption is that the "satellite TV platforms" type of services is unlikely to be launched in the short to middle term. Still, licensees for such services would likely be Chinese companies that are potentially state-owned. Furthermore, mainland Chinese satellite operators should be preferred for the broadcast of such platforms. Based on the assumption that platforms will be in service and that there will be substantial progress in the digitisation of terrestrial networks, the number of channels is expected to develop progressively in the next decade.

Oceania & Pacific

Growth is expected to come from the introduction of more HD channels and more digital channels to fill terrestrial networks. Growth is nevertheless expected to be limited by the relatively small size of the market, its maturity and the growing focus of broadcasters on non-linear services, particularly in Australia and New Zealand. More than 500 HD channels could be broadcast in the region by 2025. Around 50% of total channels distributed in the region should be HD channels in 2025. **APB**

Dimitri Buchs is senior consultant, Euroconsult.



Spectrum sharing? Even before WRC-19 comes around next year, Intelsat and Intel have submitted a joint proposal to expand the use of 3700-4200MHz spectrum from satellite services to terrestrial mobile services.

ground-segment hubs at multi-gateway sides to counter the complexities and effects of rain fade. So, while HTS is provisioned in either Ku- or Ka-band, there is still a compelling case to be made for traditional C-band fixed-satellite service (FSS) widebeam broadcast distribution.

At WRC-15, one of the key verdicts passed was to maintain C-band spectrum primarily for FSS. However, this may prove to be a temporary reprieve as the International Telecommunication Union (ITU) prepares to re-convene for WRC-19 next October in Sharm El Sheikh, Egypt.

Perhaps, unsurprisingly, mobile operators have already begun to clamour for parts of the C-band spectrum band to be allocated for the International Mobile Telecommunications Advanced (IMT-Advanced) service.

And in a further twist to this development, satellite services provider Intelsat, in conjunction with Intel, submitted a joint proposal last October under a current Federal Communications Commission (FCC) Notice of Inquiry regarding expanding the use of 3700-4200Mhz spectrum from satellite services to terrestrial mobile services.

If the proposal is adopted, wireless operators would be able to access new "mid-band" spectrum that would help accelerate the adoption of 5G services.

According to Intelsat and Intel, satellite users would continue to operate in the band with "certainty of continued high quality" for C-band video distribution and data networks.

To say the least, this is a controversial position that is unlikely to sit well with many providers of C-band satellite services, particularly in Asia-Pacific.

While HTS services provisioned in Ku- or Ka-band are likely to grow across the region, C-band frequencies, arguably, remain vital to the operation of satellite services in Asia-Pacific, where 'rain fade'

is most prominent.

Governments and regulators need to consider carefully the potential impact of allocating C-band spectrum, if any at all, to the IMT industry. What would be the criteria for any spectrum sharing scheme, and how would this impact both operators and users?

In many under-developed countries in Asia-Pacific, where high-speed mobile networks simply do not currently exist, will C-band sharing diminish the ability to connect under-reached populations? For the sake of the future of broadcast distribution in Asia-Pacific, it is a decision that no government or regulator in the region can afford to take lightly.

Rising above the challenges caused by disruption

A survey conducted by the World Teleport Association (WTA) on top executives of satellite service providers at the end of 2017 produced some thought-provoking results. Nearly half of respondents (44%) of media-focused companies expect declines in DTH, terrestrial and cable TV origination, as well as distribution services.

To counter the downturn, they are now directing their investment in over-the-top (OTT) distribution, private cloud services for content owners, the Internet of Things (IoT) and the integration of third-party cloud services into their offerings.

In the past year, a wave of disruptive technologies and market changes has begun to challenge operators, said Robert Bell, executive director of WTA. "This includes new models of connectivity — HTS, middle and low earth orbit spacecraft, [and] is driven by the rising domination of software over hardware, customer demands for seamless global service, and the accelerating shift in how media consumers want their programming delivered."

Having said that, and despite of the expected decline in their core business, 18% of respondents to the WTA survey indicated a continued willingness to invest in terrestrial, cable and DTH distribution.

There is still "significant capacity growth potential" in Asia over the long term, argued Alan Crisp, senior analyst at Northern Sky Research (NSR), an international market research and consulting firm. "Despite some gloom in some more developed video markets, the very real value of satellite in terms of point-to-multipoint content carriage is not going away," he said.

In Myanmar, for example, multiple new platforms have been launched over the past couple of years, with several operators benefiting from multi-transponder contracts, NSR reported. And in Indonesia, the most populous Muslim country in the world, the sheer size of the country means there is still a sizeable number of households getting a TV set for the first time.

Within South-east Asia, increasing levels of disposable income means there is still significant room for an increase in first-time subscribers paying for DTH, cable TV and IPTV subscriptions.

Or, as Crisp sums up perfectly: "There are opportunities, if you know where to look." **APB**

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From ground to space ... Mitsubishi Electric provides total solutions

Hiromasa Nakaguro, general manager, Space Systems Division, Mitsubishi Electric Corporation, details to **APB** how the company can help customers in the satellite space meet all their needs through its space systems and ground support.

One key development in the satellite communications/broadcast industry that is set for continued growth in 2018 is HTS. How would you access the impact of HTS, particularly for the satellite broadcast industry, and how is this technology also addressing how content is being consumed today?

Hiromasa Nakaguro: We believe high throughput satellite (HTS) has already become the major trend for communications/broadcast satellite in Asia-Pacific and will remain that way for the near future.

Most of the enquiries we receive from our customers in APAC, South Asia and the Middle East have been related to their interests on HTS for their future satellites. We believe that growth on throughput for video, cellular backhaul and airline connectivity will continue based on the

strong demands in these regions.

HTS has enabled operators to cope with the competition from the terrestrial networks on the "cost per bit" race, by supplying large communication capacity. Although the majority of the satellite service revenues in APAC are generated by broadcast service, we believe that there will be a steady growth for video, cellular backhaul and airline connectivity demands supported by HTS, as the middle-income population in the region increases.

Can you also elaborate on some of the HTS initiatives and projects that we can expect from Mitsubishi Electric in 2018?

Nakaguro: Based on our heritage DS2000 platform, we are currently developing an enhanced satellite platform called *New DS2000*, which will double the spacecraft capacity up to 25kW to meet the HTS payload needs.

New DS2000 is based upon the contract from the Japanese government, named the ETS-9 (Engineering Test Satellite-9) programme, which is planned to be launched in 2021. We will be ready to start selling capacity on *New DS2000* for the commercial market in 2019.

New DS2000 will enable Mitsubishi Electric to provide our customers with multi-beam HTS payload of more than 100 beams and a digital channeliser capable of bandwidth and power flexibility, and Digital Beamforming. This enhancement will give more power and capacity for 4K/Ultra HD (UHD) payload,



Mitsubishi Electric is developing an enhanced satellite platform called *New DS2000*, which will double the spacecraft capacity up to 25kW to meet the HTS payload needs.

and enable our customers to cope with ever-changing market demands.

What other technologies do you see your customers in Asia-Pacific looking for? For instance, are you seeing increasing opportunities in the region for 4K/UHD and satellite IP?

Nakaguro: We believe there is another growing need for smaller, compact spacecraft with less power, which can carry smaller HTS or conventional payloads. Utilising its flexibility, *DS2000* can meet the needs for these types of small satellite platform. It will enable operators who want to concentrate on certain areas with steady demand, and avoid investing on a large HTS platform to lower the "cost per bit".

We believe this platform will be able to provide our customers with a low Capex solution by minimising the satellite cost, as well as the launch cost by launching several satellites in stacks.

We are already starting to see many Satcom start-up companies in the region, and we believe it is also important for us to be able to provide "one-stop solutions" that our customers can count on, as well as offering competitiveness in the quality, lead time and cost.

As a "one-stop solution" provider, we can provide service from start to

finish, including case studies on their payload planning, satellite and payload design, manufacture, assemble and test in-house. We can also provide ground system integration and training courses for operators and technicians, launch site operation, in-orbit test and perform backup operation at our control centre, and offer lifetime support by our support engineers.

We are confident that we will be able to provide satisfaction to our customers with our *New DS2000* small satellite platform and its flexible payload, together with our "one-stop service" proposition.

What are some of the challenges Mitsubishi Electric expect to face in 2018, and how will this shape your overall strategy for Asia-Pacific?

Nakaguro: We see the strong downward pressure on the "cost per bit" continuing, which means that there will be more "cost down" pressure on satellite Capex as well.

Our customers are constantly facing price pressure from the market and, at the same time, are trying to find the right path to meet what are now uncertain future market demands.

To support our customers, we believe it is our mission to provide a more flexible payload that is cost-effective and available in shorter lead time for a quicker service deployment. Our *New DS2000* programme is not just about the development of a large, flexible HTS payload and platform, but will also aim to develop a cost-effective large HTS platform with shorter lead time.

We are aiming for more than 30% cost reduction compared to previous *DS2000* satellites, with comparable lead time as a conventional satellite. We are very much looking forward to introducing this platform to the market to better serve our customers. **APB**



“We believe there is another growing need for smaller, compact spacecraft with less power, which can carry smaller HTS or conventional payloads.”

— Hiromasa Nakaguro

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20 years of interference prevention

BY MARTIN COLEMAN

This year, the Satellite Interference Reduction Group (IRG) turns 20. A lot has changed, both within the group and in this industry during that time. I thought, therefore, that it would be an opportune moment to reflect on the past 20 years of interference prevention and the satellite industry in general. I will also take a moment to think about what the coming 20 years may bring.

SUIRG

In 1998, the Satellite Users Interference Reduction Group (SUIRG — now IRG) was born from a discussion started at the World Broadcasting Union – International Satellite Operators Group (now the WBU-IMCG) meeting in Geneva. At that meeting, a representative from the European Broadcasting Union (EBU) brought up the increasing trend of more and more interference affecting their broadcast and, as a group, it was decided something needed to be done to stop it. The broadcasters in attendance were not sure what could be done and so asked the satellite operators to act. One of the biggest outcomes of that was the formation of SUIRG that same year to enable those operators to work together towards a common goal — reducing interference for all satellite users.

It began as mainly a forum, which enabled operators, users and manufacturers to come together, discuss experiences, and consider solutions to the problem. That remains one of the most important functions IRG performs. Only by getting all the engineers together in one room can you properly understand

the problem and come up with the extraordinary technology to resolve it.

Understanding causes

Historically, one of the biggest challenges when it comes to interference resolution has been understanding what is causing it. Up until around 2007, the industry believed that it was caused exclusively by deliberate attacks on satellites. This meant, of course, that all efforts and initiatives prior to that were aimed at reducing attacks or dealing with resolving interference when they happen. We know from experience that this is one of the hardest types of interference to resolve, so unsurprisingly, very little headway was made.

Therefore, having not made much headway in reducing interference in 2007 and 2008, the then still SUIRG decided to find out exactly what was happening and collected data from satellite operators. The results were surprising. It turned out that less than 1% of interference was deliberate. Of the remaining cases, half was caused by VSATs not working properly and the other half by equipment failure and human error. Data is vitally important to help us understand the landscape. This year, we are hoping to repeat this research to properly examine how and if that has changed, although I suspect the percentage split will be similar today.

Naturally, understanding these causes made it possible to develop a much more targeted approach to resolving interference. It brought about many initiatives that have started to have some effect on the problems. This included some from other groups, such as a



Turning 20 this year, the Satellite Interference Reduction Group (IRG) is continuing its education efforts to eradicate interference in satellite transmission.

focus on training and equipment type approvals from the Global VSAT Forum (GVF). Both are crucial to reducing interference through human error and poor equipment.

The focus for IRG has been on technology and innovation to produce better tools and keeping the focus on using automation technology to reduce the human interaction needed, and thus reducing the risk of human error.

Technology milestones

Carrier ID (CID) is one of the most effective ways to reduce interference, as it means that when interference occurs, and it will, you can easily see where it is coming from so that steps can be quickly taken to resolve it. I was involved at the very beginning with developing the original CID technology. Comtech EF Data went one better by developing it in a way that the carrier information could be carried resiliently under the noise floor.

Crucially, this meant services no longer need to be interrupted to check the ID. With that technology now available, I wanted to ensure firstly that all manufacturers were implementing CID in all products and that they were using that new version. Therefore, my first push when I took over as executive director in 2011 was to see Carrier ID become a standard. After many meetings and much pushing, we managed it and

now all new modulators and encoders come with the new CID technology. The next task is to have it switched on as default so that a user must actively switch it off if they do not need it, rather than the other way around.

The other major technology milestone was with VSAT interference, something that is widely reported to account for the largest percentage of downtime due to interference. The main problem has historically been the lack of a way to identify the interferer. To this end, the SatGuard solution from Kratos has revolutionised this area and operators have reported time to resolution has dropped from hours, weeks, months to, in many cases, a matter of minutes.

And, most importantly, our members and other suppliers have been adding more resilient technology to mitigate many forms of interference automatically and built this into their products based on the awareness gained from the group's work. This has been truly astounding.

So, what's next?

The past 20 years has been eventful and we have certainly made some considerable headway, both in terms of raising the awareness of interference and in terms of encouraging technology developments that go a long way to eradicating the problem. Now, with more complex communication systems

“Carrier ID (CID) is one of the most effective ways to reduce interference, as it means that when interference occurs, and it will, you can easily see where it is coming from so that steps can be quickly taken to resolve it.”



— Martin Coleman, Executive Director, Satellite Interference Reduction Group and an APB Panellist

soon to become the norm, we are looking into how machine learning and artificial intelligence (AI) can help us better manage these complex networks of the future. If used well, these technologies

are likely to improve the overall efficiency of satellite communications, making for error-free and cost-efficient processes and workflows, with the added benefit of significantly reducing interference. **APB**

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Over the years GMV has had the chance to work with space agencies, satellite operators and satellite manufacturers all round the world, furnishing them with systems, products and support services. It has by now become one of the world's top suppliers within the sector. Our space applications and systems are now meeting the needs of a continually growing community of users in different activity sectors.



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Satellite growth in Asia driven by HTS

Sjoerd De Clerck, Newtec's vice-president sales, Asia-Pacific, shares with **APB** how the company's key strategies in Asia is evolving with technologies such as HTS.

Can you share with us your plans to expand Newtec's business in Asia in 2018, and what specific opportunities do you see in this region?

Sjoerd De Clerck: The continued growth of High Throughput Satellite (HTS) is opening up new opportunities and capabilities in numerous vertical markets across Asia-Pacific. This is especially true for areas such as mobility and maritime, as the need for data to be delivered everywhere will see 'Communications on the Move' becoming increasingly key. This includes In-Flight Connectivity (IFC), which we expect to see really take off following the first commercial flights featuring Panasonic Avionics' Newtec-designed modem for IFC in 2017.

Additionally, as governments continue to enforce Universal Service Obligations (USOs) for connectivity in rural areas, satellite over cellular backhaul is enabling mobile operators to bridge the digital divide and we predict this area will continue to grow. Our Newtec Dialog multi-service platform was deployed by several major operators to provide cellular backhaul

in 2017, with some networks preparing to deliver 4G services, as well as 2G and 3G connectivity.

Regionally, India will be a priority for Newtec. This follows our expansion in 2017, which saw various strategic moves to fuel our growth in APAC, including:

- Further investment in our customer service support with expansion of our Singapore team.

- Expansion of our geographical reach through new partnerships in Indonesia, South Korea and other countries.

- Continuous commitment to enabling community broadband in rural areas, including Indonesia.

All this contributed to our APAC business doubling in 2017, compared with the year before.

Would you like to expand on Newtec's strategy for HTS and how it is meeting the demand for the technology in Asia?

De Clerck: In the domestic sphere, Asia's vast land mass — which includes many rural and isolated areas — means terrestrial broadband is not always an option when deploying high-speed services. This makes HTS ideal for service providers looking to offer competitive broadband packages.

Furthermore, HTS' wide-beam feature allows service providers to deliver connectivity to a specific area or location, enabling them to tailor their data services — proving increasingly beneficial for Asia's aviation and maritime markets. This will allow those providers to offer new services for commercial markets, such as IFC, and meet increasing capacity demands in the maritime sector.

For HTS to succeed, the innovation in

“For HTS to succeed, the innovation in space must be matched on the ground and this drives Newtec's strategy.”

— Sjoerd De Clerck



In Indonesia, the world's largest island nation, satellites are providing the connectivity answers.

space must be matched on the ground and this drives Newtec's strategy. It also drives innovation in our product development, and last year, we unveiled new HTS-optimised DVB-S2X wideband products as part of our Newtec Dialog multi-service platform. Designed to support the massive scalability required by HTS networks, this hub architecture provides higher throughput and density in a robust, carrier-grade package. The architecture is already being used in several HTS projects.

What other technology trends do you expect to impact the satellite industry in 2018?

De Clerck: As viewing habits change, the broadcast landscape is shifting. In 2018, we expect further demand for 4K/Ultra HD (UHD) content, meaning broadcasters must efficiently make the most of their existing space segment. Newtec's high-performance satellite broadcast solutions are designed for this, enabling broadcasters to deliver more content at lower costs while maintaining high quality and — very importantly — reliability.

Throughout 2017, broadcasters reaped the benefits of these solutions. BBC News, for example, leveraged IP connectivity over satellite via our Newtec Dialog platform, which allowed news teams to deploy mobile solutions capable of transmitting video, voice, files and general broadband services. Newtec Dialog also played a key role in the World Solar Car race, giving the Belgian Punch Powertrain Solar Team a global stage by enabling interviews and race footage to be streamed along the race track, even in the Australian Outback.

Another undeniable change is the rise of bandwidth-hungry broadband

applications such as over-the-top (OTT) services — for which China is expected to be the main driver of revenues across the globe.

The Internet of Things (IoT) and 5G will also bring change and opportunity. For IoT, we believe satellite will play a key role as the long tail of the connectivity graph with satellite nodes serving as injection points to the cloud-based services IoT can deliver. For more advanced IoT applications such as connected cars, satellite is likely to act as a complementary connectivity tool. Connected to this is 5G, which is poised to radically change the connectivity and service landscape in the coming years. Again, satellite will be part of the communications suite enabling this ubiquitous connectivity.

What drivers do you see in this region fuelling the satellite industry in 2018?

De Clerck: Throughout Asia, we see governments and regulators paying more attention to including the entire population in the economic boom Asia continues to enjoy. 'Connecting the Unconnected' acts as a driver for education, knowledge enhancement and information sharing, and forms the basis on which local entrepreneurship thrives.

We see this in Indonesia, the Philippines, Thailand, India and others in various formats, from USO for community Wi-Fi and mobile backhaul bringing sheer connectivity, over ATM and POS networks enhancing electronic trading, to remote education and healthcare networks benefiting the remote population, to connecting and integrating all government buildings and establishments for improved efficiency and higher security.

Satellite will continue to play a major role in these, and we are looking forward to another successful year! **APB**



An update on the video broadcast market

BY ALAN CRISP

The video broadcast market in Asia remains one of solid growth, with channel counts, capacity leases, and pay-TV subscribers on the up and up, albeit at less dynamic levels than have been seen historically.

At the same time, a number of headwinds will cause market erosion in East Asia, such as greater levels of competition with over-the-top (OTT) platforms and increased channel encoding. Simultaneously, increasing levels of disposable income by citizens in South-east Asia and South Asia mean that there is significant room for increase in demand with many new first-time subscribers paying for direct-to-home (DTH), cable TV and IPTV subscriptions.

NSR expects opportunities to be strong in the short term through to the long term, if you know where to look.

Growth recently, however, has been rather concentrated by a handful of players, with new platforms being broadcast in Asia, and especially in South-

east Asia seeing strong development in recent years. Much of this is coming from the opening up of countries such as Laos and Myanmar. The latter alone has seen multiple new platforms launched over the past couple of years, with several operators benefiting from multi-transponder contracts.

In addition, Indonesia especially, is expected to see some greater demand through the sheer size of the country and number of households getting a TV for the first time. However, this market also sees some saturation, with several DTH platforms operating in the red. The Philippines provides perhaps the best long-term combination of market size, economic growth prospects, and a relatively undeveloped pay-TV market.

In terms of technologies moving forward, top-down demand for 4K/Ultra HD (UHD) content — while being more prevalent in North America and Western Europe — is adding to satellite capacity requirements in Asia, in particular East Asia. Japanese public broadcaster NHK even intends to broadcast the

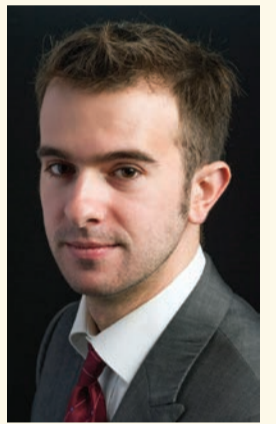
2020 Olympic Games from Tokyo in 8K. However, NSR does not believe that the enormous demand requirements for 8K content will result in opportunities across the video broadcast value chain elsewhere. On the other end of the spectrum, it is important to remember that the majority of channels are currently broadcast in standard definition in Asia, meaning there is significant capacity growth potential in the longer term.

Despite some gloom in some more-developed video markets, the very real value of satellite in terms of point-to-multipoint content carriage is not going away. The lack of high-speed connectivity for many residents in South-east Asia is resulting in limited forms of competition with OTT platforms like we have witnessed elsewhere, and increasing levels of disposable income are also driving subscribers to DTH and pay-TV content.

However, satellite operators and pay-TV platforms alike will need to enter the market sooner rather than later, as the window for new entrants is slowly closing as the region inches towards maturity. **APB**

“Despite some gloom in some more-developed video markets, the very real value of satellite in terms of point-to-multipoint content carriage is not going away.”

Alan Crisp is senior analyst at Northern Sky Research (NSR), an international market research and consulting firm specialising in telecommunications technology, with a particular focus on satellite and wireless networks, emerging technology and media applications.



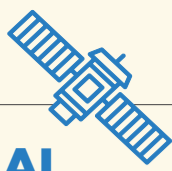
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GMV calls for new approaches to space technologies

Last year, GMV became a member company of the Eurospace association. Can you share with us an overview of the space industry in Europe, and what are the technologies and/or solutions you see relevant to the Asia-Pacific space industry?

Miguel Molina: Over decades, the space sector in Europe has reached a level of maturity that allows reliable access to space and fully operational programmes delivering services strategic for governments, and for answering the citizens' needs.

Satellite imagery and satellite communications (including localisation) have become the norm for a range of major applications, such as for meteorology; for disasters monitoring; for surveillance purposes; for providing localisation, navigation and cartography software and services; for emergency and/or secured communication, and for delivering connectivity everywhere (in-flight and to the most isolated places), just to mention a few.

Can you share with us GMV's plans in expanding into the broadcast and media industry, and what opportunities do you see in Asia-Pacific?

Molina: GMV is expanding its presence on the payload domain, particularly in terms of configuration, redundancy and capacity management. Today, operators are looking for the adaptation of the payload to the real and immediate user needs, and to be able to react faster in order to minimise the margins in the payload operation, and improve the final cost.

The versatility and flexibility delivered by the new-generation payloads design will be supported by our innovative Payload Control System (PCS), which enables the efficient operations of the payload from the ground while supporting a high degree of operations automation. The new payload concept will be able to include antennas electronically steerable and shapeable, geolocation capability, as well as an advanced Digital Signal Processor (DSP) stage with capabilities for channel selection, channel filtering and reprogrammable capabilities, including routing for any antenna and beam.

Miguel Molina, business development manager for space, GMV, details some of the trends the company is seeing in the satellite sector, and how GMV is continually re-inventing itself to better serve customers' needs.



What are some of the strategies GMV has developed for HTS, and what opportunities does HTS have to offer to the broadcast sector?

Molina: High throughput satellite's (HTS) main purpose is to provide higher throughput over smaller surface areas while offering lower cost per bit, which is today a major driver for telecom operators and service providers in order to be competitive.

The concept is also about looking for services not covered by the previous standard payloads, like the possibility to cover regions unserved or underserved by terrestrial technologies, in-flight connectivity, enhanced maritime communications, high data rates and high-bandwidth applications, and improved governmental services.

As indicated before, GMV is providing dedicated tools to manage how these types of payloads and services are configured and operated — minimising the margins and increasing efficiency.

At the 3rd ESA International Security Symposium last year, GMV's Julio Vivero pointed out that big data and security are the two new challenges for space. Can you elaborate on his opinion, and how will both big data and cybersecurity intelligence impact the space industry?

Molina: The explosion that we are seeing in terms of data availability from space systems, particularly from LEO orbits and Earth Observation satellites, is creating a real need in terms of data management for such an amount of information.

In Europe, only the Copernicus programme and the Sentinels fleet are achieving levels of Petabytes that are requiring a dedicated data management system, as it is the case today for banking or massive Internet applications. The public availability of this data and the easy availability of information is also creating the need for a powerful and reliable access for intensive data exploitation of this information in hundreds of applications providing useful services to final users worldwide.

Today, several institutions are developing the required infrastructure to manage this public information in Europe. The challenge in the near future will be to find a way to coordinate all this data sources and to provide reliable and powerful access.

This growing relevance of space-based services in our societies, although mostly unnoticed by citizens, has gathered attention from several types of attackers: from anonymous hackers to cybercrooks or hostile governments.

For a long time, the security over the network was not a real driver when designing a future space ground segment. More and more, however, the use of dual systems and the potential risk to suffer an external attack in the network are putting a new relevant requirement affecting the design of the network. We need to protect our systems against external attacks and we need to be able to manage in a proper way the data according to its qualification level. Again, the experience acquired in other markets — such as banking — is fully reusable and

should be adapted to the space domain.

However, not all space missions are equally attractive to the different types of potential attackers, neither would they be equally exposed to attacks. As an example, earth observation or military missions will gain more attention from hostile governments, communication missions will typically be more attractive for cybercrooks as long as they benefit from them, and virtually anything with a minimum notoriety will be a target for hackers.

What are some of the technology trends you are taking note of that will have a sustainable impact on the space industry in 2018?

Molina: These are exciting times for us. We are seeing several trends that will change how we approach space technologies, at a rate of innovation not seen in a long time. I would like to highlight the following ones:

- New payload concepts will show us the future evolution of communications systems.

- Integration of 5G is key and the satellite community should work with telcos to explore synergies for 5G, especially since connectivity is needed everywhere on a permanent basis, and when the failure of earth communication systems should be anticipated.

- The issue of sustainability in space is really crucial. In space, we have a growing amount of debris. There are several areas of improvement related to this topic, such as the identification and follow-up of the elements contributing to this debris, the removal and de-orbiting of the objects, and the definition of principles/rules, avoiding further proliferation.

- Constellations of hundreds of thousands of small, low-cost satellites are under deployment. In parallel, we are also defining new technologies and techniques for satellites manufacturing.

- The access to space is evolving to new concepts targeting relative lower costs, keeping the reliability for existing systems and new micro/small launchers and also enlarged/heavy versions.

- The massive use of electric propulsion (including orbit raising) is increasing the lifetime of satellites and reducing the cost at launch.

- The exploration of space is also becoming global. More nations are now within reach of space than ever before, while the influx of fresh capital is driving innovation and new technologies from the private sector. The possibility to fix permanent establishments in the moon or having a man walking on Mars seems to be achievable targets in the coming decades.

High Altitude Pseudo-Satellites (HAPs) are aircraft positioned above 20km altitude in the stratosphere for long-duration flights (defined in terms of months or years). These unmanned aircraft may be airplanes, airships or balloons offering advantages and complementary applications over satellites, terrestrial infrastructures and Remotely Piloted Aircraft Systems (RPAS) at relatively low cost. **APB**



GMV is seeing several trends that will change how space technologies are approached, at a rate of innovation not seen in a long time.

Staying MENA-focused, Es'hailSat eyes new opportunities in APAC

Ali Al Kuwari, president and CEO of Es'hailSat, shares with **APB** how the company has progressed since its establishment in 2010, and why satellite remains a key communications platform despite the emergence of OTT services.

Established in 2010, Es'hailSat has been primarily focusing on the Middle East and North African (MENA) region. What are the key services that Es'hailSat has been providing to the broadcast sector in the region, and what opportunities do you see in the wider Asia-Pacific region?

Ali Al Kuwari: Direct-to-home (DTH) is the key service we provide on our Ku-band capacity, both in the pay-TV and free-to-air (FTA) segments. beIN Sports, being our anchor customer in the pay-TV segment, is taking a large number of transponders on a long-term lease. Al Jazeera, Al Rayyan, Qatar TV and a host of other niche regional channels take up multiple Ku-band transponders for FTA DTH services.

We also provide playout services, compression, modulation and uplink services, along with capacity lease. The services include content transfer via online or fibre between playout facility, and uplink station for final distribution via satellite.

Our region of coverage is MENA, with services being offered via Es'hail-1 in the Gulf Cooperation Council (GCC), North Africa and Levant. The coverage area remains the same with the soon to be launched Es'hail-2, which will bring additional capacity to support exciting and new customers looking to grow their business within the region.

However, our goal has always been

to be a global player in the satellite space; hence, we see ourselves being active in South-east Asia, and other regions in the near future, by offering broadcast and telecommunications services. We are in active discussions with partners within the region, and we hope to conclude these partnerships, and launch our services over the next few years.

The broadcast industry saw the emergence of over-the-top (OTT) platforms, which have resulted in the shift in consumers' viewing habits towards non-linear viewing. In your opinion, how has this change in consumer behaviour impacted both the broadcast and satellite industries, and what other technology trends is Es'hailSat looking at in 2018?

Ali Al Kuwari: Non-linear viewing via OTT platforms is increasing around the globe. However, we see it as being complimentary to the existing linear channels on satellite, and do not believe the linear viewing habits of consumers will completely disappear due to the emergence of these OTT services. Satellite will remain as the primary platform for distribution of TV channels, especially news and sports channels, where viewership numbers, rather than reducing, are continually increasing globally. However, broadcasters will need to adapt with multi-platform and multi-device applications to cater for new consumer behaviour, where seamless transition for consumers, from one device at home to mobile devices while on the move, becomes a major differentiator. In this regard, satellite operators have started



Positioned at the 25.5° East location in geostationary orbit, the Es'hail-1 satellite is packed with Ku- and Ka-band capacities, providing services to the broadcast, telecommunications and broadband sectors.

working independently and together with broadcasters to provide these services.

4K/Ultra HD (UHD) channels will be another differentiator for the satellite operators, where bandwidth, quality and reliability become priorities for broadcasters and consumers. Satellite has a definite advantage over other platforms for distribution of these services. Technology and equipment to efficiently support these services for consumers are areas we will be focusing on in 2018 and beyond.

Es'hailSat has collaborated with Inmarsat to expand L-band services in Qatar. Can you share with us what role does Es'hailSat play in this partnership, and what opportunities does L-band have to offer to the broadcast sector, particularly in the Asia-Pacific region?

Ali Al Kuwari: The collaboration between Es'hailSat and Inmarsat is a strategic partnership for both companies to expand our product portfolios, and enter new markets. The partnership enables Es'hailSat to provide voice and data services using L-band in Qatar and surrounding areas, and add to the existing products and services in Ku- and Ka-bands currently

on Es'hail-1. For Inmarsat, Qatar is a new market, one which has low L-band voice and data penetration, especially in mobility services.

The L-band service offers quick deployment of connectivity for news crew and first responders in locations around the globe, especially in locations where cellular connectivity is poor, or where having standard ground equipment for satellite communications is not feasible. Lightweight and easy to set up, the L-band terminals enable even a one-man crew to be on site, and be transmitting live within a short period.

In Asia-Pacific where C-band is the dominant frequency, how do you see high-throughput (HTS) developing, and what are the drivers to encourage a widespread adoption of HTS in this region?

Ali Al Kuwari: C-band has been popular for video distribution and cellular backhaul across a wide region; this is especially true for high rainfall regions. However, with demand for services beginning to become very focused- and area-specific, HTS with smaller cell coverage compared to C-band becomes a viable option. HTS can be feasible in Ku- or Ka-band, depending on the region of coverage.

We see the demand for HTS capacity coming from consumer broadband, cellular backhaul, enterprise, government and mobility sectors. Some of the key factors for higher rate of adoption will be optimum coverage, high throughputs per beam, lower cost per Mbps, lower cost of terminals, traffic shaping and latency, among others. As we have seen over the past few years, the take-up of HTS capacity has increased as cost of ownership and price per Mbps comes down. We certainly believe the sectors mentioned above will adopt HTS services quicker over the coming years. **APB**

“Satellite will remain as the primary platform for distribution of TV channels, especially news and sports channels, where viewership numbers, rather than reducing, are continually increasing globally.”

— Ali Al Kuwari, President and CEO, Es'hailSat



How satellite service providers respond to disruption will determine their future

BY ROBERT BELL

The satellite ecosystem is made up of satellite operators, ground-based service providers and the customers they both serve, supported by technology providers and other vendors. In the past year, a wave of disruptive technology and market change has begun to challenge all of them. It includes new models of connectivity — high throughput satellite (HTS), middle and low earth orbit spacecraft. It is driven by the rising domination of software over hardware, customer demands for seamless global service, and the accelerating shift in how media consumers want their programming delivered.

As the CEO of one teleport operating company summed it up: “Everybody desperately wants to know where things are headed right now — and nobody knows.”

At the end of 2017, the World Teleport Association surveyed top executives of satellite service providers on the changes they were seeing in the industry and how they were responding to them. What market opportunities are they targeting and where are they investing their capital? What are their biggest obstacles to growth and the biggest threats to their survival? Their responses paint a picture of an industry sector that is facing disruption and, in many cases, disrupting their own operations by innovating up the value chain to meet new customer needs.

Where will growth come from?

The survey data allowed us to focus on the teleport business, whose primary market is the broadcast customer. The top five opportunities that they see in the market include supporting Internet of Things (IoT) applications, over-the-top (OTT) origination and distribution, cloud services, aeronautical service for passenger airlines and enterprise video and data networks. It is a very interesting list — because only two of those opportunities are in the broadcast space. That reflects a dim view of the future of their traditional business. Nearly half of the respondents (44%) of media-focused companies expect declines in direct-to-home (DTH),



Teleport operators have succeeded by resisting the temptation to get too far ahead of the market, too close to the bleeding edge of technology or too sure of the road ahead, according to the World Teleport Association.



terrestrial and cable TV origination, as well as distribution services.

The growth in OTT distribution needs little explanation. The viewing habits of the young — anywhere, anytime and on any device — are rapidly become the viewing habits of us all, particularly in Asian cities where mobile bandwidth is exploding. We dug deeper into the reference to cloud services, because media-focused operators have a different view of the future from their data-centric peers.

Media-focused operators see opportunities in providing their own cloud services, as well as integrating third-party providers, while non-media-focused companies see value only in third-party integration. TV content owners have been far slower to adopt public cloud services such as Amazon Web Services, and service providers are offering their own private clouds as solutions.

Where is investment going?

The media-focused service providers are directing today’s investment in OTT distribution, private cloud services for content owners, IoT and the integration of third-party cloud services into their offerings. Despite expected decline in their core business, however, 18% of respondents will continue to invest in terrestrial, cable and DTH distribution.

Looking forward three years, every broadcast service provider expects to increase investment in OTT, while nearly

90% will do the same in IoT and cloud services. However, 37% expect their investment in DTH to decrease in the next three years, while 17% said the same for distribution to terrestrial broadcast and cable TV systems.

What are their biggest obstacles?

Asked to name the one obstacle that presented the greatest threat to their businesses, executives saw danger in increasing competition from new companies entering the market, in addition to established competitors. At the same time, they foresee the need to invest a rising amount of cash in technology to meet their customers’ needs. These same factors, however, are likely to translate into greater choice, better pricing and more advanced offerings to broadcast customers.

Entrepreneurship lies deep in the DNA of independent commercial teleports. The sector was born when entrepreneurs seized the chance created by the US Open Skies policy to access satellites directly for the first time. From analogue to digital, one TV channel per transponder to hundreds, telex and fax to broadband and IoT — teleport operators have never stopped innovating.

In spite of that, innovation has always been about evolution rather than revolution. Teleport operators have succeeded by resisting the temptation to get too far ahead of the market, too close to the bleeding edge of technology or too sure of the road ahead. In 2017, they even faced a faster and deeper rate of technology and market change than ever before. The question that will begin to be answered in 2018 is whether the industry’s tried-and-true approach to innovation will continue to deliver success in the years ahead. **APB**



Robert Bell is the executive director of the World Teleport Association (www.worldteleport.org), which conducts research into the teleport and satellite industry, and offers a Teleport Certification programme to service providers. This article is based on data from the Teleport Opportunities 2018 study published in January.

As the CEO of one teleport operating company summed it up: “Everybody desperately wants to know where things are headed right now — and nobody knows.”



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Boxer teams up with V-Nova

Boxer, a UK broadcast solutions provider, has entered a new partnership with V-Nova. Under the deal, Boxer will represent V-Nova's line of Perseus-powered P.Link products for the growing contribution and remote production markets, whether over fibre or satellite, as well as provide infrastructure support for the V-Nova P.Link customer base. Jayson Chase, commercial director at Boxer Systems, commented: "V-Nova's Perseus-enabled P.Link encoder/decoder has demonstrated its ability to provide the best video quality per bit of any contribution intra encoder on the market. This allows our customers to lower costs by up to 70%, increase video quality, or increase the number of services in the same network link."

PFT hires new CSO



Caesar Sedak has joined Prime Focus Technologies (PFT) as chief security officer. He brings in-depth knowledge of IT security and cybersecurity strategies

and implementation, as well as his experiences in media and entertainment content security, anti-piracy and content distribution systems. Welcoming Sedak to the PFT team, Ramki Sankaranarayanan, founder and CEO, PFT, said: "As the CSO for PFT, he will leverage all of these skills and experiences to enhance PFT's overall leadership in content security, and ensure that the company provides trusted technology solutions for the media and entertainment industry."

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Live streaming brings viewers around the world – instantaneously

What would be a better way to discover other parts of the world now if it is not possible to be there in person? While video already enables viewers to travel around the globe without leaving the comfort of their homes, live video brings them directly to live events, in real time. **Josephine Tan** discovers how live video streaming is opening up new broadcasting opportunities.

People love watching TV, undoubtedly, as it is a fascinating form of entertainment for them to temporarily escape from reality. But in the 21st century, the term "watching TV" is being entirely redefined.

While TV itself still remains as the black box sitting in our living room, the programmes it has traditionally been transmitting can now be delivered across a wider variety of media — ranging from smartphones to tablets, as well as smart TV sets. And with the advent of network mobility and advanced technologies, consumers can now access their favourite TV programmes and channels anytime, anywhere.

Streaming is one technology that can be used to enable the delivery of video across multiple screens. It involves the transfer of video data, as a continuous stream, via the Internet. From the end-user perspective, streaming allows them to watch the programme in real time, without the need to wait for the entire file to be downloaded.

Video streaming was thrust into the limelight in 2005, the year when YouTube was founded. Over a decade, the video streaming website has launched local versions in more than 88 countries, and can be accessed in 76 different languages. To date, according to YouTube, the service has garnered over a billion users — which is equivalent to almost one-third of all people on the Internet — generating more than one billion hours of videos being watched daily on the platform.

Following the acquisition by Internet giant Google in 2006, YouTube has been expanding its offerings beyond just video sharing. For instance, YouTube has introduced YouTube Red, a subscription streaming service that provides subscribers with an "enhanced, uninterrupted experience" across YouTube, YouTube Music,

“Deploying self-branded over-the-top (OTT) services are currently the most effective way to maximise the viewer experience, and build a more personal relationship with each subscriber while ensuring the broadcaster remains in control.”



— **Stefan Lederer, CEO, Bitmovin**

YouTube Gaming and YouTube Kids; and YouTube Live, a service that integrates live video streaming capabilities and discovery tools directly into the YouTube platform.

In an attempt to bring the YouTube experience to live TV, YouTube has launched a TV streaming service known as YouTube TV. Available as a paid membership service in selected cities in the US, YouTube TV offers live TV streaming from broadcast and cable networks — such as ABC, CBS, Fox, NBC and ESPN — alongside content from YouTube creators. The service comes along with a cloud digital video recorder (DVR) with "unlimited" storage limit, enabling subscribers to record as many programmes as they want.

Another social media platform, Facebook, has also tapped into the video space with the launch of Watch, a new video platform for shows to be streamed on Facebook. Available on the Facebook apps, desktop site and on TV apps, Facebook Watch consists of shows that are made up of episodes —

live or recorded — and follow a theme or storyline.

Although Facebook Watch is limited to a group of people in the US, Facebook has another live video streaming service that is available to the wider global community — Facebook Live. Using Facebook Live, users can create engaging conversations with viewers by fielding their questions in real time, and check out their live reaction to gauge how the broadcast is going.

Stefan Lederer, CEO of Bitmovin, tells *APB*: "Live-streaming offerings such as Facebook Live, Periscope and YouTube Live are distributors or syndicators of content produced by other content creators, often called 'social video' services.

"While these services are an important tool to increase reach and identify new viewers, they should not act as a replacement for a broadcaster's own live video delivery infrastructure. Used as an exclusive distribution channel, these services effectively strip broadcasters of their direct relationship with the viewer, and prevent them



With the deployment of Telestream's Wirecast live video streaming production software, students at Whitney High School are able to produce a 15-minute daily newscast, featuring news, sports and lifestyle segments.



With the advent of network mobility and advanced technologies, actions from the stadium can be streamed onto mobile devices in real time, bringing new monetisation opportunities for media companies.

from having exclusive control over advertising.”

In order for broadcasters to maintain rapport with their viewers, Lederer stresses that broadcasters must remain in control of their own distribution channel. He explains: “Deploying self-branded over-the-top (OTT) services are currently the most effective way to maximise the viewer experience, and build a more personal relationship with each subscriber while ensuring the broadcaster remains in control.”

Declaring that OTT is an “entirely different ecosystem” compared to traditional linear TV, Lederer suggests that OTT offers more possibilities when it comes to monetisation while creating a more dynamic product to enable broadcasters to engage with a more versatile audience.

Scalability is another area that is “radically different”, he highlights. “In the traditional sense, live broadcast is delivered across a few distribution methods, such as cable, digital terrestrial television (DTT), and satellite. However, there are millions of OTT-capable devices that broadcasters have to take into account when devising ways to take live video delivery from the TV to these new platforms.”

Lederer cites the example of the *Super Bowl*, one of the most viewed sports programmes on live TV, where the broadcast delivery infrastructure has to manage millions of concurrent viewers who are all expecting broadcast-like quality. In such a scenario where viewers have zero tolerance for poor viewing experiences, Lederer explains that the challenge can be solved through improved video optimisation and better compression of high volumes of data, to deliver broadcast-quality content to the viewer.

He continues: “Since the invention of TV, viewers have become accustomed to the linear, live nature of the medium — watching events as they unfold was synonymous with

TV itself. However, due to technical complexity and bandwidth limitations, the first generation of online video in the early 2000s was almost exclusively on-demand, losing one of TV’s most compelling attributes.

“Now, with video technology infrastructure providers, such as Bitmovin, broadcasters can provide live video content in an affordable and simple way — the same way TV was originally offered. Now that they have access to readily available tools, broadcasters are embracing live online broadcasting as a means to stay relevant within an increasingly crowded media landscape.”

New York-headquartered fuboTV is an OTT Internet TV service provider that focuses primarily on channels that distribute live sports. When building their video infrastructure, the fuboTV streaming team approached Bitmovin to provide a player that delivers broadcast-quality video experiences, and is capable of providing a consistent user experience across devices, premium content protection, and a flexible video encoding platform that does not tie them down to a specific hardware or cloud vendor.

As part of the deployment, Bitmovin provided fuboTV with a cross-platform video player, as well as cloud-based encoding and encryption via the Bitmovin Encoding Service integrated with BuyDRM. To maximise reach, the platform generates MPEG-DASH and HLS (HTTP Live Streaming) as streaming formats, while the digital rights management (DRM) systems from Microsoft PlayReady, Google Widevine and Apple FairPlay are used to secure content.

“Through our collaboration, fuboTV can focus specifically on subscriber growth while maintaining a streamlined workflow,” Lederer adds. “As our solutions and products are able to reduce

the complexity of online video streaming, fuboTV can invest its resources and efforts in its main business and core activities.”

However, there is a difference between launching OTT video-on-demand (VoD) services and live streaming services, Shawn Carnahan, CTO and co-founder of Telestream, declares. He explains: “Broadcasters deliver both services over the same infrastructure of unmanaged networks — they are subjected to the same networking issues that occur in the content delivery network (CDN) that broadcasters might not own themselves.

“If it’s VoD, the infrastructure might take around five seconds to buffer up without the consumers noticing. Whereas, if it’s a live streaming of an event, these issues are much more noticeable.”

This brings forth the importance of quality of service (QoS) monitoring, according to Carnahan, whereby broadcasters need to be certain that the content entering the delivery chain is of high quality, and be able to identify where the content gets degraded by service issues along its delivery path.

He continues: “The time has come for all broadcasters to apply forward-thinking strategies in the creation of their streaming infrastructure. New platforms, formats, standards and delivery mechanisms are being designed every day.

“Machine learning technologies are being developed today that will shape the content we deliver, and our monetisation options. Broadcasters’ infrastructure should be designed to respond and grow with their business plans.”

Another crux when it comes

Another crux when it comes to live event streaming is how the technology is able to enhance a broadcaster’s ability to be more competitive while generating more revenue.

to live event streaming is how the technology is able to enhance a broadcaster’s ability to be more competitive while generating more revenue, Carnahan adds.

“This is largely about targeting — adapting to micro-casting, where broadcasters take their primary live content and provide dozens of feeds, each of which is targeted at a very specific audience within a demographically and geographically diverse region,” he elaborates.

“Despite each country, or region, having different content requirements, moving from broadcasting a single channel to broadcasting dozens that are more narrowly focused channels enable better targeted advertising, which in turn provides a larger total ad yield for the broadcaster.

“Although each channel may only target around 1,000 subscribers, but when a broadcaster does this over hundreds of channels, they can generate really significant revenue streams.”

But to retain audiences, the key challenge is maintaining the quality of experience (QoE) across all the channels, Carnahan adds. “Today’s workflow tools can assure quality, and provide corrective tools.

“However, to achieve this level of quality efficiently, broadcasters need to employ intelligent automation. Automation is the difference between simply extending reach and actually creating meaningful monetisation opportunities.”

Telestream has provided its Wirecast live video streaming production software to Whitney High School, a public high school in Rocklin, California, USA. As

the core installation to the school’s broadcast studio and remote production workflow and distribution, Wirecast enables students to provide a 15-minute daily newscast, which features news, sports and lifestyle segments.

Titled *Unleashed*, the programme has expanded into a full-fledged community TV station, branded as WCTV19, which can be watched on the school’s campus-wide TV channel, as well as on two local cable channels, and on the school’s social media outlets.

Ben Barnholdt, teacher/director of the broadcast media programme at Whitney High School, says: “I want our students to develop classroom-to-career skills, and to get a feel for every aspect of broadcast news production in a professional atmosphere. This programme is designed to teach them broadcast journalism skills, and then apply those skills to actually producing all of the features and content that we need to make *Unleashed* a professional-looking newscast.”

WCTV19 streams to other online and social media destinations via ESE Networks, a CDN and Telestream partner. Using a specific hashtag, students are able to post pictures and video to social media, such as Twitter and Instagram, which the *Unleashed* team can aggregate. They capture on-screen graphics and video clips of interest from their social media sites using Telestream’s ScreenFlow. These assets are then moved into Wirecast, which keys them into the blue-screen background on-set.

“Wirecast enhances our show by allowing us to chromakey news graphics and videos into the blue screen behind the anchor desk. It also makes it easy to display CG text and lower-third supers, and add transitions and effects, all from a single user interface,” Barnholdt concludes. **APB**

Smart TV just grew smarter

How today's consumers feel when they view or interact with what they see on their TV sets, and whether the experience is engaging and easy to navigate, shapes the "TV Experience" today, suggested Aneesh Rajaram, CEO of Vewd.

Having had 15 years' experience in delivering over-the-top (OTT) software for some of the leading consumer electronics brands, Vewd now wants to help define the TV Experience with the launch of Vewd OS, an entertainment operating system designed for smart TVs.

Rajaram told APB: "We now see smart TV as being the most important platform for long-form content, because people don't want to watch movies and TV shows on their mobile phones.

"So, it makes sense that Vewd OS leads with video. Beginning

with a cinematic home screen, Vewd OS really immerses the viewer in video. Static app icons give way to dynamic thumbnails, giving users a real-time overview of content."

He also sees a shift from app-centric display to video-centric display of content in 2018, where viewers relate to content instead of just a static display of apps.

Opportunities also abound in Asia-Pacific, where technologies such as HbbTV emerges, as Rajaram explained: "This means there's an opportunity to provide a good linear TV experience blended with OTT content. Doing this now will give viewers a more cohesive and seamless viewing experience between all content sources."

At the heart of Vewd OS is Vewd Core, a software development kit (SDK) that provides an

HTML5 rendering engine. "Vewd Core is the industry's most chosen third-party HTML5 SDK. It's proven and shipped on tens of millions of devices, and comes with all the robustness and dynamism of core Web technologies," said Rajaram.

Vewd OS also enables the cloud-launching of apps, a "great win" for Vewd's content partners, he described. Rather than asking consumers to download an app, they can see video choices from each content company immediately, thus enhancing content discovery.

As to how artificial intelligence (AI) can further augment this process, Vewd is "watching the space closely", Rajaram said, before adding: "Already, Vewd OS lets consumers 'favourite' everything, from apps to specific videos. These are great signals we can use

when it comes time to recommend content."

Going back to HbbTV, he believes ad replacement is one of the most valuable benefits broadcasters can derive from the standard. "Because you can dynamically insert IP content into the broadcast stream, you can unlock all of the targeting and personalisation that comes with IP technology and this, of course, applies to serving more targeted advertising content."

Another of Vewd's key goals is to help broadcasters monetise their content. For instance, the company works with South Korean network Arirang to bring the latter's content to viewers all over the world through Vewd Snap, which allows content owners to create and submit a TV app in minutes.

Rajaram concluded: "Increasingly, broadcasters are con-



"We now see smart TV as being the most important platform for long-form content."

— Aneesh Rajaram, CEO, Vewd

tent owners who can monetise their content globally, and with our tools, any broadcaster can service their expatriate populations globally."

Verimatrix enhances OTT security with AWS as cloud partner

To enhance revenue for network-connected devices and services, Verimatrix has announced an API integration between its MultiRights OTT multi-DRM (digital rights management) security solution with Amazon Web Services (AWS) Media Services. The integrated solution is available through AWS Elemental MediaConvert and AWS Elemental MediaPackage.

The cloud-based AWS Media Services provides users with the capability to ingest, process, package and deliver content at scale. With this API integration, pay-TV operators, broadcasters and over-the-top (OTT) providers will be able to process and deliver video streams for broadcast TV and multi-screen devices with security, scalability and simplicity of cloud-based solutions, said Verimatrix.

Tom Munro, CEO of Verimatrix, told

APB: "Media companies have been changing their workflows by incorporating cloud technology to better streamline their workflows. We are also seeing a shift in how video is created and distributed. More video content is now being stored in the cloud, which is also a more efficient way for operators to share their resources."

Designed to unify rights management across networks and devices for OTT video delivery, MultiRights OTT is equipped with the ability to manage different DRM implementations across HLS (HTTP Live Streaming), Smooth Streaming, and MPEG-DASH content formats.

By installing MultiRights OTT, operators can deploy multi-network services with a platform that accommodates evolving security regimes and business models while ensuring differentiated multi-screen video



Tom Monrue, CEO of Verimatrix: The integration of MultiRights OTT with AWS Media Services strengthens Verimatrix's "cloud strategy for the broader workflow that includes analytics and watermarking".

services across all device categories. In addition, the multi-DRM solution brings set-top boxes (STBs), consumer devices and HTML5 browsers under a unified rights management security umbrella to enable "secure premium" content playback.

"We have been focusing on developing next-generation technologies," Munro added. "The Verimatrix MultiRights OTT API integration with AWS Media Services

strengthens our overall cloud strategy for the broader workflow that includes analytics and watermarking."

Live video workflows combine encoding using AWS Elemental MediaLive, and packaging, origination and encryption via AWS Elemental MediaPackage with MultiRights OTT. The AWS Elemental MediaConvert file-to-file video transcoding service can be implemented with MultiRights OTT, creating on-demand assets for both broadcast and multi-screen delivery.

MultiRights OTT can be deployed on-premises, as a virtualised instance hosted in-house by the provider, or via the Verimatrix Secure Cloud hosting and management service. The multi-DRM solution is also able to provide optional video watermarking and cloud-based analytics for premium video services.

TVT brings localised expertise to diverse Asian market

What do you think are some of the key requirements of broadcasters in Asia today, and what opportunities can you see for TVT in the region?

Jason Ho: Broadcasters of all types need to be sure that they are primed to deal with the fast pace of change, including the continuing rise of over-the-top (OTT) and on-demand, the growing internationalisation of TV across the region — and indeed across the globe.

As broadcasters expand their offerings to include more content for other regions and move into new markets, it is critical that they get their approach right at a number of levels. Aside from the obvious technical obstacles broadcasters face when taking their content with new markets, there are a variety of cultural

Jason Ho (right), the newly appointed vice-president of sales, Asia, TVT, explains to APB why TVT can play a role in the continued transformation of Asia's broadcast industry.



barriers and compliance challenges to surmount — and this is particularly true within APAC.

Preparing a broad range of foreign content for linear broadcast, OTT, catch-up TV and video-on-demand (VoD) requires a blend of cutting-edge technical processes and highly-skilled people with expertise that spans regulatory compliance, format versioning, craft editing and a host of other

content management skills.

Operators starting this journey need feet on the ground with long-standing experience to prepare content that meets local market expectations in terms of quality, tone, translation, presentation and reflection of native values — and that is where TVT comes in. We play a key role in providing expertise for global TV brands navigating the local regulatory environment and

cultural nuances.

Across APAC, TVT has solidified its position as a leading content services provider for major international players moving into new markets, with a strong presence from Australia to Indonesia to South Korea to Malaysia to Singapore to Japan and beyond, and we hope to continue this momentum across the region.

Delivering IP cloud technologies is one of TVT's key offerings. In your opinion, how is IP and cloud continuing to reshape broadcast infrastructures, particularly in Asia-Pacific?

Ho: The broadcast industry is rapidly embracing IP and adopting a more software-centric approach, and the journey towards virtualisation is no longer a case of if,

but rather when. However, given the fragmented nature of Asia's broadcast technology landscape, the adoption rate of IP technology differs vastly across the region.

Certainly, network infrastructure capacity and associated costs will make large deployment initially a challenge to roll out, but as this cost reduces you will see broadcasters move away from traditional baseband infrastructures. This has started to happen with early adopters, but is not widespread yet, mainly due to the evolution of standards and interoperability issues.

Nonetheless, broadcasters across APAC need to plan for the transition to IP-based systems after a careful consideration and analysis of how IP can best address their current and future needs.

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What price do you put on quality?

Sir Frederick Henry Royce, 1st Baronet of Seaton, OBE (27 March 1863 – 22 April 1933) was an English engineer and car designer who, with Charles Rolls, founded the Rolls-Royce company. He also once famously said: “The quality will remain long after the price is forgotten” — a very useful proposition for the world’s most expensive car.

This quote was very much born of the days where quality could be created, developed and assured almost single-handedly. In the broadcast world, those days are no longer with us.

In traditional linear broadcasting and transmission, for those of us old enough to remember, there was an off-air monitor and receiver in a master control room that allowed you to check that everything was working okay and generally speaking to see what people were viewing on their TVs at home. Simple, right? Wrong. Well, wrong in today’s environment anyway.

These days, at the very least, there are multiple set-top boxes (STBs), smart TVs, apps, mobile devices, smartphones and tablets to consider.

So my question to Sir Henry would be, how do you check the Quality of Service (QoS) and the Quality of Experience (QoE) on all of those devices especially as so many of them change every time there is a software or operating system update?

It is just not good enough any more to pump out content on an app and hope for the best. There is too much money invested and too much at stake.

The same applies to people pushing content

to the cloud and putting the responsibility for the quality of its delivery on to other people. This “model” worked when content went from a broadcast transmission tower straight to the home, with no steps in between. It no longer works when there are encoders, encode farms, content delivery networks (CDNs), as well as multiple networks, platforms and devices to consider and take into account.

There are millions of content owners out there that now include telcos, banks, healthcare companies and many, many other non-traditional broadcasters. They now sit alongside traditional broadcasters and want to know the content they put out is being received, received well and creating a good experience for the viewer.

So, Sir Henry, what is the answer?

Well, every single Rolls-Royce is tested for quality at every single step of its production process, not just at the end. This means every component, every part and every process “should” be flawless, resulting in a great product.

If we take that example and apply it to content and broadcasting, we get to companies like HeadSpin, Witbe and IneoQuest who essentially apply the same QoE and QoS quality controls and scripts to each part of the broadcast or transmission workflow.

In HeadSpin’s case, they run constant scripts

and tests across all Apple iOS and Android workflows, devices and networks, creating “end point” tests. Witbe runs similar test for STBs and IneoQuest puts probes in at the encoder that probes the whole transmission path.

The result? Well, by using services like HeadSpin, Witbe and IneoQuest, content owners and broadcasters can now test an entire workflow and experience before they send that content on to any device and via any platform.

This means they can now have even more confidence than they did in the old days of simple linear broadcasting that the QoS and QoE their users and viewers are getting is as near perfect as it can be.

So, Sir Henry, what price would you put on the viewer’s QoS and QoE for today’s content? I say, if we take care of them with the right tools for the job, it will not cost as much as a Rolls-Royce, but the viewer should at least feel the same as if they were driving one. □

PATRICK SO,

Director of Asia Operations, Magna Systems and Engineering.

He is also an APB Panellist and has never owned a Rolls-Royce.



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