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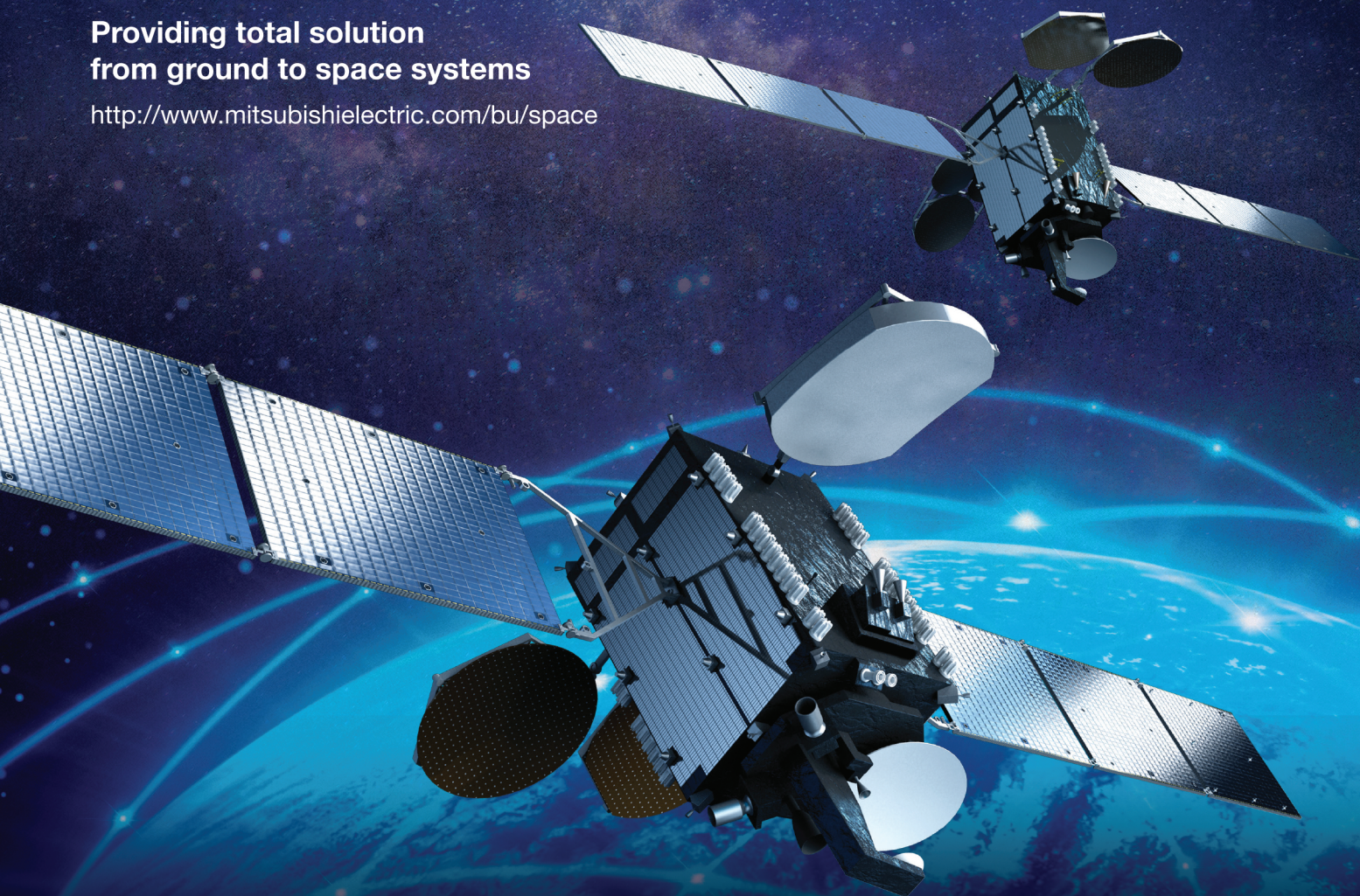
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Delivering specific content to specified viewers

At a time when viewing habits are changing and satellite broadband connectivity is rising, high throughput satellites (HTS) will gain greater traction as it can deliver more capacity than traditional fixed-satellite services. And equally important, HTS is also capable of delivering specific content to specified viewers, thereby meeting the growing demands for personalised content. Indeed, it will play a pivotal role in addressing OTT viewing and the accompanying bandwidth requirements. HTS will be a hit. Shawn Liew reports.

In an increasingly digital world, change — that of the most disruptive nature — is altering lifestyles and reshaping consumer behaviours. While there are reasons to be optimistic that linear TV will be around for a long time yet, there can be no disputing that TV and media content are now being insatiably consumed on over-the-top (OTT) platforms.

As this trend continues to grow, and as bandwidth-hungry video streaming services proliferate, many industries will be profoundly impacted, including quite possibly a repainting of the satellite supply picture.

HTS beams down on new satellite broadcast age

FSS wide beam broadcast distribution at C-band has, by and large, been a permanent fixture for the satellite broadcast industry for many decades. However, is this dominance about to come to an abrupt end?

Wide beam satellite capacity and dozens of transponder-satellites of yesteryear face “enormous pricing pressures” across a number of verticals. From 2015 to 2025, widebeam revenue is expected to drop by over US\$1.25 billion, predicted Northern Sky Research (NSR) in its *Global Satellite Capacity Supply and Demand, 13th edition* report, published last July.

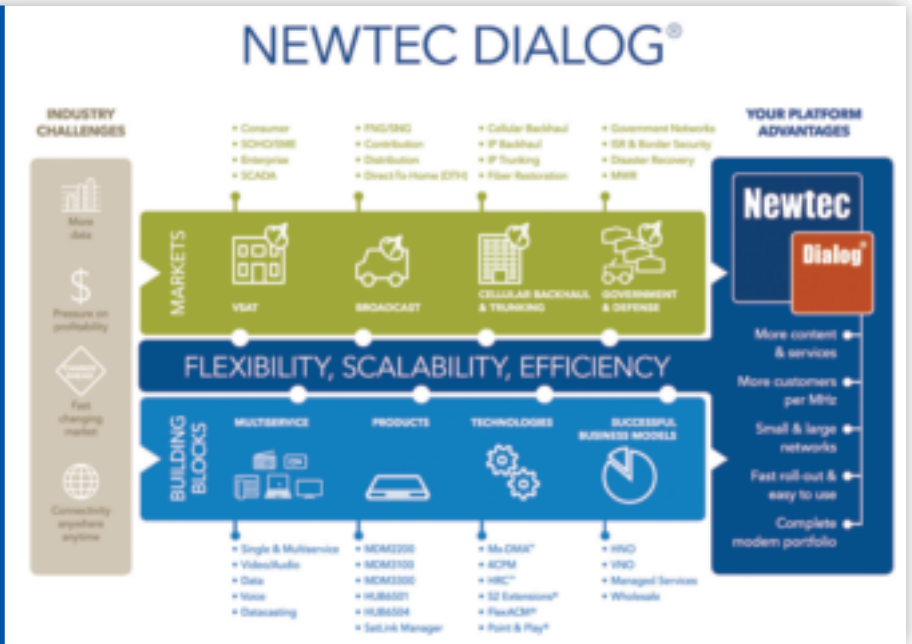
However, with HTS, the satellite industry will enjoy a renaissance of sorts. Over the same period, more than \$7 billion in new revenues will pave a growth path for operators to pivot towards new business models and new ways of selling satellite capacity, according to NSR.

Another consulting and research firm paints an equally rosy picture for HTS. Driven by a deepening market shift towards bulk capacity leasing and rapidly increasing data usage per end-user,



Many satellite operators today are ready to support HTS applications. However, they are not in a hurry to neglect more traditional C-band applications. The Eutelsat 172B satellite, for instance, hosts a C-band, Ku-band and HTS payload that will allow multiple needs to be addressed.

Enabling operators to make the most of HTS opportunities: A new software release for Newtec Dialog, a multi-service satellite communications platform, is equipped with features designed with HTS innovations in mind, including DVB-S2X on the forward link, Layer 2 bridging and a protocol to enable communication with antenna control units for beam switching.



Euroconsult estimates current HTS systems (numbering nearly 100) to be worth in excess of \$17 billion, with another 123 HTS systems to be launched over the next decade.

Projecting these figures in the *High Throughput Satellites: Vertical market analysis and forecasts* report released last March, Euroconsult expects the global HTS capacity supply to more than quadruple from 680Gbps in 2015 to nearly 3Tbps by 2020. In terms of market value, HTS capacity lease revenues are predicted to jump from \$1.1 billion in 2015 to more than \$4.9 billion by 2024, generating more than \$26 billion in aggregate revenues over the period.

While mainstream broadcasting is likely to remain on conventional wide beam satellites, specific applications within this market might find HTS to be advantageous, said Sjoerd De Clerck, vice-president, sales, Newtec.

Describing a trend towards multi-service networks, he said: "The increasing consumption of content on any device, at any time, forces broadcasters to exchange content in various, sometimes multiple, formats across different transmission channels."

With its ability to provide multiple, polarisation/frequency diverse, contiguous, narrow spot beams with Ka- and Ku-band footprints, HTS offers broadcasters the opportunity to deliver specific content to specified viewers, in turn addressing the demand for personalised content, added De Clerck.

HTS, as with any emerging technology, will be faced with certain constraints. In Asia-Pacific, because of spectral limitations and licensing regimes, HTS services are predominately provisioned in either Ku- or Ka-band. This, in itself, spawns expensive ground segment hubs at multiple-gateway sites to counter the complexities and effects of rain fade, a particularly pertinent issue in the region.

On the other hand, HTS will allow operators to maximise spectrum re-use and increase satellite throughput.

It will, however, not replace wide beam C-band in Asia-Pacific, or at least not for the foreseeable future, suggested Tan Tian Seng, director of product and marketing at Singtel Satellite. "Wide beam C-band is still very popular in Asia, [because] it allows for wide area coverage, and is extremely

resilient to severe weather conditions like heavy rain."

And while Asian viewers are proving to be one of the most eager consumers of mobile content, Tan also correctly pointed out how direct-to-home (DTH) remains one of the most effective platforms to reach out to large and otherwise underserved populations across Asia-Pacific.

Asia – a land of opportunities

Besides continuing to serve as a highly efficient delivery platform, DTH is also supporting a highly lucrative market in Asia.

The cumulative revenue for the satellite communications (Satcom) ground infrastructure equipment market will surpass the \$12-billion mark in the decade from 2015-2025; Asia, in particular, will present the largest market opportunity currently and over the long-term, reports NSR.

Unit shipments of DTH receivers in Asia will grow at a CAGR level of 8.1%, with 2015's market base of 12 million growing to surpass the 26-million mark by 2025.

Lluc Palerm, senior analyst at NSR, elaborated: "DTH is the largest market where cumulative unit shipments will total 206 million.

"Growing demand in key markets such as Indonesia will drive growth boosted by the growing number of pay-TV households and rising income levels."

In revenue terms, the Asian Satcom market will register cumulative revenues of \$27.2 billion from 2015-2025. This surge will be mainly driven by DTH, which will account for \$19.9 billion, due to the "sheer volume" of DTH terminals to be shipped in this time frame.

Satellite operators and service providers are apparently recognising the potential opportunities in Asia-Pacific. Eutelsat, for instance, is continuing to scale up operations in the region.

In April this year, the Eutelsat 172B satellite will be launched as a long-term replacement for Eutelsat 172A. Hosting a C-band, Ku-band and HTS payload, Eutelsat 172B will provide more capacity and coverage, extending reach in China and Pacific Islands.

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Mitsubishi Electric's track record is extraordinary: since the late 1960s, the company has participated in about 560 satellite or space exploration programs as prime or major contractor, in Japan and around the world. Today, Mitsubishi Electric enjoys global recognition as a qualified GEO commercial satellite manufacturer, and appreciates its clients for selecting its flagship DS2000 GEO satellite platform in international competitive bids.



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What goes on in a modern teleport? Serving as key broadcast and media hubs, today's teleports are equipped to handle multiple formats, and address evolving viewing habits and the transition to IP.

HD or 4K/Ultra HD (UHD) already being broadcast through Eutelsat's video neighbourhoods, Eutelsat's satellites are meeting the need for extra bandwidth, and are adapting to viewing on mobile devices with new services and technology partnerships, said Jean-François Fenech, CEO of Eutelsat Asia.

The convergence towards IP networks is also redefining the functionalities of teleports around the globe. SpeedCast, a global network and Satcom service provider, today operates 40 teleports globally, half of which belongs to the company. From these broadcast and media hubs, SpeedCast offers broadcast satellite services for video (uplink, downlink and turnaround services), local connectivity, high-definition playout, OTT streaming and disaster recovery services for media customers.

The company's acquisition of ST Teleport last year — now named SpeedCast Singapore — reaffirms SpeedCast's commitment to providing broadcast and media playout

services in Asia-Pacific, said Pierre-Jean Beylier, SpeedCast's CEO.

"Regardless of whether it is in HD, 4K/UHD and even 8K, our teleports and networks are future-proofed and ready for any technological advancements because we can transmit in any format or any bandwidth speed required," he added.

As for more content and live TV being streamed over IP networks, operators need not worry, Beylier assured. SpeedCast's teleports are designed, for instance, to take the signal from a satellite downlink, or from an incoming fibre link, and transform the quality, resolution and coding type to transmit it over the Internet using IP.

Gearing up for the future

A future increasingly defined by digitisation, virtualisation and the Internet of Things (IoT) will continue to delight and astound us in equal measure.

Technological advancements will be rapid, and may increasingly dictate many aspects of life as we know it. Consumption of media and TV content will continue to deviate — partly, if not completely — from traditional TV platforms.

Within the satellite broadcast ecosystem, HTS can potentially play a pivotal role in addressing OTT viewing, and the accompanying bandwidth requirements. But as long as broadband infrastructures are not built to support these services, DTH will sit comfortably as one of the most effective platforms to deliver content to mass audiences. HTS, for the moment at least, will have to be content with playing a supporting role, albeit an important one.

Competition from terrestrial networks, low earth orbit and medium earth orbit constellations, and even HTS, may also start a race to lower "cost per bit", suggested Yasunori Kamochi, general manager, Space Systems Division, Mitsubishi Electric Corporation.

Having been in the space technology developing sphere since the 1960s, the company believes that the only way for service providers to stay relevant and competitive in an increasingly competitive marketplace is to re-invent themselves as a "one-stop solution" provider.

He illustrated: "As a 'one-stop solution' provider, we are able to provide service from start to finish, including case studies on your payload before the project start, design, manufacture, assemble and test the satellite in-house."

For all that technology delivers, and continue to promise, Yasunori may have touched on a salient point often overlooked: the best and most efficient way to overcome technology advancements and its implications — positive or otherwise — is by finding the right partner who can help you design a roadmap to a successful future. **APB**

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As Asian broadcasters move to IP-based systems, interoperability is one of the biggest issues facing key technology decisions. And with many standards being proposed by manufacturers and organisations including AIMS, ASPEN, NMI, NDI and SMPTE, the goal of the Broadcast IP Inter-Op Lab is to show what is working in IP today and highlight interoperability between different manufacturers.

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Making OTT deliver on its promise

The explosive growth of online media is challenging the business model of broadcasting and cable television. Robert Bell, executive director of the World Teleport Association (WTA), tells **APB Satellite Special** what satellite service providers are doing to help their customers in the media & entertainment industry to adapt and prosper in this new world.

What are the trends shaping the future of online programme distribution?

Robert Bell: The venture capitalist and Netscape founder Marc Andressen likes to say that “software is eating the world”. He means that the accelerating technology revolution may still need hardware — but it is software that ultimately provides the value, while the hardware becomes increasingly a commodity.

There is no better example of this trend than online or over-the-top (OTT) TV distribution. It is quickly eating the world by delivering high-quality video to any device over the public Internet. This is the same content that has always travelled through a TV or set-top box (STB) over pristine, custom-engineered series of fibre, satellite and coaxial networks or transmission towers.

It is also eating a hole in the pocket of content owners. Nearly every channel is compelled to make its content available through an Internet-based service but those services do not offer the revenue model that has made broadcasting such a successful business. Specifically, advertising online is still a matter of trading linear dollars for non-linear pennies.

Fortunately, a lot of good work is going into solving this problem, and much of it takes place within the teleport industry, whether it is the service provider on the ground or the technology partners they work with. Teleports are the plumbers of the B2B transmission business. They are the gents to call when your pipes spring a leak — and the advertising pipe is definitely leaking.

What are teleport operators doing to solve the OTT advertising problem?

Bell: There are two fundamental problems that get in the way of the advertising model translating properly into OTT. The first problem has to do with encoding and compression of the video.

A finished programme is assembled and made ready for playout. It is ingested into a content management system, where it is encoded for security and compressed to reduce the amount of bandwidth required for distribution. The problem is that, once it is inside those digital “containers”,

With IP media devices, metadata is king... Metadata is already heavily used in production, post-production and distribution, and it is what lets automation systems assemble programmes on-the-fly from assets in a content management system.



Teleports are the plumbers of the B2B transmission business - they are the gents to call when your pipes spring a leak.

the management and distribution systems can no longer access the information that allows frame-accurate clips of the file.

The ability to add or change adverts and make other customisations to the file depends on being able to find precisely where a sequence starts and ends. Take that away, and you risk having programming stop and start in the wrong places whenever you try to do something with the file other than just play it in its entirety.

Encompass Digital Media is a teleport operator headquartered in the US with a major facility in Singapore. Encompass has worked with technology vendors to create a service called Channel Mark. It can provide industry-standard markers defining exactly where sequences start and end that are accessible even within a compressed and encoded file.

How does that help solve the problem?

Bell: Channel Mark, and similar innovations by other teleport operators and technology companies, make it possible to automate what is currently a laborious manual process.

That is huge when it comes to online, because it creates



the opportunity to localise and ultimately personalise advertising based on the viewer's location, cookies and other data available from IP devices. It allows longer programmes to be broken automatically into clips for repurposing across the Web. You no longer have to start from the original programming and manually build what is needed for each online application. Instead, you can work from the same stream packaged for linear broadcast.

What is the second problem?

Bell: With IP media devices, metadata is king. If you are not familiar with that buzzword, metadata is data that tells you about other data. It describes the content of a file, how the file is structured, when it was created and so on. Metadata is already heavily used in production, post production and distribution, and it is what lets automation systems assemble programmes on the fly from assets in a content management system.

The problem is that metadata frequently does not survive the compression and encoding process in usable form that complies with industry standards. So again, you have to go back to the original uncompressed programme and manually build what you need for OTT. Otherwise, there is a serious risk of poor performance in OTT distribution.

What is the solution?

Bell: Technology providers including a small US firm, Crystal, have developed software that automatically analy-

ses linear programme files for their metadata, corrects errors and fills in fields to ensure that the clip being put online does what it is supposed to do.

Having the right metadata not only eliminates manual work and improves performance, but it is also vital to ensure that advertising is inserted and that you can verify that fact for the advertiser. It is also where the money comes in.

There is going to be a great deal of innovation in this space in the next few years, and broadcasters should keep alert to developments that can help turn those non-linear pennies into a meaningful return-on-investment (ROI). **APB**

“Online or OTT TV distribution is quickly eating the world by delivering high-quality video to any device over the public Internet.”

— Robert Bell,
Executive Director,
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Eutelsat scaling up in Asia-Pacific in 2017

By Jean-François Fenech

Eutelsat has been progressively scaling up business in Asia-Pacific and the pace is set to accelerate in 2017. In 2012, Eutelsat bought the GE-23 satellite and the orbital rights at 172 degrees East from GE Capital. The satellite was renamed Eutelsat 172A and integrated into Eutelsat's global fleet. Eutelsat 172A is the bridge between the Americas and Asia and provides complete coverage of the Pacific Ocean region.

This milestone complemented the launch of Eutelsat 70B, a satellite with dedicated Asian coverage and cross-strap capabilities between Europe, Africa and Asia. The combined footprint of the two satellites provides complete coverage of Asia-Pacific, particularly for data and mobility applications.

In a context of unprecedented growth of the Asia-Pacific mobility market, Eutelsat is preparing to replace Eutelsat 172A in order to

bring additional features to the 172 degrees East position. Eutelsat 172B, an all-electric high-performance satellite (hosting a C-band, a Ku-band and a high throughput payload), will be launched in April this year and enter into service in the autumn. It will have more capacity and more powerful coverage that will benefit maritime users and will extend reach in China and Pacific Islands.

Eutelsat 172B will also feature a high throughput Ku-band payload specifically

designed for in-flight broadband, with multiple service areas optimised to serve densely-used Asian and trans-Pacific flight paths. This new payload will be the first customised for in-flight connectivity over the Pacific Ocean Region, delivering an overall throughput of 1.8Gbps to an underserved market set to enjoy sustained growth over the coming years.

Panasonic Avionics Corporation, one of the fastest-growing providers of in-flight entertainment and communications, has signed

a long-term agreement with Eutelsat for this capacity and will also use regular Ku-band capacity for live TV.

In addition to transforming the in-flight connectivity and live TV markets for trans-Pacific flights, Eutelsat will leverage Eutelsat 172B to offer improved performance and coverage to fixed and mobile customers and serve fast-growing video markets.

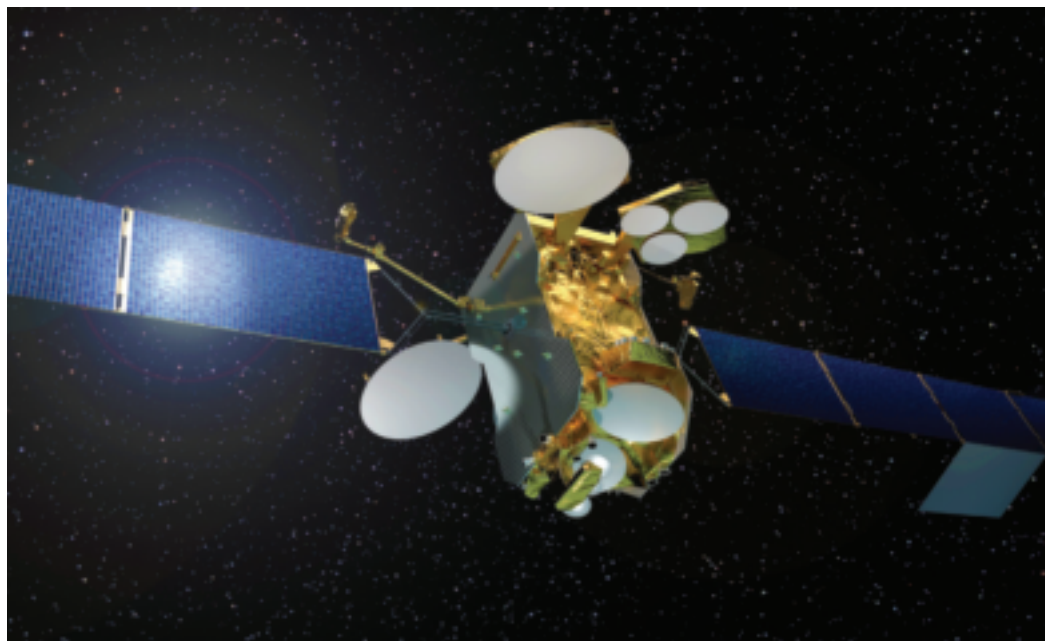
Eutelsat is committed to leveraging its capacity portfolio and teleport connectivity to take Asian clients wherever they need to go. In the video market, more than 200 Asian channels broadcast through Eutelsat's video neighbourhoods that reach into homes in Europe, Africa, the Middle East, Russia and the Americas.

As the face of the broadcast market evolves, from SD to HD and beyond to 4K/Ultra HD (UHD), Eutelsat's satellites are meeting the need for extra bandwidth and are adapting to viewing on mobile devices with new services and technology partnerships.

This is one of the benefits of being a global player: Eutelsat can bring solutions to customers, whenever and wherever they want to expand and share its global expertise and experience locally to, so that the market for digital services can continue to evolve and thrive. **APB**

“As the face of the broadcast market evolves, from SD to HD and beyond to 4K/Ultra HD), Eutelsat's satellites are meeting the need for extra bandwidth and are adapting to viewing on mobile devices with new services and technology partnerships.”

— Jean-François Fenech, CEO, Eutelsat Asia



An artist's view of the Eutelsat 172B satellite, which is scheduled for launch this April. Hosting a C-band, a Ku-band and a high throughput payload, Eutelsat 172B will replace Eutelsat 172A to bring additional features to the 172 degrees East position.

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Singtel Satellite ready to support hybrid broadcast

2016 was an award-winning year for Singtel Satellite. APB asks Tan Tian Seng, Director of Product and Marketing from Singtel Satellite, the key behind the company's success, and how he views issues such as HTS.

2016 saw Singtel named as the Satellite Operator of the Year at the Asia Communications Awards 2016; it also garnered the VSAT Service Provider of the Year 2016 award. In the face of increasing competition, what are the key factors that are keeping Singtel as one of the leading satellite service providers in Asia?

Tan Tian Seng: We have the privilege of having a strong telco parentage with the capability of integrating terrestrial and satellite networks to provide end-to-end solutions, in addition to value-added services such as cloud and cyber security solutions to achieve the competitive edge.

Customer service is absolutely the most important part in any business. At Singtel Satellite, listening to our customers and offering excellent customer service is the mantra we live by. Every issue raised by customers is treated with care and handled properly.

Having streamlined our fault management processes with the use of integrated FRMS (Fault Reporting Management System), customers can be assured that our extended service team, made up of customer service officers and technical officers, share the same system with full visibility of all tickets raised by customers.

This enables faster, better coordinated and more consistent responses to customers' queries, which helps to speed up incident resolution.

We constantly upgrade our infrastructure as we understand that enterprises undertake different business initiatives in their quest for superior business outcomes. Enterprises need an experienced provider to deliver superior service experience.

We also understand that businesses today need innovative, customised solutions that drive productivity and enhance operational efficiencies. Being a satellite ICT service provider, besides providing reliable satellite connectivity, our value-added services have been well received by customers.

For example, shipping companies experiencing costly communication at sea and finding it difficult to manage due to lack of IT expertise on board can look to Singtel AIO (All-In-One) Smartbox and mobile app to address their issues.

Singtel All-In-One ("AIO") SmartBox is a centralised management box installed on board vessels for remote monitoring and control. Singtel Mobile App provides fast and easy access to contact list and multimedia messaging; and importantly, it overcomes the challenge of high communication costs.

For enterprises facing increasingly complex and persistent cyber-security threats, the need to have cyber-security protection is critical as disruptions from hacking and viruses via satellite transmission can have potentially

damaging effect to companies. The acquisition of US-based Trustwave, a leading specialist in managed security services, has strengthened our global cyber-security capabilities in North America and Asia-Pacific.

Enterprises will benefit from Trustwave's three main areas of services — threat intelligence, vulnerability management and compliance management, which are delivered through the unified cloud-based Trustkeeper platform, helping enterprises to protect their IT infrastructure, applications and networks.

How do you see Asia's HTS market developing in 2017, and will this diminish the importance of C-band satellite in the region?

Tan: We see that high throughput satellites (HTS) will increasingly play a pivotal role in growth across Asia. HTS is a technology that can be applied to Ku-, Ka- or C- band to maximise the spectrum reuse, and to increase the satellite throughput.

While there are certainly plans by various satellite operators for HTS in Asia in the coming year, we foresee that the take-up will be slow.

Widebeam C-band is still very popular in Asia. It allows for wide area coverage and is extremely resilient to severe weather conditions such as heavy rain. C-band is still the preferred choice for distribution and contribution feeds to cable head-ends and in some instances, direct-to-home (DTH) operations.

Hence, while HTS is expected to grow in importance in the coming year, especially in the data segment, widebeam C-band is expected to continue to play an



“C-band is still the preferred choice for distribution and contribution feeds to cable headends and in some instances, direct-to-home (DTH) operations.”

**— Tan Tian Seng,
Director of Product and
Marketing,
Singtel Satellite**

important role in the broadcast segment.

What do you think will be the buzz word for the satellite broadcast industry in 2017, or will any specific technology take centre stage?

Tan: The broadcast industry has now transformed into “anytime, anywhere and any device” availability of content for consumers.

For such an era to happen “fast and furious”, there is a need to expand Internet connectivity and for broadband infrastructure to be readily available.

Hence, the buzz word for the broadcast industry will be “hybrid”. Broadcasters will be looking for satellite operators who are able to offer satellite and fibre connectivity at the same time. It will change the way how content is being consumed and distributed to meet the exponential demands of viewers. **APB**

Broadcasters will be looking for satellite operators who are able to offer satellite and fibre connectivity at the same time.

Mitsubishi Electric aims to be a 'one-stop solution' provider to stay relevant and competitive

Having been a space technology developer since the 1960s, Mitsubishi Electric remains committed to international space development and satellite construction. Yasunori Kamochi, General Manager, Space Systems Division, Mitsubishi Electric Corporation, shares more with APB.

One recent key trend in the satellite communications/broadcast industry is high throughput satellites (HTS). How do you see this trend developing in 2017, particularly in Asia-Pacific, and can you share with us what HTS capabilities Mitsubishi Electric is offering its customers?

Yasunori Kamochi: We think that the trend for HTS will continue to grow in 2017, and into 2018. We have been receiving a lot of interest from our customers — not only in Asia-Pacific, but also in the Middle East and so on — on future plans for their HTS satellites, and this number has increased over the past few years. We believe that growth on throughput for video, cellular backhaul and airline connectivity will continue based on strong demand in the Asia-Pacific region.

We have provided HTS satellites for our customers since 2014, and we are able to propose multi-beam HTS satellites with throughput over 40Gbps. We are also able to provide an RF channelliser developed in-house, which is capable of changing the bandwidth of each beam to optimise its throughput and maximise the satellite's potential and flexibility, at less cost.

We are currently developing an in-house digital channelliser, which will enable even more flexibility for our customers to cope with ever-changing market demands.

What are some of Mitsubishi Electric's key strategies for

Asia-Pacific? For instance, you offer the D2000, the company's flagship satellite bus. How does this help your customers in the region address emerging technologies such as 4K/ Ultra HD (UHD) and satellite broadband IP?

Yasunori: Our strategy is to provide our customers with more power and a more flexible payload, at less cost and lead time based on the DS2000 heritage. The DS2000 has a long successful history as a geostationary satellite platform since the early 2000s, with a very good track record in orbit.

We have recently enhanced the power capacity of DS2000 from 14kW to 18kW and introduced a hybrid propulsion subsystem, which will contribute to satellite fuel mass reduction. This enhancement will provide more power and capacity for 4K/ UHD payloads.

We are planning the next enhancement of DS2000, which is to increase the power capacity up to the 25kW class, and the introduction of an all-electric propulsion subsystem, which we hope to complete in the near future.

We believe that these enhancements will enable our customers to choose the right platform based on their payload needs. Combining our payload solutions with RF channellisers or digital channellisers, we will be able to propose satellite solutions that will provide an optimum combination of payload throughput, cost and lead time.

What are the main challenges

that will be facing the satellite communications/broadcast industry in 2017, and what opportunities do you think Mitsubishi Electric can find in an increasingly competitive marketplace?

Yasunori: We believe that there will be an increase in pressure to lower the "cost per bit" due to the competition from terrestrial networks, LEO (low earth orbit)/ MEO (medium earth orbit) constellations or even from HTS satellites providing wider coverage.

To stay relevant and competitive in this market, we believe it is important to be able to provide a "one-stop solution" that our customers can count on, as well as provide competitiveness in the quality, lead time and cost.

As a "one-stop solution" provider, we are able to provide service from start to finish, including case studies on clients' payload before the project starts, design, manufacture, assemble and test the satellite in-house.

We are also able to provide ground system integration, provide training courses for operators, technicians, launch site operation, in-orbit test, backup operation at our control centre and lifetime support by our support engineers.

We are confident that we will be able to provide satisfaction to our customers with our new DS2000 platform and its flexible payload, together with our concept of "one-stop service".

Besides the commercial communications satellite space,



“We have provided HTS satellites for our customers since 2014, and we are able to propose multi-beam HTS satellites with throughput over 40Gbps.”

— Yasunori Kamochi,
General Manager,
Space Systems Division,
Mitsubishi Electric
Corporation

what are the other key fields of business for Mitsubishi Electric?

Yasunori: We are also very active in the observation satellite arena. The ALOS-2 SAR and GOSAT-2 Green House Gas observation satellites are just two examples of what we offer in this area.

We are also manufacturing positioning satellites called QZS (Quasi Zenith Satellite). QZS is a seven-satellite system that covers the Asia-Pacific region and will be in service from 2017.

In the field of space exploration, we are manufacturing the avionics module of the H-II Transfer Vehicle (HTV), which controls the HTV's rendezvous with the International Space Station (ISS). We are also involved in JAXA's lunar lander programme, SLIM (Smart Lander for Investigation Moon), which is planned for a 2019 launch.

We are one of the leading manufacturers in Japan for radio and optical telescopes. We were responsible for the design and manufacture of the "Subaru-Telescope", which is a state-of-the-art, 7.2m optical telescope placed in Hawaii. We are also involved in the Thirty Meter Telescope (TMT) project, and we are able to provide the necessary products and services from ground to space. **APB**



SpeedCast grows into role as global communications and IT service provider

Global network and satellite communications service provider SpeedCast has picked up where it left off last year, with the recent acquisition of Harris CapRock. Pierre-Jean Beylier, CEO, SpeedCast, shares with APB the company's strategies to complete its transformation into a global communications and IT service provider.

SpeedCast's first major announcement of 2017 is the acquisition of managed communications company Harris CapRock. Can you explain how this acquisition builds on SpeedCast's goal to transform into a global communications and IT service provider?

Pierre-Jean Beylier: This acquisition will combine Harris CapRock's expertise with SpeedCast's, to create a global and diversified leader in remote communications and network services. Bringing the two organisations together offers many synergies, additional technical expertise, as well as augmented R&D. Our combined capabilities will provide greater scale, resulting in increased flexibility and resources for our customers.

Our people have always been at the heart of our organisation, providing high levels of support as a result of a customer-focused culture. As part of our expanded footprint, we now have 240 field engineers supporting customers in more than 100 countries.

What are some of the other key developments we can expect from SpeedCast in 2017, and how much of this focus will be placed on supporting broadcast services, particularly in Asia-Pacific?

Beylier: I predict that our customers will see an increased level of innovation from us in 2017, as we capitalise on our additional technical expertise!

SpeedCast operates in several key verticals, which are defined by our three major divisions: Enterprise and Emerging Markets (EEM); Energy; and Maritime.

“For Asia-Pacific specifically, ST Teleport (now SpeedCast Singapore) has been, and remains, integral to our broadcast and media playout offering in the region.”

— Pierre-Jean Beylier, CEO, SpeedCast



We have also strengthened our position in broadcast and media services through a targeted growth plan that includes strategic acquisitions. We now operate out of more than 40 teleports globally, with half of these belonging to us. This global infrastructure allows us to treat our teleports as media centres, in addition to data communications centres. We offer broadcast satellite services for video (uplink, downlink and turn-around services), local connectivity, HD playout, over-the-top (OTT) streaming and disaster recovery services for media customers.

For Asia-Pacific specifically, ST Teleport (now SpeedCast Singapore) has been, and remains, integral to our broadcast and media playout offering in the region. As part of our growth plans, this teleport will become a major media and broadcast hub.

Speaking of ST Teleport, which SpeedCast acquired in 2016, can you describe how a modern teleport works, considering

the number of formats and workflows broadcasters are utilising today? What can SpeedCast offer those involved with content creation and distribution in Asia-Pacific?

Beylier: The SpeedCast Singapore teleport will be further developed into a media and broadcast hub. We already provide broadcasters with a range of services — playout, accommodating and converting different broadcast formats, modifying and editing broadcast content, and using different coding techniques as an option to transmit in different formats.

In addition, we provide content over multiple mediums — Internet streaming, fibre, satellite and multi-protocol label switching (MPLS). We also provide satellite newsgathering (SNG) services, and this is especially useful for customers requiring our remote VSAT equipment for major live events taking place across Asia-Pacific.

In terms of the broadcast industry and major trends, we

are witnessing a convergence towards IP networks, with an increased amount of content and live TV being streamed over them. For instance, we can take the signal from a satellite downlink or from an incoming fibre link, and transform the quality, resolution and coding type to transmit it over the Internet using IP.

We provide a one-stop shop for both TV channel companies and content providers through a variety of mediums. Regardless of whether it is in HD, 4K/Ultra HD (UHD) and even 8K, our teleports and networks are future-proofed and ready for any technological advancement because we can transmit in any format or any bandwidth speed required.

In Asia-Pacific, where C-band has been dominant for so long, how do you see high-throughput satellites (HTS) developing, and where does HTS lie in SpeedCast's list of priorities?

Beylier: SpeedCast operates many different networks with over 70 satellites, with the majority being Geostationary Earth Orbit (GEO). However, we also use Medium Earth Orbit (MEO) and Low Earth Orbit (LEO) satellites, and many different frequency bands.

While C-band satellites have dominated the APAC region, we also use L-band, Ku-band, Ka-band and C-band frequencies, depending on coverage and applications. This variety of options enables SpeedCast to provide tailored solutions for our customers — whatever their needs.

HTS are complementary to our existing portfolio of network services and have great potential for high-density areas. It allows us to use very concentrated, powerful beams (multi-spot beams) through small antennas.

SpeedCast is closely studying the developments in HTS and plans to integrate and overlay some of these beams onto our existing networks in certain regions. **APB**

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Satellite broadband playing crucial role in Asia's digital transformation

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

Sjoerd De Clerck: As Asia continues its digital transformation, there are a number of opportunities that will result in further growth for Newtec. Changing media habits, such as streaming and over-the-top (OTT), combined with an increasing demand for more bandwidth, are changing the way satellite capacity is used and consumed in a number of areas, including mobile, broadcast and connectivity.

Asia-Pacific is one of our most important regions due to the increasing demand for global geosynchronous earth orbit (GEO) high throughput satellite (HTS) services, which is expected to reach 1.5Tbps globally by 2024, according to a number of studies, with Asia named as the second-largest market for satellite capacity.

To fuel that growth, we have a three-track strategy:

- Continue to invest in customer service to support our existing and future customers.
- Expand our geographical reach further through new strategic partnerships.
- Work even closer with our existing customers to help them realise their long-term plans towards profitable growth.

And, of course, all of this is based on the technological leadership and innovation that Newtec is known for, and will continue to bring to the industry.

How crucial is satellite communications in Asia-Pacific, and what are some of the reasons behind the increasing demand for global GEO HTS services in the region?

De Clerck: Containing nearly half of the world's Internet users, Asia is uniquely positioned to take advantage of the many benefits that satellite broadband from GEO HTS services can offer. The

Appointed Newtec's vice-president Sales, Asia-Pacific last December, Sjoerd De Clerck explains to APB why HTS services will continue to grow in demand, especially in Asia-Pacific.



geographical spread of its land mass — which comprises 30% of the earth's total land area and includes many rural and isolated areas — means that even the latest advances in fibre-optic terrestrial broadband does not make this a realistic solution.

Furthermore, the region's incredibly busy aviation and shipping industries mean satellite connectivity can directly improve and expand operations, improving Asia's commercial and domestic markets.

Would you like to expand on Newtec's strategy for HTS?

De Clerck: As bandwidth becomes an increasing commodity, falling MHz prices are driving the satellite industry towards technologies that are even more flexible and deliver an increasingly enhanced performance.

HTS is the ultimate proponent for meeting this demand and, like all new innovations in the space segment, the advances that HTS infrastructures have brought require equally innovative ground segment technology. This, in a nutshell, is our strategy when it comes to enabling operators to make the most of HTS opportunities.

HTS re-uses different beams and have more advanced routing so ground technology needs to share this synergy to ensure optimal results. HTS also brings multiple gateways and feed beams connecting to multiple satellites, creating the need for scalable ground segment technology, which matches the dense space segment.

Our latest software release of Newtec Dialog, for example, is equipped with features designed with HTS innovations in mind, including DVB-S2X on the forward link, Layer 2 bridging and a protocol to enable communication with antenna control units for beam switching.

Meanwhile, our MDM5000 modem was the first VSAT modem in the market to support DVB-S2X. It is also capable of receiving wide-band carriers up to 140MHz, with throughputs exceeding 200Mbps.

Specifically, what will HTS bring for the broadcast and media industries? Will it also potentially diminish the importance of C-band, particularly in Asia-Pacific, where its use is prevalent?

De Clerck: While mainstream broadcasting is likely to remain

on convention wide-beam satellites, specific applications within this market might find HTS to be advantageous.

The increasing consumption of content on any device, at any time, at any place, forces broadcasters to exchange content in various, sometimes multiple, formats across different transmission channels, including OTT, IPTV, high-quality HD and low-quality mobile, around the world and in many different time zones. There is also more demand for personalised content, and HTS multi-spot beams give broadcasters the opportunity to deliver specific content to specific viewers.

In addition, users are behaving more and more like content providers through applications that enable the streaming and uploading of photos and videos such as YouTube and Instagram. This further increases the amount of traffic network providers have to deal with, as well as making operations even more complex.

What other technology trends do you expect to impact the satellite industry in 2017?

De Clerck: We see a trend towards multi-service networks across our industry. Although most VSAT terminals are deployed for consumer broadband, much of the revenue actually comes from high-end applications, such as mobility, oil & gas and cellular backhaul. By combining all these applications on a single platform, network operators can maximise economies of scale while diversifying their business.

With a diverse and expanding modem portfolio and three return technologies, our Newtec Dialog multi-service platform was specifically designed to address a wide range of applications. Released in 2014, it has already been chosen by many customers as a way of streamlining, expanding and future-proofing their businesses. **APB**

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Banging the CID drum

By Martin Coleman

I feel as if I have been banging the Carrier ID (CID) drum for some time now. With the pressure and drive from the broadcaster community, IRG initiated the case for why manufacturers should integrate CID in all new modems and modulators, and so they did, from standardisation to production. Next, we suggested that satellite operators should integrate CID detection across their networks — most operators are now able to manage and detect CID in their networks.

Now, we need to encourage users to step up and integrate it into their transmission systems. That is the sticking point right now, but CID remains the most effective way to identify interference when it occurs in most scenarios while improving reliability and quality of services.

Are users complacent?

For the majority of satellite broadcasters, satellite offers high reliability. When interference does occur, the effect is huge, with a potential degradation or eventual loss of service. However, it is very difficult to justify any type of investment for a problem that does not appear to be there.

Often, issues are missed by users as the onus is on satellite operators. Broadcasters expect that service to be resumed immediately and so the affected operator is at times left moving transmissions to another space in order to restore service. This satisfies the user, but compounds the problem, with a growing amount of unusable spectrum.

For the broadcaster, it comes down to two things: Maintaining a good service; and keeping costs down. While the service continues, there is no impetus to spend money. And that causes a problem for instigating widespread adoption.

Lack of regulation

When there is reluctance, one way to encourage implementation for the greater industry good is through regulation. The FCC has started the ball rolling with its updated CID regulation covering transmissions in the US, with the date for compliance set for September 3 this year. The industry simply was not ready earlier this year but, anyone broadcasting within the FCC footprint really does need to ensure readiness by that deadline.

Of course, it is likely that other regulators may follow suit, but the problem we have right now is that unless the regulators experience the pain of interference, they do not see a need to regulate for the use of CID. One way to tackle that is for satellite operators to tell them every time they experience interference. However, that in itself takes time that the operator would prefer to spend solving the interference, except in cases which are often intentional,

One simple action for IRG is to lobby all suppliers of DVB-S2X modems and modulators to set the factory default of CID to 'ON'!



“With CID, interference can be resolved quickly.”

— Martin Coleman,
Executive Director,
Satellite
Interference
Reduction
Group

certainly extreme, where the regulator is needed.

Of course, CID would give the regulators valuable insight as to what transmissions are taking place within any footprint, making it easy to identify any rogue transmissions or non-licence-paying users.

Why bother?

It is very easy to understand where the reticence to comply is coming from. Those broadcasters plagued with constant interference are, of course, likely to be more receptive to the idea. Those who are not, or rarely affected, are going to struggle to justify the expense of replacing legacy equipment.

However, as the space environment gets more and more congested, and without implementation of technology such as CID, it is likely that interference will increase. I expect most broadcasters will experience it at some point over the coming year or so. It could be resolved easily with very little pain. But, what if it is during a live sporting event, for example? Viewers will not be impressed with missing a winning goal or defining moment of live action. Remember it has happened before, damaging company reputations in an instant! With CID, interference can be resolved quickly.

If you have replaced equipment in the last couple of years to meet the demands of DVB-S2X, it is probable that you already have it integrated. Therefore, before you do anything, just ask your supplier if you have CID and how to switch it on if available. Then, tell your satellite operator! That way you make it easier to resolve when you experience interference.

What can IRG and manufacturers do to help this progress?

One simple action for IRG is to lobby all suppliers of DVB-S2X modems and modulators to set the factory default of CID to 'ON'. That itself would simplify implementation.

We can remind all broadcasters to tell their satellite operator which current and future services will have CID so that record and checks can be made and CID put fully in place. **APB**

Asia driving growth of SatCom ground equipment market

The cumulative revenue for the SatCom ground infrastructure equipment market will surpass the US\$12-billion mark in the decade from 2015-2025, according to the *Commercial Satellite Ground Segment* report from Northern Sky Research (NSR).

Direct-to-home (DTH) and consumer broadband, in particular, are verticals counting global annual shipments in the millions and will attract a large chunk of the revenue growth opportunities in ground equipment, said Lluc Palerm, senior analyst at NSR.

Writing in the Q1 2017 edition of the Asia-Pacific Satellite Communications Council (APSCC) newsletter, he reported that the market for DTH receivers is driving the majority of shipments, and will generate \$64 billion in cumulative revenues through to 2025.

In particular, Asia presents the largest market opportunity currently and over the long term. Unit shipments will grow at a CAGR level of 8.1%, where the market base of 12 million in 2015 will grow to surpass 26 million by 2025. Cumulative shipments from 2015-2025 will total close to 211 million units, Palerm said, adding: "DTH is the largest market where cumulative unit shipments will total 206 million. Growing demand in key markets such as Indonesia will drive growth boosted by the growing number of pay-TV households and rising income levels."

Following behind DTH in terms of annual shipments is consumer broadband, which will account for 3.3 million in cumulative shipments. While this segment is a "distant second" compared to DTH, its addressable market is "massive", said Palerm, who also described the opportunity to capture new users as "tremendous".

"The challenges lie in serving unconnected users

economically and despite the rapid development of the vertical, the pressure on terminal costs and finding a compelling business model are key aspects that need to be solved," he added.

In revenue terms, Asia remains the second-largest market next to Western Europe, primarily because despite lower unit shipments, Western European purchases are for more expensive systems, such as mobility terminals where antenna systems drive costs upwards. Nevertheless, cumulative Asian revenues from 2015-2025 will amount to \$27.2 billion, representing a CAGR level of 7.4%.

The main drivers for Asia are in DTH, Palerm reiterated, which will account for \$19.9 billion in 2015-2025 cumulative revenues due to the "sheer volume" of DTH terminals to be shipped in this time period. This is followed by Satcom earth stations at \$2.7 billion, aeronautical terminals at \$1.4 billion, consumer broadband at \$619 million, maritime VSATs at \$463 million, EO terminals at \$431 million, and wireless backhaul at \$319 million.

Palerm also explained why, while ranked as the second-largest market in terms of unit shipments, consumer broadband terminals are ranked fourth in revenue terms.

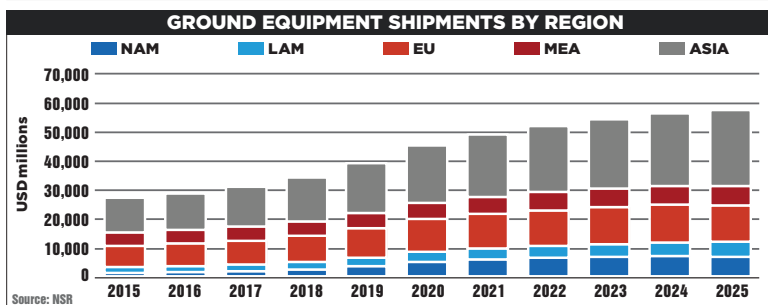
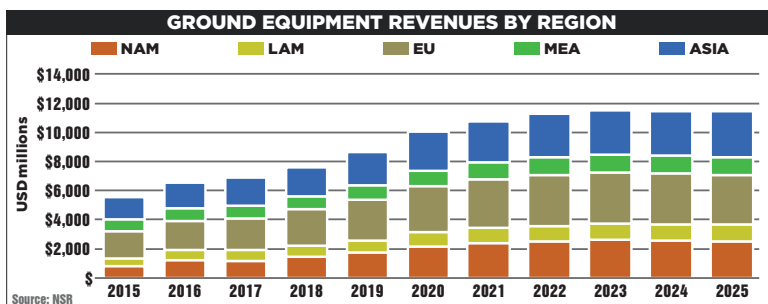
"This has to do with price such that a correlation of lower prices leads to higher shipments, thus stimulating demand," he wrote. "However, the overall revenue picture is not as favourable as higher prices in other sectors such as aeronautical and Satcom earth stations, which account for relatively low unit shipments numbers, but command higher prices, leading to high revenue shares."

Palerm also highlighted how more attention should be paid to Satcom earth stations, particularly demand for broadband earth stations that will be serving high throughput satellites (HTS). "HTS poses a new set of requirements for teleports," he posed. "With more powerful satellites, together with more efficient and powerful amplifiers on the ground, the need for large antennas is diminishing."

NSR expects the traditional 36MHz transponder to generally lose its relevance, with electronics needing to adapt to efficiently saturate the new larger transponders. New frequency bands will also require adapted antennas and electronics, as well as new levels of redundancy with multiple access points.

The applications served will also change the way ground infrastructure is planned, Palerm suggested. "A proliferation of IP applications, better backbone connectivity in developing countries and regulations, or simply the convenience of landing traffic locally is growing the demand for earth stations in emerging markets," he said.

Thus, broadband earth stations will attract the most demand in the vertical, which in turn mitigates the drop in demand for video stations. While growth in new DTH platforms in emerging regions and the transition to 4K/Ultra HD (UHD) will provide some opportunities, the real growth story for earth stations will centre on systems serving the HTS boom. These broadband stations, Palerm concluded, will progressively capture a larger share of revenues in Asia, as well as other regions of the globe. **APB**



Unit shipments of ground equipment in Asia will grow at a CAGR level of 8.1%, where the market base of 12 million in 2015 will grow to surpass 26 million by 2025. Cumulative Asian revenues from 2015-2025, meanwhile, will amount to \$27.2 billion, representing a CAGR level of 7.4%.



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