

Latin American Pay TV Market

by Virgil Labrador, Editor-in-Chief

The Latin American Pay TV market is undergoing a major transition. Although the economic recession was somewhat on the wane in 2017, the Latin American pay TV sector was still affected. According to the eighth edition of the Latin America Pay TV Forecasts report, the number of pay TV subscribers was flat year-on-year. Fewer than 5 million additional pay TV subscribers are expected between 2017 and 2023 – bringing the total to almost 76 million. Pay TV penetration will not climb beyond the current 44% of TV households.

Simon Murray, Principal Analyst at Digital TV Research, said: “Given its continuing economic and social problems, Brazil lost 1 million Pay TV subscribers between 2015 and 2017. Its peak year of 2014 will not be bettered until 2023.”

“Mexico recorded impressive growth in 2016, but its pay TV subscriber count fell in 2017. It will continue to decline until a slow recovery starts in 2020. The 2023 total will be just under the 2016 peak. However, it’s not all bad news as Claro and Telefonica will enter Argentina and Mexico, although this is likely to involve OTT,” Murray added.

Mexico overtook Brazil in 2016 to become Latin America’s largest pay TV market, despite Brazil having twice as many TV households as Mexico. Brazil has been losing subscribers since November 2014. However, Brazil will regain top slot in 2023.

Pay TV revenues in Latin America [subscriptions and PPV] will grow by only 1.0% between 2017 and 2023 to US\$ 19.74 billion. Revenues will fall in 2017, 2018 and 2019 before a slow recovery begins.



Brazil (US\$ 7.01 billion in 2023) will remain the top country by Pay TV revenues by some distance, followed by Mexico (US\$ 2.49 billion) and Argentina (US\$ 2.49 billion). Brazilian subscription rates are much higher than Mexican ones. Brazil’s 2023 total will be lower than 2017 and the peak year of 2014.

Two operators dominate Pay TV in Latin America. Claro/America Movil had 13.91 million pay TV subscribers (Down by 500,000 on the previous year) by end-2017 and DirecTV/Sky had 21.31 million. These two companies accounted for nearly half of the region’s pay TV subs by end-2017.

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The Latin American Satellite Market



The hot northern summer months are usually a time to recharge and catch up on much needed vacations. But in the Southern hemisphere where Latin America is located they have a mild winter climate (more like spring) and a very busy schedule of satellite industry events. In the month of August alone, there is the Latin American Satellite Congress in Rio de Janeiro, Brazil, Andina Link in San Jose, Costa Rica and the SET EXPO in Sao Paolo, Brazil. Of these three events, SET is the largest and most attended. Organized by the Society of Engineers of Brazil, SET is like NAB of Latin America.

As we reported in the cover story of this issue, the Latin American Pay TV market is undergoing a major transition. Although the economic recession was somewhat on the wane in 2017, the Latin American pay TV sector was still affected. According to the eighth edition of the Latin America Pay TV Forecasts report, the number of pay TV subscribers was flat year-on-year. Fewer than 5 million additional pay TV subscribers are expected between 2017 and 2023 – bringing the total to almost 76 million. Pay TV penetration will not climb beyond the current 44% of TV households.

These and other developments in the very competitive Latin American market, makes for a very interesting market. We hope to see you in one of the shows in Latin America this summer.

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Latin America Pay TV Market..From page 1

Latin American countries will reach US\$ 4.60 billion in 2022; up from the \$1.87 billion recorded in 2016. SVOD will remain the region’s largest OTT revenue source; contributing US\$ 2.86 billion by 2022 (62% of the total).

The Latin America OTT TV and Video Forecasts report forecasts 32.54 million SVOD subscribers by 2022; nearly double from the 17.08 million recorded at end-2016. Brazil will account for 34% of the region’s SVOD subs by 2022, with Mexico bringing in a further 28%.

Pan-regional services such as Netflix, Amazon Prime Video, Claro Video, Blim, HBO, Crackle and Movistar Play are adding a competitive edge to the SVOD sector.

The top seven regional platforms will account for 88% of the region’s paying SVOD subscribers by end-2022. Netflix will remain the largest pan-regional SVOD platform by some distance, with half of the region’s total by 2022 (down from a 64% share in 2016).

According to Kaltura, In Latin America, content owners are not flocking to consumers; they are flocking towards cable and satellite companies, bundling their services and content catalogs with traditional pay TV and mobile subscriptions. Out of the top seven SVOD services in Latin America, more than half come bundled for free with an existing service.

“...In Latin America, content owners are not flocking to consumers; they are flocking towards cable and satellite companies, bundling their services and content catalogs with traditional pay TV and mobile subscriptions. ...”

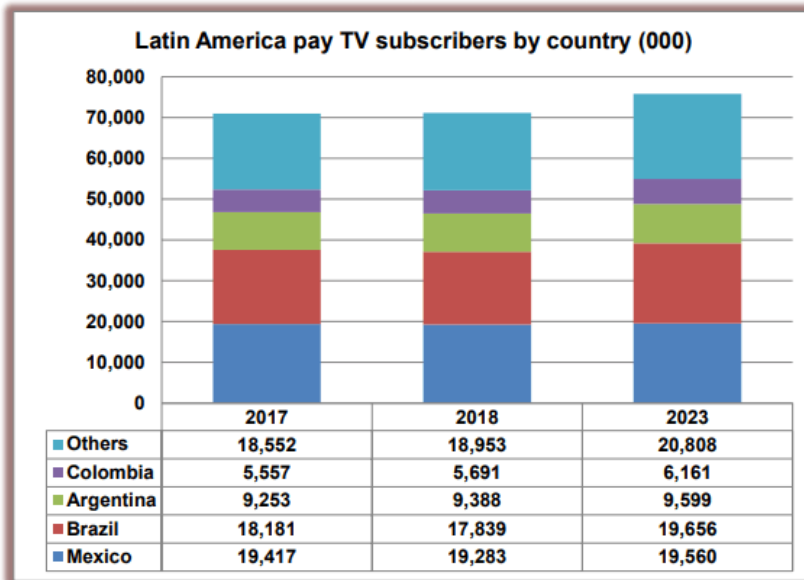
Delving deeper, it becomes clear that content owners simply cannot compete with the likes of global services like Netflix and Amazon Prime

OTT’s contribution to the revenue total will increase from 15% in 2016 to 29% in 2022. Its revenues will more than double over this period. OTT revenues will represent 42% of the Pay TV total by 2022, up from 18% only in 2016.

Pay TV revenues will fall over the same period, although the decline will be very low.

SVOD subscriptions will reach half the pay TV total by 2022 – up from 27% in 2016. SVOD subscriptions increased tenfold between 2010 and 2016, and will double by 2022 to 546 million.

Pay TV is not dead, with more than 1 billion subscribers forecast by 2022. North America will lose subscribers, and Europe will be virtually flat. However, the Asia Pacific region will increase by 92 million subscribers between 2016 and 2022. And Latin America is not that far behind.



Source: Digital TV Research Ltd

Video. As a result, local Latin American services like Claro Video and Movistar Play have a substantially lower number of paying subscribers, but they still have large audience figures, with most people accessing their content for free as part of their TV and mobile subscription packages.

Globally, Pay TV revenues [subscriptions and PPV] and OTT revenues [AVOD, SVOD, TVOD and DTO] combined will reach US\$ 283 billion by 2022; up by 18% from US\$ 239 billion in 2016, according to the OTT and Pay TV Forecasts report.



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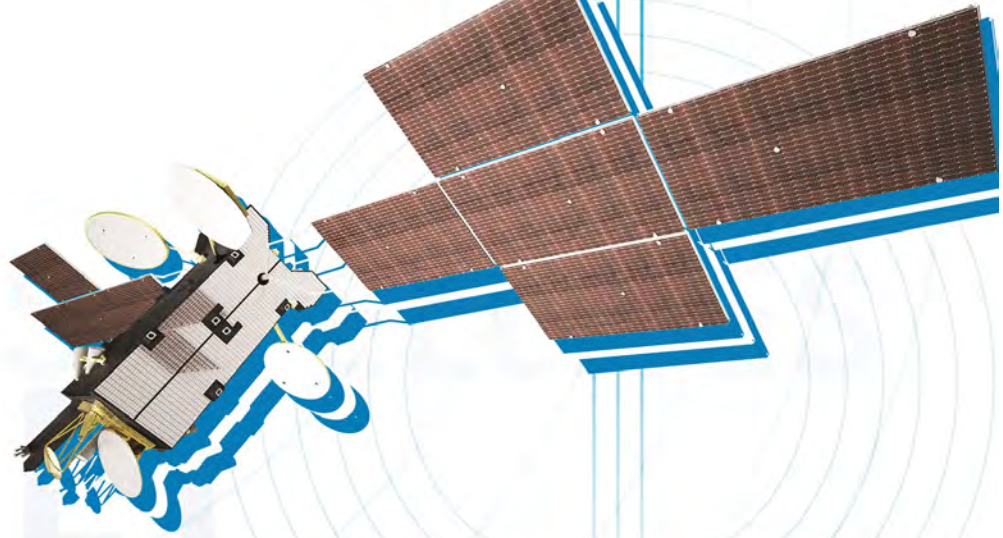
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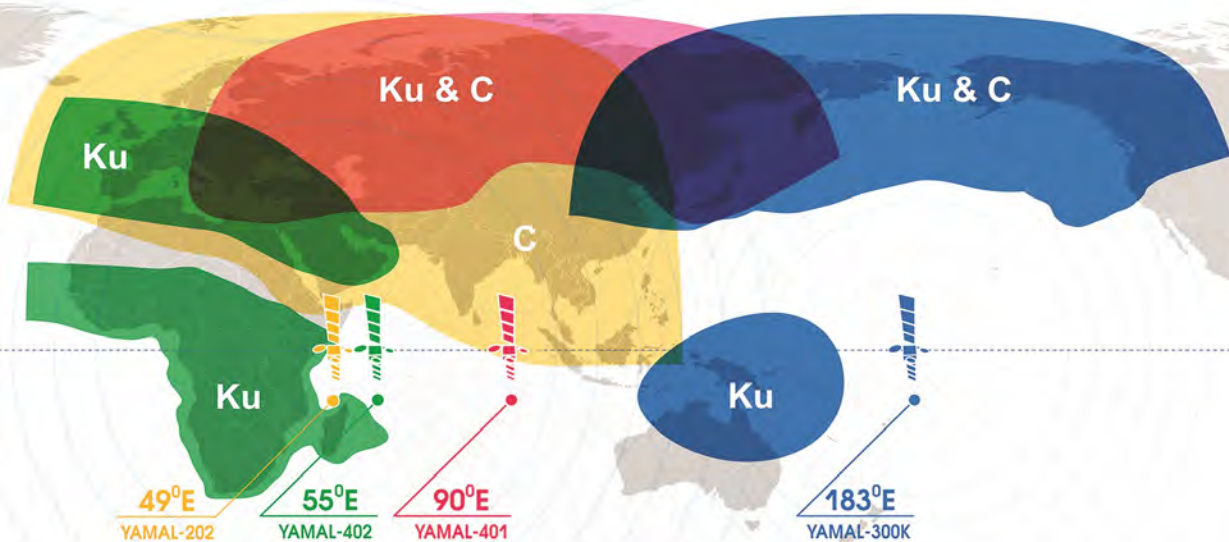


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CommunicAsia Highlight Key Satellite Trends in Asia-Pacific

by Elisabeth Tweedie

Two themes dominated the Casbaa Satellite Industry Forum and CommunicAsia, now called ConneCTechAsia, in Singapore this year: 5G and flexibility. 5G was definitely the hot topic, and not just for the satellite companies, telcos and equipment manufacturers were also keen to talk about it. For the satellite industry 5G is rarely mentioned without there being some reference to the move by Intelsat, backed by SES to offer part of the C-Band spectrum to the FCC for 5G in the US. Even though this deal applies only to the US, the Asian operators had

and may have roaming implications. There are also spillover implications if there isn't standardization, in the rest of world. For example, in the Marina Bay Sands in Singapore, where the CommunicAsia was held, cellphones sometimes roam onto Indonesian networks.

Huang Baozhong, EVP, APT Satellite, agreed with Dr. Tong, calling the Intelsat move "a disaster for the industry." The issue of registering the C-band antennas also provoked heated discussion, with Dr. Tong asserting that "it was un-



The CASBAA Satellite Industry Forum, held the day before ConneCTechAsia (formerly CommunicAsia) brought together key executives such as from left Jim Simpson, CEO, ABS, Dr. Roger Tong, CEO AsiaSat, Jean-François Fenech, CEO Eutelsat Asia, Huang Baozhong, EVP, APT Satellite and Mitsutoshi Akao, executive officer & group president of Sky Perfect JSAT's Global Business Group Space and Satellite Business Unit.

plenty to say about it. Dr. Roger Tong, CEO, AsiaSat saying that Intelsat "sold out the industry," arguing that Intel will now go to the other regulators around the world, saying that unless the other regulators go with the same regulations as the FCC, it will be necessary to develop a different chipset for any dissenting country, which among other things will make handsets in that country more expensive

reasonable to ask all the users in Asia, some of whom can't read or write, to register their antennas." Casbaa estimates that there are over 12 million antennas in Asia, but others thought that was a low figure, stating that there were over 20 million C-band antennas in China.

Spectrum, aside, many of the key players, see 5G in

very positive light. Sean Yarborough, VP Product Management, VT iDirect, describing it as a “great opportunity for the satellite industry.” Terry Bleakley, Regional VP, Asia, Intelsat saying that “5G gives the satellite industry the opportunity to move out of the shadows.” Most would argue that Intelsat has very clearly done this already with the spectrum deal! However, in this instance he was referring to the satellite industry getting involved in the standards bodies for 5G, so that “we can put the case for satellite and help others understand the technology.” Alvaro Sanchez, General Manager, Integrasys, pointed out that his company is on the steering board for 5G in Europe, with the aim of showing the benefit of satellite for multicast. Yarborough agreed with the necessity of getting involved with the standards bodies, saying “we move the market faster by standardization that we do by customization.”

At CommunicAsia, in a very extensive presentation entitled “How satellite will play a vital role in the successful roll-out of 5G,” Semir Hassanaly, Market Director, Mobile Backhaul, Newtec, highlighted four areas where satellite could play a significant role in 5G, these are: Trunking and headend feed, backhauling and tower feed, communications on the move and hybrid multiplay. The latter being to expand video streaming into areas where terrestrial coverage is poor, or to high density areas, (sports venues, airports etc.) where the bandwidth would quickly become exhausted.

One of the issues with 5G, which could become a stumbling block for the satellite industry is the line in the specification that refers to a only latency of 1-4 milliseconds. It was therefore interesting to hear Mikio Iwamura, Executive Research Engineer 5G Laboratory NTT Docomo, talk about a “flexible” rollout for 5G. By this he meant that not all parts of the standard are likely to be implemented, including latency. Even the defined speed of 10Gpbs would only be achieved in areas close to the base station, unless there are multiple transmitters everywhere, which of course is not likely to be the case. DoCoMo has been involved in several 5G demonstrations, including delivery of 4k video to high-speed trains. Nevertheless, Iwanura admitted that “the main challenge is to produce a monetizeable business case.”

5G apart, the traditional satellite industry is facing many challenges: the increasing spread of fiber, price erosion, increasing popularity of high-throughput satellites and the emergence of non-geostationary orbit (NGSO) operators.

“...One of the issues with 5G, which could become a stumbling block for the satellite industry is the line in the specification that refers to a only latency of 1-4 milliseconds. ...”

Opinions of the Asian operators, differed regarding the falling prices, which are obviously impacting operator revenues. APT felt that prices are now stable, with Baozhong stating that he believed they were now at the bottom. Asiasat is still seeing price erosion, but less than in recent years. However, all the operators are dealing with short-term contract renewals. Jim Simpson, the new CEO of ABS, which he described as “the low-cost leader,” stated that prices still needed to drop by an order of magnitude in order to reach acceptable fill levels. ABS-2 and 2a are currently only 50% full. ABS is also going to be targeting US government business, which has dropped to 13% of its revenue from a high of 48% in 2013.

At the same time as those operators are concerned about falling prices, Mark Dankberg stated that ViaSat’s main focus is “driving down prices.....and we have become vertically integrated in order to do so.” ViaSat-1 with a capacity of just over 100Gbps cost ~US\$5 million per Gbps, whilst ViaSat-3 which will be the first terabit satellite, is costing ~US\$1M per Gbps.

Tong, expressed a very different opinion of HTS, saying that it didn’t give as good a return as video, but “if you launch HTS too early, you’re committing suicide, but if you stand on the sidelines for too long, you’re waiting to die.”

The manufacturers are dealing with their own issues: lack of orders for geostationary satellites and a need to be more flexible. Chris Johnson, the new President of Boeing Satellite Systems International, said that the industry is at the tipping point for standardization of satellites. He advocated standardizing as much of the bus as possible and making the payload software defined, which would give the customers much more flexibility in their business case. Tony Colucci, VP Business Development, SSL said that the industry was at the beginning of a ramp-up for data satellites. Dawn Harms, VP Global Sales and Marketing Boeing Satellite Systems International, agreed, but said that she still hadn’t seen any orders. She went on to say that BSSI have been investing in technologies that will drive down the cost and let BSSI provide more flexible satellites for its customers. Whilst flexibility is key for many customers, Colucci pointed out that not all customers want this, saying that SS/



During a panel discussion on the Chinese satellite market at the ConnectTechAsia Summit, Huang Baozhong, executive vice president of APT Satellite, Michael Yang, COO of China Communication Technology Satcom, and Wang Zhongmin, head of Satellite division of Zhongshan Tatwah Smartech, discussed how China is emerging as a global power across different areas in the space and satellite industry.

They discussed the various technology trends across the Chinese satellite telecoms industry and revealed how Chinese companies are adopting new business models to cope with evolving markets and different demand verticals.

Michael Yang said China is moving up the value chain from manufacturing of satellite equipment to becoming provider of satellite broadband services. He said that for now, Chinese companies are taking advantage of the economic growth of the Southeast Asian nations to offer their equipment and services.

Wang Zhongmin said many satcom companies are aligning their strategies with China's "Belt and Road Initiative," which focuses on connectivity and cooperation between Eurasian countries, to sell their cheaper satcom equipment and services.

Huang Baozhong said China is developing "disruptive" satellite technologies for new companies. They are also looking at the launch of small satellites carrying less than 20 transponders and are partnering with some countries like the Philippines to offer satcom services.

L is building a ultra-high throughput satellite (UHTS) for a customer that had no interest in flexibility.

All these point to one thing: the need to be flexible and rethink traditional business models. John-Paul Hemmingway, CEO of SES Networks referred to this when he talked about the new business models being adopted by SES. No longer would there be customers and suppliers, simply partners. He quoted the example of SES and iDirect working closely together, jointly using Agile software scrum models and sharing the risk. In addition, satellite should strive to become part of the wider communications world by agreeing standards for seamless integration, and leveraging satellite strengths: flexibility, mobility, reliability and velocity. He also suggested that to be part of mainstream telecoms, teleports need to be renamed "data centers." "We need to go out and be part of the mainstream and be bold."



Elisabeth Tweedie has over 20 years experience at the cutting edge of new communication and entertainment technologies. She is the founder and President of Definitive Direction a consultancy that focuses on researching and evaluating the long term potential for new ventures, initiating their development and identifying and developing appropriate alliances. During her 10 years at Hughes Electronics she worked on every acquisition and new business that the company considered during her time there.

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Cloud Services and Satellite: Clear Skies or Cloudy Weather?

by Robert Bell

Cloud services from Amazon Web Services, Microsoft Azure and other providers have been on a tear. Worldwide, cloud service providers generated US\$ 220 billion in revenue in 2016, according to Gartner, and will nearly double that to US\$ 411 billion by 2020. In government services alone, AWS GovCloud has grown 221% year-over-year since 2011 and Microsoft claims to have more than 5 million government users on its dedicated government cloud.

The cloud represents a new kind of capacity – for storage, for processing and also for contribution and distribution. It represents both an opportunity for satellite service providers and a potential or actual competitive threat for some of the functions that service providers have been offering for decades.

A New Kind of Capacity

It is also a different kind of capacity. With acres of servers and sophisticated systems to manage them, cloud providers offer their customers flexibility to add or remove services fast, scalability to burst traffic for high demand, and most profound of all: pay-per-use pricing. For an industry that is still struggling to adjust to short-term contracts and last-minute decision-making by customers, it is a whole new world. The cloud model turns capital expenses into operating expenses. That offers a major advantage when starting up a service and reduces the risks to the business if a new service fails to meet its objectives.

In WTA's latest report – *Clear Skies or Stormy Weather? Cloud Services for Teleport Operators* – one teleport operator said that the cloud lets him offer more flexible occasional-use video services, including the ability to quickly scale up during peak demand, along with a better cost structure. Using a public cloud to encode video may cost more per hour than on-premise technology, but it is well-suited to the unpredictable demand of occasional-use.

Clear Skies or Stormy Weather? Cloud Services for Teleport Operators



NEW MARKETS

Teleport operators and cloud service providers share insights on the operational, business and competitive benefits and challenges of integrating the cloud into the service mix.

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“As our business transitions from long-term commercial contracts to customers only willing to commit to three months of service at a time,” said the executive, “we can use a cloud solution to spin it up, deliver service and walk away without worrying about capex. Where it could take months to set up a channel before, we can literally set it up faster than the customer can make the final decision. Time-to-market shrinks from 30 days to under 60 minutes.”

New Opportunities

The cloud offers teleport operators the same potential value as any other enterprise: the chance to reduce costs,

increase agility and gain access to valuable applications. One executive turns to cloud providers for special IT requirements. “If we are doing a customer-facing portal website for their services, often we will host it in the cloud, rather than us spinning up database and web servers in-house. It’s faster and takes advantage of the database, web hosting and other services the cloud provider already offers.”

Cloud services can also be a gateway to new business. The big cloud providers have a massive network of customers and can help them market services to each other. The cloud operators also need what the satellite industry offers: the ability to connect beyond the cloud, as well as local data processing capacity that puts workload closer to end-users.

Their rich software toolkits can also help expand existing business. “A broadcaster needs multiple ways of getting content to the consumer,” said one report contributor, “and lots of different ways to monetize the content to pay for the additional distribution cost. As their service provider, we need to offer IP delivery across all formats and networks. We need to master analytics so that we become their source for answers about viewer demographics and viewing habits, which is so critical to monetization.”

A cloud provider can also act as a highly secure platform for a service provider and customer to interconnect systems that need to talk to each other. One executive described a customer’s request to integrate its in-house scheduling system with the playout system at the teleport. Directly connecting the platforms would create staffing, operational, legal and security issues for both companies. But interfacing the systems through an application programming interface (API) in the cloud protects both companies’ IT infrastructure while meeting the customer’s requirements.

New Competition

Not all is sunny, however, beneath the cloud.

In late 2017, Discovery Communications announced that it had transitioned its playout from in-house to Amazon Web Service’s public cloud using a cloud-compatible Evertz playout system. It was a significant milestone: a major global media company putting its primary network creation on a cloud system.

In a press release, Discovery’s SVP of Technology said that the cloud solution transformed playout operations and gave the scalability, flexibility and agility to continuously address evolving business and technical challenges. “In order to distribute content on every screen and launch new and innovative products, the ability to scale our technical operation is critical....We decided to reimagine what infra-

structure could look like by moving to a software and public cloud environment,” said John Honeycutt, Chief Technology Officer at Discovery at the time.

It is not hard for satellite service providers to see a threat to their existing businesses in a decision like the one Discovery made. The executives we interviewed were alive to the potential for significant market disruption from the growth of cloud services. They cited early signs that media transcoding, packaging, playout and workflows were beginning a migration to the big cloud providers. That disruption, they note, is not because the cloud offers a better technology or quality of service – it is the fast-adapting, pay-as-you-go business model that appeals to decision-makers who have much less visibility into the future than they are used to.

Ultimately, the executives interviewed for the report see the cloud as a natural evolution of the media and data markets, just like the transitions from analog to digital and SD to HD. Custom-built hardware and software solutions are being commoditized by the cloud, and the service providers must deliver new and different kinds of value to remain competitive.

In short, you have to be in it to win it. Savvy service providers everywhere are exploring the cloud, working in the cloud and integrating it into their operations. They know they have no choice but to understand it thoroughly, adopt it intelligently and adapt to the changes it will bring to the business.



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 program to service providers. The report *Clear Skies or Stormy Weather? Cloud Services for Teleport Operators* is available from the WTA website and is free to members and for sale to non-members. He can be reached at: rbell@worldteleport.org

The Satellite of Things

It is hard to read anything about business or technology these days without coming across the Internet of Things. In 2014, for the first time, the number of mobile phones and other devices equaled the number of human beings on earth, about 7.2 billion. The analyst firm Gartner says that by 2020, there will be 26 billion connected devices – and most of them will be connecting with other devices rather than people.

The Internet of Things (IoT), as this is called, is rapidly connecting lights and cars, factory equipment and footballs, aircraft engines and thermostats, traffic lights and baby monitors. By monitoring, measuring and managing these billions of things, it will save us time and money, reduce waste, cut pollution, and make the way we live safer, easier and more rewarding. Accenture forecasts that it will add as much as \$14 trillion to 20 of the world's largest economies by 2030.

But maybe we should call it the Satellite of Things instead. Because satellite technology has been connecting important things for decades and will be doing it for decades to come.

Connecting Things Before the Internet

For more than 30 years, the Satellite of Things has connected cash registers in stores with computers at corporate headquarters. Machines talked to machines, and retailers could monitor and inventory hour by hour to discover what was selling and what was not.



The Satellite of Things has been making the world's energy supply smarter, too, from electricity grids to gas and oil pipelines. Sensors, switches and valves send data and receive commands from space – and the system runs more safely and reliably at lower cost.

Flickr Creative Commons, Raymond Arjmand, "Retail," for commercial use

Today, advances in information technology are giving the Internet of

Things new powers – and satellite is spreading them across the globe.

Keeping the Bananas Cool

Globecomm is a communication solutions provider working on the Internet of Things. For one of the world's largest shipping companies, it found a way to make sure that bananas picked in the field and put into a shipping container reached their destination ready for sale. Working with other leading technology firms, Globecomm equipped refrigerated shipping containers with temperature sensors and small computers. Each container keeps track of its tem-

perature and reports it over a wireless link to a central computer aboard ship. Wherever the ship sails, the computer stays connected over the Globecomm satellite network to the shipping company's computers.

The result? An accurate, real-time record of what went on inside the container, from the moment it was closed on one side of the ocean to the moment it's opened on the other. When a perishable cargo goes bad, somebody has to make good on it.

The Satellite of Things makes sure the shipper does not pay for problems it did not cause – and that can be worth millions every year.

Making Sure the Water Flows

Sometimes the savings is measured in people instead of money. In 2012, America's Mid-Atlantic states were struck by Hurricane Sandy, which caused more than \$62 billion in damage. One victim was a major water utility serving millions of people in the region.

The utility used Internet of Things technology to monitor and control its network of valves, pumps, storage tanks and reserve pools that deliver a steady supply of clean water. Those machines talked to other machines over cellular links, the same kind used for mobile phones. But Sandy's strong winds and severe flooding took down the cellular network in lots of places.

Suddenly the control room was blind. The company scrambled to send personnel to facilities across the state. They checked sites, radioed the information to headquarters and manually operated equipment before rushing to the next site. It was an all-hands, around-the-clock exercise that went on



for days until cellular service was fully restored.

Those days of crisis taught the utility a lesson. Its Internet of Things platform now includes a satellite backup for all remote sites. Going further, state governments began requiring satellite backup for every network that controls crucial infrastructure. It costs a little more, but the risk of failing systems leaving people high and dry – or much worse, spreading disease – far outweighs the cost.

Ours is a world of constant change. Things move. Storms rise. Technology improves but makes us more vulnerable at the same time. The Internet of Things promises big benefits. But only

the Satellite of Things can make sure it keeps that promise.

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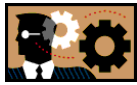


Join your military and industry communications peers in facing command, control, communications, computing, intelligence, surveillance and reconnaissance (C4ISR) challenges head on. Be a part of this evolving conversation, where you will hear and understand the requirements, pace of change and state of play in a variety of C4ISR markets serving the military, federal agencies and multinational entities.

milcom

Military Communications for the 21st Century

October 29-31, 2018 • LAX Marriott, Los Angeles, CA



Products and Services MarketPlace

A guide to key products and services to be showcased at SET EXPO 2018 in Sao Paulo, Brazil from August 28-30, 2018.

Advantech Wireless Technologies
booth # 32
www.advantechwireless.com



Advantech Wireless supports the critical need for High Throughput Satellite communications in a rapidly expanding digital environment. Our proven low-cost and highly reliable system solutions are meeting the ever-increasing need for high-bandwidth communications essential to broadcasters. We integrate award-winning research and development engineering into our designs. Learn more about our World Leading SATCOM GaN based SSPAs/BUCs, pulse amplifiers for radar systems, frequency converters, Broadcasting Datalink Solution, Fixed & Mobile Antennas and Microwave Radios.

Hispasat/Hisparmar
Booth # 118
www.hispasat.com



The **HISPASAT Group** is composed of companies with a foothold in Spain as well as in Latin America, where its Brazilian affiliate HISPAMAR, sells its services. HISPASAT is the Spanish satellite communications operator, leader in the distribution of content in Spanish and Portuguese.

With more than 25 years of experience, the HISPASAT Group maintains an important presence on the Iberian Peninsula and in Latin America, where it is now the fourth satellite operator. HISPASAT has solidly positioned itself in high growth markets and has a stable strategic client base.

HISPASAT distributes more than 1,250 television and radio channels through its powerful fleet of satellites and is a key driver for the Spanish aerospace industry.

Newtec
Booth # 104
www.newtec.eu



Newtec, a specialist in designing, developing and manufacturing equipment

and technologies for satellite communications. As a pioneer in the industry, Newtec is dedicated to creating new possibilities for the broadcast, consumer and enterprise VSAT, government and defense, cellular backhaul and trunking and mobility including maritime markets. Their products and technologies can be applied in a wide range of single and multiservice applications. They are looking forward to discuss future projects with potential customers.



Newtec MDM5000 Satellite Modem

Newtec will be showcasing at SET EXPO its most advanced VSAT modem to date – the first on the market to support wideband DVB-S2X, the Newtec MDM5000 Satellite Modem. The MDM5000 is capable of receiving forward carriers of up to 140 MHz, and processing over 200 Mbps of throughput. On the return channel, it supports SCPC, TDMA and Newtec's unique Mx-DMA™, up to 75 Mbps.

RSCC
booth # 129
www.rsc.ru



The **Russian Satellite Communications Company (RSCC)** is Russia's satellite communications operator, whose spacecraft ensure global coverage. The RSCC satellites are positioned along the geostationary orbital arc from 14 ° W up to 145 ° E, covering the entire territory of Russia, CIS, Europe, Middle East, Africa, Asian-Pacific region, North and South America, and Australia.

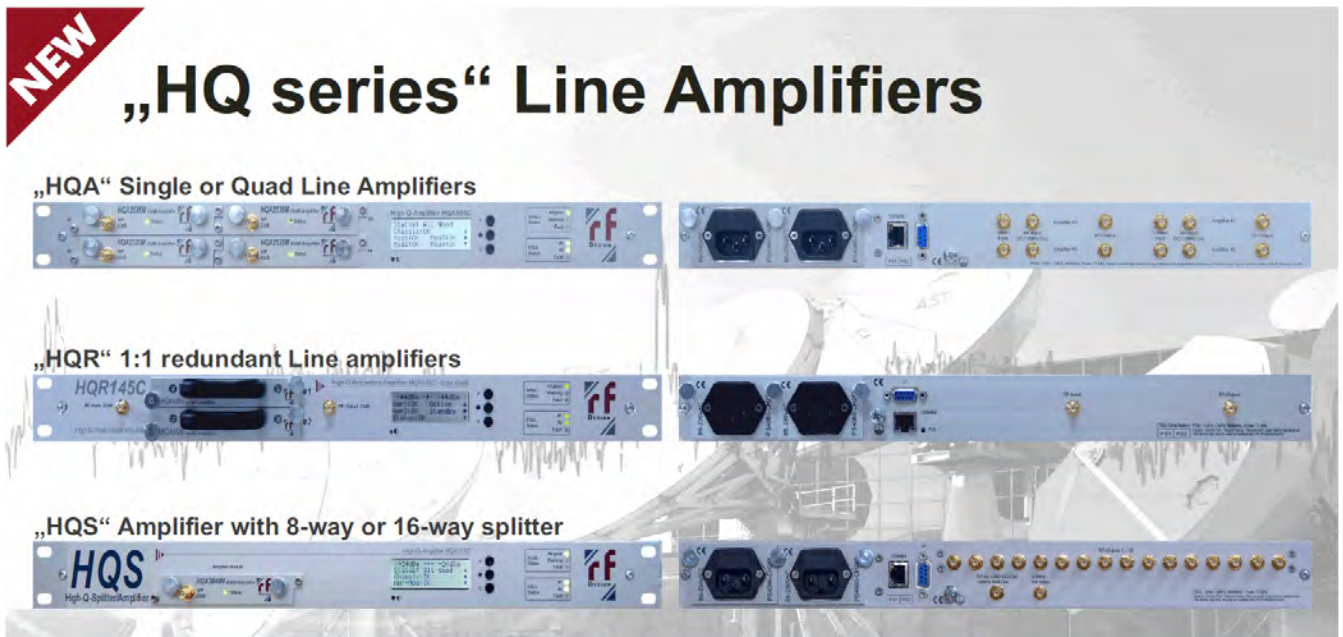
Brazil's National Telecommunications Agency (Anatel) has authorized the Russian Satellite Communications Company (RSCC) to operate the Express AM8 satellite over Brazil, using the C and Ku bands. The authorization was issued for four years. The satellite is located at the 14 degrees West orbital position.



RF-Design Launches Fourth Generation Amplifier in HQA series

Singapore, June 26, 2018--RF-Design's latest and fourth amplifier generation named "HQ series" has recently been launched at the CommunicAsia 2018 exhibition in Singapore. New Single, Quad and 1:1 redundant RF amplifiers launched and presented at CommunicAsia 2018. RF-Design from Lorsch/Germany is globally known for high quality RF-distribution, RF-over-Fiber and RF amplifier technology. Part of their main product range are their 1RU/19" rack-mount amplifiers which enjoy an excellent reputation in the Satellite Communication and Broadcast industry worldwide.

Thousands of RF-Design's amplifiers are in operation at Satellite Ground-Stations, Teleports and Broadcasting facilities worldwide and certainly the company is grateful to count major organizations such as Intelsat, SES, Viasat, Hughes, BT British Telecom, Thaicom, Media Broadcast, Axesat and many others among their valued customers using their amplifiers.



The entire team at RF-Design is constantly striving to fulfill customers requirements for any new product development. By following this "Listen to the Customer" philosophy before and during the development of their new HQ amplifiers and considering the individual requirements of different customers the company strongly believes that the HQ amplifiers will fully meet the market needs in terms of RF specifications, features and functionalities.

The new HQ series come as Single, Quad or 1:1 redundant amplifiers while also units with integrated 8-way, 16-way, 24-way or 32-way Splitters are available, all in a compact 1RU/19" rack-mount chassis. The units of the HQ series support variable gain-control, slope equalization, RF power monitoring, threshold alarming, switchable LNB-supply, a 10MHz external reference signal port and 1:1 redundant dual power supply. Local Configuration can be realized via a front-panel LC-Display while remote access, configuration and monitoring can be done via a rear-side Ethernet-Interface (WebGUI, SNMP).

Outstanding RF performance e.g at return-loss, frequency response and isolation in combination with beneficial features make these amplifiers a perfect fit for any RF distribution infrastructure where accurate RF power as well as excellent signal quality and stability is relevant.

With their fourth amplifier generation the company has laid the foundation for the further success of its amplifier product range and already has purchase orders that soon will be delivered to the customers.

For more information about RF-Design's new HQ amplifiers or their other products see their website www.rf-design-online.de, send an e-mail to contact@rf-design-online.de or call them at +49 (0) 6251 80 348 – 22.



MULTIFUNCTIONAL SATELLITE FOR THE GOVERNMENT OF THE REPUBLIC OF INDONESIA



Government Contracting Agency
Minister of Communication and Informatics
Republic of Indonesia

Executing Agency
Telecommunication and Information
Accessibility Agency (BAKTI)

Project Scheme
Public Private Partnership

Contract Period
15 Years

Return of Investment Mechanism
Availability Payment

Technology
High Throughput Satellite (HTS)

Capacity
150 Gbps

Operation Plan
2023

Project Objective

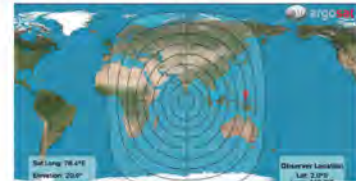
Over **149,400 public sites** (schools, hospitals, state/local government, defense & security administration) around Indonesia are lack of connectivity, satellite system is the only feasible access technology to cost-effectively address these remote locations.



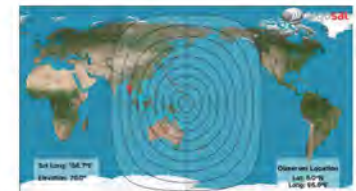
Indicative Orbital Slot Requirements



- Must provide visibility to all of Indonesia with an elevation angle **no lower than 20°**
- Compatible slots to the **GEO arc** between approximately 78.4°E and 156.7°E
- Filing registration status at least **CR/C document** that has been published by Radiocommunication Bureau - International Telecommunication Union.
- Minimum at **Ka-band** frequency with 2 GHz bandwidth in both polarization (frequency to achieve 150 Gbps throughput capacity)

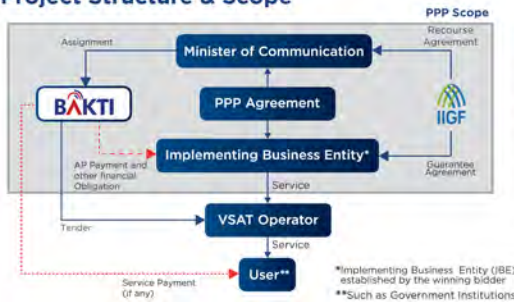


Western-most satellite with acceptable viewing to the eastern tip of Indonesia



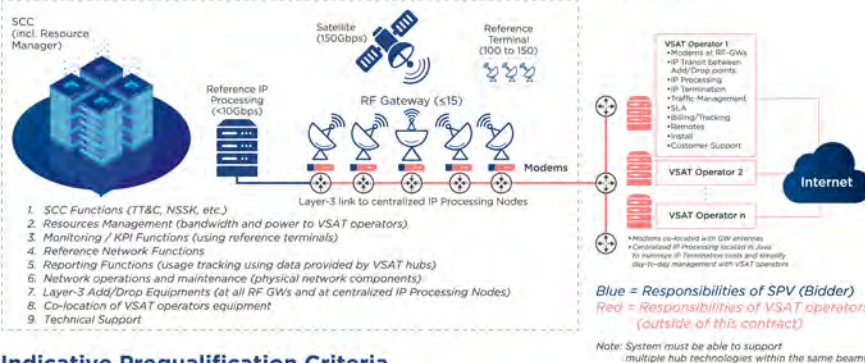
Eastern-most satellite with acceptable viewing to the eastern tip of Indonesia

Project Structure & Scope



Scope of Works	IBE	GCA
Financing of the Project	✓	
Securing the Satellite orbit	✓	support
Acquiring the gateway location	✓	support
Acquiring the earth station location	✓	support
Manufacturing the satellite	✓	
Constructing of gateway and earth station	✓	
Launching the satellite	✓	
Obtaining insurance for the Project	✓	
Operation and maintenance of the satellite, gateway, and earth station	✓	
Monitoring and evaluation of the Project		✓
AP Payment		✓

Network Functional Definition and Responsibility Breakdown



Indicative Financial Profile

CAPEX

IDR 6,580 billion
USD 459.8 million
(Satellite, Launch Vehicle, Insurance, Ground Segments, Pre-operating Costs)

OPEX

IDR 1,140 billion
USD 79.6 million
Total Asset Replacement (in 10th operational years)

IDR/USD 14.326 (as of 10 July 2018)

Indicative Prequalification Criteria

IN PRE-QUALIFICATION STAGE, PARTICIPANTS WILL BE SHORTLISTED UNDER PASS & FAIL BASIS

Administrative

- Participants must provide complete company document
- Participants must comply to Presidential Regulation No. 44/2016 (minimum local company(ies) shares 33%)
- Participant in the form of consortium is obliged to submit the consortium agreement in the form of Notarial Deed or legalized by a notary (in Bahasa version or Bahasa and English version (bilingual))

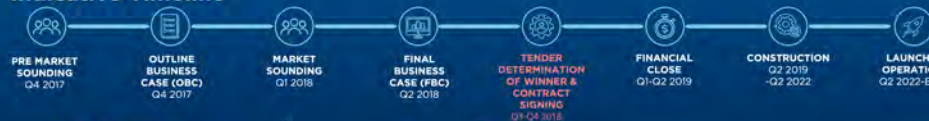
Technical

- Participant or member of Consortium shall demonstrate its technical experience in Telecommunication project
- Participant or member of Consortium shall propose an orbital slot location and provide proof of the Right to Use the orbital slot

Financial

- Participants must provide audited financial statement and must comply to minimum required Total Asset and Net Asset for the past 3 consecutive years
- In the event the business entity of the Participant is established less than 1 (one) year and/or the financial capacity is insufficient, the Participant may submit Shareholder Support Letter (Sponsorship Agreement)

Indicative Timeline



Contact Information

For further information regarding PPP Satellite Projects please contact The Procurement Committee

Wisma Kodell Lt. 6
Jl. HR Rasuna Said Kav B4, South Jakarta
Indonesia

Email : satellit@baktikominfo.id
Website : www.baktikominfo.id

Prepared by :



Interested in bidding for this project? See Tender information on next page...



MINISTRY OF COMMUNICATION AND INFORMATICS OF THE REPUBLIC OF INDONESIA

**REQUEST FOR PRE-QUALIFICATION OF BUSINESS ENTITY PROCUREMENT FOR GOVERNMENT
MULTIFUNCTIONAL SATELLITE PUBLIC PRIVATE PARTNERSHIP PROJECT
No. 2304/SMF/BPPPTI.2/PD.2.02/7/2018**

Ministry of Communication and Informatics of the Republic of Indonesia is pleased to invite domestic and international legal entities to participate in the Pre-Qualification Of Business Entity Procurement For Government Multifunctional Satellite Public Private Partnership Project (the "Project"). The procurement process will be undertaken pursuant to the Head of National Procurement Agency Regulation Number 19 of 2015 on Procedure of Procurement of Public Private Partnership in Providing Infrastructure.

The Project scope covers the financing, design, procurement, construction, launching, operation and maintenance of Government Multifunctional Satellite. The estimated Project investment cost is IDR 6.580.000.000.000 (Six Trillion Five Hundred Eighty Billion Rupiah).

Indonesian Legal Entity and/or Foreign Legal Entity who wish to participate in this Pre-Qualification may obtain the Pre-Qualification Document in the Procurement Committee Office at the address below:

Date : 24th July – 20th August 2018
Time : 08:00 – 17:00 Indonesia Western Standard Time
Address : Wisma Kodel 6th floor
Jl. H.R. Rasuna Said Kav. B4, Jakarta

The prospective participant(s) may obtain the Pre-Qualification Document upon fulfilling the following requirements:

1. **President Director of the Firm (or his/her Attorney by submitting the original Power of Attorney Letter) shall register and obtain the Pre-qualification Document;**
2. **Represent only one business entity or consortium;**
3. **Show original identification card and submit the copy; and**
4. **Submit an Expression of Interest Letter (original document) signed by the President Director or other authorized person in the Firm.**

Indonesian Legal Entity and/or Foreign Legal Entity may submit the requirements by e-mail at below mentioned address. The Procurement Committee will send the Pre-Qualification Document by e-mail upon receipt of such requirements by e-mail completely.

Jakarta, 24th July 2018
**The Procurement Committee of Business Entity Procurement of
Government Multifunctional Satellite Public Private Partnership Project**
E-mail: satelit@baktikominfo.id
www.baktikominfo.id

Inflight Connectivity Lands at Farnborough

by Martin Jarrold

According to the Euroconsult report *Prospects for In-Flight Entertainment and Connectivity* (May 2017) over 17,000 commercial aircraft will offer broadband inflight connectivity (IFC) to passengers by 2021, and NSR's *Aeronautical Satcom Markets* report (5th edition, May 2017) forecasts IFC to be installed on 1 out of 3 commercial passenger aircraft by the end of 2019, and 2 out of every 3 by the end of 2026. Also according to the NSR report, over 50 per cent of the addressable commercial passenger aircraft market will have IFC served by FSS and/or High Throughput Satellites by 2021.

Farnborough International Air Show (FIA) in the UK is one of the world's most important events in aerospace. Alternating, biennially, with the Paris Air Show, the previous FIA in 2016 attracted 82 of the world's top 100 aerospace companies and some US\$124 billion of orders and commitments were placed in the civil and military aviation spheres. **FIA 2018** will include some 1500 exhibitors from 52 countries, and encompassed within the context of the show's various exhibition 'Zones' will be *Aerospace 4.0*, the *Innovation Zone*, and the *Space Zone*.



Additions to the numbers of, and further improvements in the capabilities of, HTS operating in the Ku- and Ka-bands, again according to Euroconsult, will result in the amount of bandwidth capacity dedicated to IFC reaching 21Gbps by the end of 2018, and increasing to almost 300Gbps by the close of 2026. Some of the industry's leading IFC solutions providers have started to deploy networks offering up to hundreds of Gbps.

IFC service-provider revenue growth through to 2026 is forecast, by Euroconsult, at 21 per cent (CAGR), and NSR forecasts that the installed IFC base will generate revenues of over US\$32 billion over the 2017-2026 period. Analysis such as this comprises the backdrop to one of the GVF-EMP Conference Partnership's latest innovations: **AeroConnect@Farnborough**.

Over the years, as a frequent visitor to the show on FIA public days, I've long enjoyed the flying displays, and as a trade visitor – when, in a former life, I worked for *Space Business International* magazine – the exhibition was immeasurably valuable as an information source. Now, in 2018, in my role with GVF, I get to be an integral part of the show.

FIA 2018, takes place 16th to 22nd July. On 19th July the new multifunctional Farnborough Exhibition & Conference Center will be the venue for GVF's **AeroConnect@Farnborough** conference, with the conference program being an embedded feature of Farnborough Week.

This will not be the first event organized by the GVF-EMP Partnership to address aeronautical/inflight connectivity. But, in once again taking-up the analysis of the IFC market, GVF-EMP has achieved the significant innovation of

pairing its program of dialogue with the FIA. Today the aerospace market, the scale and scope of which is nowhere better illustrated than at this most prestigious of industry shows, is as much about communications connectivity as it is about airframe design, engine efficiencies, aircraft performance, etc. Indeed, so many of these (and many other) parameters, as the objects of inflight measurement, generate the volumes of mega-data that is gathered in real-time over the very satellite connectivity that is the very substance of discussion during **AeroConnect**'s programs.

On 19th July we have a line-up featuring speakers and panelists from such organizations as (in alphabetical order) *Access Partnership*, *Cann Research Ltd*, *Cobham Aerospace Communications*, *Comtech EF Data*, *Effective Space*, *Hughes*, *iDirect*, *Inmarsat*, *Isotropic Systems*, *PatronNetworks*, *PHASOR Inc*, *QuadSAT*, *Razorsecure*, and *SES Networks*. Each will offer a brief introductory presentation and go on to contribute to panel discussion across three session themes: [1] **In Orbit... Inflight... In the Cabin: The Technologies**; [2] **Airlines & Customers: Aeronautical Applications, Technology Platforms & Passenger Services**; and, [3] **User Expectations, Provider Capabilities: Business Models in the Cruise**. Additionally, to open the program, Paris-based consultancy *Euroconsult* will provide details from its cutting-edge research and analysis of the aeronautical satcoms market.

AeroConnect@Farnborough 2018 will comprise highly-focused industry dialogs with the satellite solution end-user aeronautical market, positioning discussion of key technological and service advances and user expectations in the IFC environment directly within the dynamics of the trade show. The conference program and the embedded format is designed to focus the attention of all exhibition attendees on the key dialogs currently underway between the airline end-user community and solutions providers in the operator, service provider, system integrator and equipment vendor segments of the satellite industry.

Panel sessions are scheduled to enable all participants to both experience Farnborough's celebrated trade show afternoon air displays and leverage the opportunity to network with exhibitors. Additionally, having been scheduled for the penultimate trade show day, the conference program will enable speakers and attendees to continue their networking on Friday 20th July. The **AeroConnect@Farnborough** program, which will be moderated by Anver Anderson, President, Anver Ltd, Betty Bonardel, President, AB5, and me for GVF, has been announced as:

0930-0945

Opening Remarks from the Moderating Team

0945-1015

Backdrop & Context Briefing

Florent Rizzo, Senior Consultant, **Euroconsult**

1015-1145

Session 1 – In Orbit... Inflight... In the Cabin: The Technologies

Anthony Spouncer, Senior Director Global Operational Services, **Inmarsat**

Mark ter Hove, Director Air Transport Satcom, **Cobham Aerospace Communications**

Gez Draycott, Vice President Market Solutions Engineering,

SES Networks

Robert Skuza, Vice President Aero Vertical Market, **Comtech**

EF Data

Steve Moses, Senior Director Vertical Market Solutions Product Management, **iDirect**

Mario Mancini, Assistant Vice President Southern Europe, **Hughes**

1145-1300

Session 2 – Airlines & Customers: Aeronautical Applications, Technology Platforms & Passenger Services

David Garrood, Senior Vice President Business Development, **PHASOR Inc**

John Finney, Founder, **Isotropic Systems**

Anver Anderson, President, Anver Ltd (for **QuadSAT**)

Richard Skaife, Managing Director, **Cann Research Ltd**

Andrew Sikorski, Policy Analyst, **Access Partnership**

1300-1400

Session 3 – User Expectations, Provider Capabilities: Business Models in the Cruise

Robert Skuza, Vice President Aero Vertical Market, **Comtech**

EF Data

Alex Cowan, Chief Executive Officer, **Razorsecure**

Mohammad Choudhary, Chief Executive Officer, **PatronNetworks**

Shahida Barick, Head of Spacecraft Operations, **Effective Space**

1400

AeroConnect @ Farnborough2018 Final Remarks & Close (Air Show Commences @ 1415)

AeroConnect@Farnborough – A Powerful Contextual Rationale

The world's networks of commercial airline routes – carrying increasing numbers of passengers, a constantly growing proportion of which are 'Millennials' and 'Generation Z' – are evolving. No longer will they be only a mode of trans-

portation between domestic or international physical/geographical hubs, but also social networks in the sky – connecting the passenger (carrying two or even three wireless devices) to the home, to the office, to the circle of friends, to the YouTube ecosphere, etc. – and comprising aircraft that will, increasingly, become hubs in the communications sense of the word, using the technologies of fixed (FSS: Ku-band, Ka-band) and mobile (MSS: L-band) satellite systems and air-to-ground (ATG) networks.

Demand for delivery of content to multiple devices per passenger exists the world over and most passengers are willing to pay for it. Use of personal devices – to stream video, access apps, browse the web, email, play games, video conference, and engage in social media – will progressively and completely replace long- and medium-haul on-board, server-based, inflight entertainment systems and introduce a common passenger experience for passengers of short-haul/low cost carriers.

Such market developments as those illustrated in the expert analyses cited above, as well as others in, for example, terminal antenna technologies, will contribute to enabling commercial airlines – as their flights increase in number and their networks of routes expand to support growth in passenger demand – to meet the requirements of their cus-

tomers base for a connectivity experience to at least match that (in performance and maybe of price) of their Wi-Fi or 4G experience on the ground; the passenger expectation of IFC will include the ability to video stream, not just update Facebook status and post a few Tweets.

Airlines, driven by customers’ increasingly making their choice of commercial carrier based on connectivity experience, will be forced to accelerate the rate at which they install IFC equipment to their fleets and they will themselves experience a market featuring an increasing number of solutions providers, and also find themselves having to make business model choices that successfully engage the passenger/IFC customer based on pricing strategies ranging from free, to freemium, to hourly premium.

All this is a powerful an accelerating rationale for elevating the inflight connectivity dialog to a new level. Whilst flight arrivals may always be subject to delays, widespread IFC has most definitely arrived, or is at least undercarriage down, and on final approach.



Martin Jarrold is Director of International Programs of the GVF. He can be reached at martin.jarrold@gvf.org

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AC Powered Antenna-Mount SSPAs

X-Band	Power Output (Watts)	Weight (Lbs)
XTSLIN-100X	100 Linear	32
XTSLIN-200X	200 Linear	49
Ku-Band		
XTSLIN-100K	100 Linear	32
XTSLIN-200K	200 Linear	49

DC Powered Antenna-Mount SSPAs with BUCs

X-Band	Power Output (Watts)	Weight (Lbs)
XTSLIN-20X-B1	20 Linear	5.3
XTSLIN-50X-B1	50 Linear	10

Baylin Acquires Alga Microwave

Toronto, Canada, July 2, 2018 -- Baylin Technologies Inc. (TSX: BYL) announced today that it has entered into a share purchase agreement to acquire all of the issued and outstanding shares of Alga Microwave Inc. for total consideration of CDN\$ 27 million, consisting of up-front cash consideration of CDN\$ 21 million, CDN\$ 4 million in Baylin shares, and CDN\$ 2 million in deferred consideration. It also agreed to purchase Alga's operational facilities in Kirkland, Quebec.

"The addition of Alga is synergistic with our recent acquisition of Advantech, helping us to further expand our rapidly growing radio frequency and microwave components business. Alga's new state-of-the-art facility, situated closely to Advantech, will set the stage for a robust platform for future growth" said Randy Dewey, Baylin's President and CEO.

"As a market leader in radio frequency and microwave, we are a natural fit in helping Baylin achieve its vision of becoming the frontrunner in data transmission. We are very excited to be able to bring our deep sector expertise and best-in-class product development capabilities to Baylin to help drive growth and profitability in the satellite connectivity segment. Alga will be able to leverage Baylin's world-class sales force and relationships with tier-one customers to expand the reach of our products" said Michael Perelshtein, Alga's CEO.

This acquisition is a key strategic move that is expected to benefit both operations in a significant way. Alga's modern factory and precision machining capability will allow us to control more of the supply chain and provide for rapid product development, said John Restivo, President, Advantech. "Additionally, Alga brings extensive high frequency passive microwave component capability expanding our addressable markets. Bringing together both Advantech's broad portfolio, sales and marketing channels along with Alga's manufacturing efficiencies, products and passive capabilities will allow us to address a wider more diversified market and provide our customers with broader networking solutions," he added.

Baylin is to purchase all of the outstanding shares of

Alga, through a newly incorporated subsidiary, for up-front consideration of CDN\$ 25.0 million (the "Share Purchase Price"), subject to customary adjustments. The Share Purchase Price will be satisfied by the payment of CDN\$ 21.0 million in cash and \$4.0 million in common shares in the capital of the Company ("Common Shares") at a price of CDN\$ 3.40 per share. The vendors may also receive up to an additional CDN\$ 2.0 million in earn-out payments if certain criteria are met over the two year period post-closing of the Acquisition.

Expected benefits of the acquisition for Baylin include: Strategic acquisition expected to generate revenue and cost synergies;

Enhances one of Baylin's faster growing segments, Satellite Connectivity Products.



The Acquisition represents a unique and strategic opportunity to expand its radio frequency and microwave components business, which the Company entered into with its acquisition of assets from Advantech Wireless Inc. in January

2018.

Michael Perelshtein, President and CEO of Alga to take on role of Chief Operating Officer of Alga, with oversight of both Advantech and Alga operations. Michael spent the majority of his career at Alga, and has previous work experience at Wavesat Telecom and C-Mac / Selectron. Michael holds countless relationships with OEMs and has significant business development experience.

Frank Panarello, COO of Alga to take on role Vice President Operations of Alga, with oversight of both Advantech and Alga operations. Frank is an experienced operations and finance professional who has a decade of experience at Alga and previously worked at Nortel Networks.

In connection with the closing of the Acquisition, Baylin has also agreed to acquire the facility in which the operations of Alga are located in Kirkland, Quebec for a total purchase price of CDN\$ 6.2 million.



Mike Edwards Joins DigitalGlobe

Westminster, Colo., July 5, 2018 -- **Mike Edwards** has joined **DigitalGlobe** as Vice President, Senior Advisor Defense Programs, to provide strategic leadership on various defense programs, including the company's work with the U.S. Department of Defense and collaboration with aero-defense companies. Edwards joins the company's senior leadership team and will report to DigitalGlobe President Dan Jablonsky.



Mike Edwards

"I'm excited to welcome Mike Edwards to the DigitalGlobe Leadership Team," Jablonsky said. "Mike has an extensive background in the military and government and especially working with large and complex programs. His experience in combination with his strategic skills brings valuable insights for our mission partners, enabling them to make critical decisions with confidence."

"I'm thrilled to be working with the DigitalGlobe and wider Maxar Technologies teams," said Mike Edwards. "I believe we best serve our customers by providing innovative solutions that leverage the technical depth and advanced capabilities from across the Maxar companies. I'm inspired to join a company that is driven by such a strong purpose and set of values."

Edwards was most recently Corporate Director of Space, Intelligence and Cyber at Northrop Grumman, where he spent the past 11 years. Previously he had a distinguished career in the U.S. Air Force, serving at the Pentagon for 13 years in a variety of leadership roles. These included leading the Department

of Defense's Interagency Protection Task Force and the Defense Intelligence Agency's Emerging Threat Working Group, where he was responsible for creating and executing solutions for emerging threats, and directing operations for the Air Force Combat Support Office. The retired Air Force Colonel served as a command pilot with 83 combat sorties and more than 3,300 hours in the A/OA-10, T-38 and T-37.

Edwards has a Bachelor of Science degree from the U.S. Air Force Academy, Air War College, and a Master of Science degree in aeronautics from Embry-Riddle Aeronautical University.

Chris Pogue Appointed President of MDA Government

Brampton, Ontario, Canada, June 12, 2018--**MDA** announced the appointment of **Chris Pogue** to serve as President of the newly created division, **MDA Government**. In addition, MDA has announced an organizational shift to better align with the market and customers' needs.



Sherin Kamal

Pogue assumes responsibility for taking MDA Government to the next level of growth and profitability and will report to Mike Greenley, the Group President of MDA. Mr. Pogue will have responsibility for the following lines of business; Defence, Earth Observation Systems, Enterprise IT, and Government Space Robotics.

"I am very pleased to announce the appointment of Chris Pogue as President MDA Government. Chris is a dynamic, transformational leader with multi-disciplinary experience and a proven track record of effective leadership, and driving significant business growth while consistently increasing profitability," said Mike Greenley,

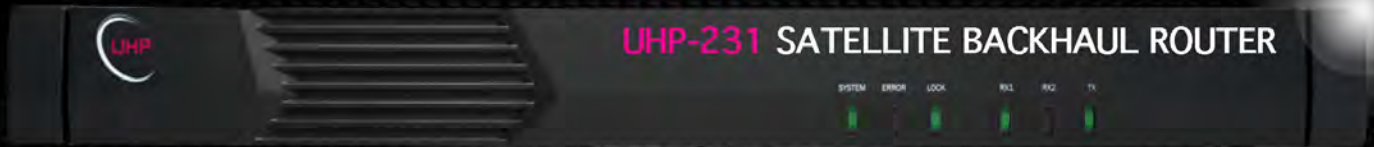
Group President of MDA. "We expect that Chris will help drive rapid growth and address diverse mission requirements for government customers by leveraging MDA's unique capabilities and collaborating with Maxar's other leading space technology companies, SSL, DigitalGlobe and Radiant Solutions to accelerate innovation for the new space economy."

Most recently, Pogue served as Vice President, Mission Systems International and Vice President Public Safety and Security Solutions at General Dynamics Mission Systems where he has worked for 8 years. Prior to General Dynamics, Chris was President of CAE Defence and Professional Services. Prior to joining the private sector, Chris had a very successful 18 year career in the Canadian Air Force. Chris has a B.Sc in Physics and an M.Sc in Physics & Oceanography from Royal Roads Military College in British Columbia, followed by executive education at the universities of York, Liverpool, and Harvard Business School.

"This is an exciting time to join the MDA team as part of the industry-leading Maxar family, and it's my honor to lead MDA Government. I know firsthand the importance of the critical mission support we deliver to the Canadian government and our international allies. MDA has pioneered some of the most impactful technology innovations in Canada's history," said Chris Pogue. "I'm confident we will continue to lead innovation in Canada, serve our government customers flawlessly and profitably grow MDA's business globally."

In conjunction with this change, to better align with market and customer needs, MDA also announced the establishment of the MDA Commercial division which will manage the following lines of business; Commercial Space Robotics, Commercial or Industrial Products, Antennae's & Electronics, Payloads, Non-Space Products. MDA is pursuing the appointment of the President for the MDA Commercial division and plans to optimize around the new structure by the end of 2018.

DISRUPTIVE INNOVATION IN CELLULAR BACKHAUL OVER SATELLITE



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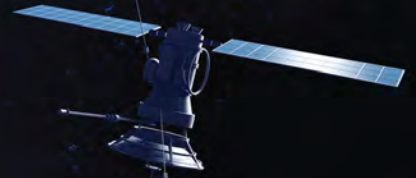
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WTA Report Teleport Services Pricing Holding Steady Despite Falling Capacity Prices

New York City, July 24, 2018 – A new World Teleport Association (WTA) research report released today has revealed that independent teleport operators' service growth is pausing after three years of growth, pricing for teleport services holds its own while capacity prices fall, and competition keeps ramping up to lower costs for customers.

The report, which explores the 2017 Top Operators rankings, says revenue diversification is trending downward as companies dig deeper into their niches.

“The teleport industry becomes more complex every year in terms of ownership, acquisition and competitive dynamics,” said executive director Robert Bell. “The Inside the Top Operators report allows us to see how the top performing companies are adapting to face the challenges of the changing conditions in our industry.”

WTA published the first Top Teleport Operator rankings in 2004 to focus attention on the important, but often un-sung, role that satellite service providers play in the satellite communications market. New rankings have been published every year since then, based on an annual survey of operators as well as review of financial data from publicly-traded firms. From this information, WTA publishes rankings of:

- The Global Top 20 companies by revenue including independents and satellite/fiber operators.
- The Independent Top 20 companies by revenue excluding satellite/fiber operators.
- The Fast 20, based on year-over-year revenue growth,

including independents and satellite/fiber operators. The Top Operators respondents not only provided financial data for the past two complete fiscal years but also shared information on trends in



markets, pricing and services at the end of the 2016 calendar year.

Since 1985, the World Teleport Association has focused on improving the business of satellite communications from the ground up. At the core of its membership are the world's most innovative operators of teleports, from independents to multinationals, niche service providers to global carriers. WTA is dedicated to advocating for the interests of teleport operators in the global telecommunications market and promoting excellence in teleport business practice, technology and operations.



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Asia Pacific to Have 351 million SVOD Subscribers by 2023

Middlesex, UK,
July 25, 2018 --

Three Chinese companies will top the Asia Pacific SVOD rankings by subscribers in 2023. Not expected to ever operate as standalone platforms in China, Netflix and Amazon Prime Video will take fourth and fifth places respectively.



quarters of the region’s OTT revenues by 2023. China will command 62% (\$25.97 billion) by 2023; increasing its share from 59% (\$8.79 billion) of the 2017 total.

Advertising on OTT sites [AVOD] revenues are the main source of OTT revenues. However, SVOD is growing faster – tripling between

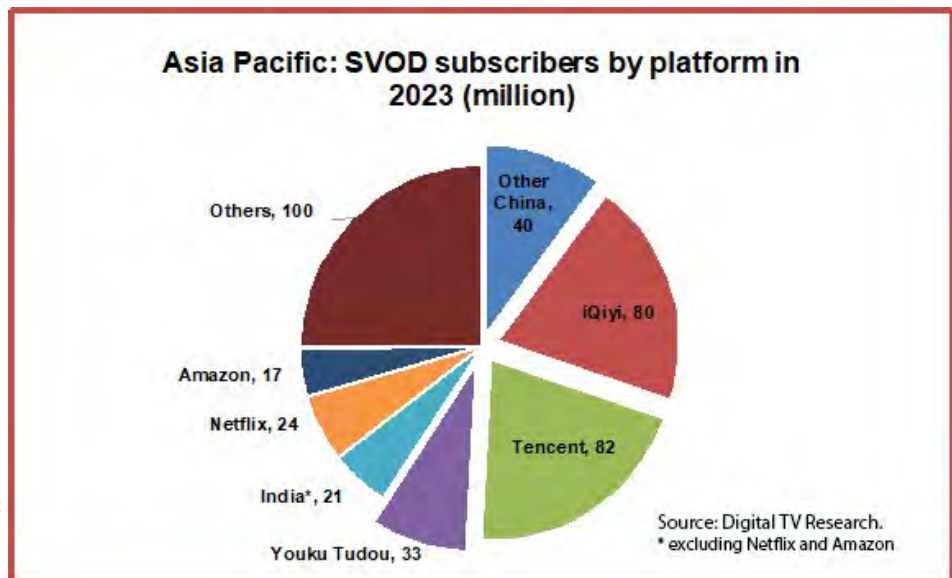
Simon Murray, Principal Analyst at Digital TV Research, said: “The Asia Pacific OTT TV & Video Forecasts report expects 351 million subscription video on-demand subscribers by 2023, up from 141 million in 2017. China will have 235 million SVOD subs in 2023 – or two-thirds of the 22 countries covered.”

recorded in 2017. The total will increase by \$5 billion in 2018 alone.” China and Japan will account for three-

2017 and 2023. SVOD will take 37% of OTT revenues by 2023, with AVOD supplying 54%. These proportions were 33% and 55% respectively in 2017.

Netflix (\$3.12 billion) will top the SVOD revenues chart in 2023. The top three platforms will account for 54% of the region’s SVOD revenues by 2023. Asia Pacific SVOD revenues will triple from just under \$5 billion in 2017 to \$15 billion in 2023. China’s share will remain at about half of the total.

Murray continued: “Asia Pacific OTT revenues from TV episodes and movies will reach \$42 billion in 2023; nearly triple the \$15 billion



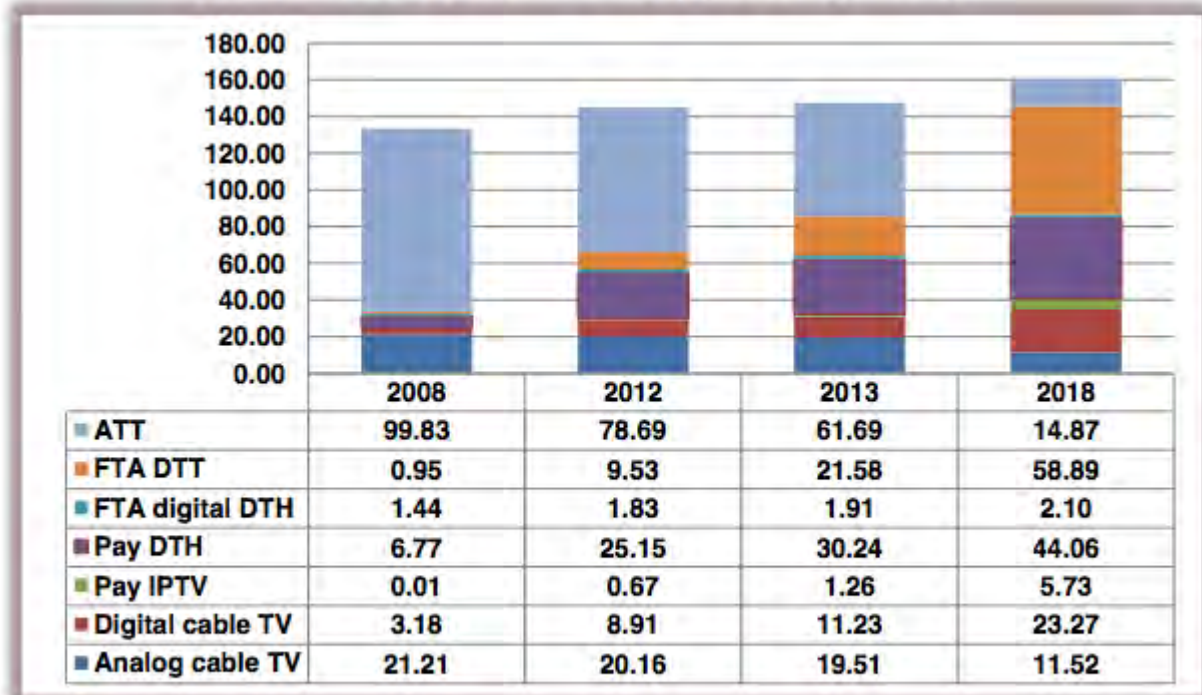
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Vital Statistics

Latin America TV households by platform (million)



Source: Digital TV Research

According to a report by Digital TV Research, DTH will continue to be the largest pay TV platform in Latin America with revenues reaching US\$20.1 billion in 2018, up from US\$13.4 billion in 2012. The growth in Latin America digital TV will reach 84% of households in the next five years. This will translate into 134 million digital television households by the end of 2018. Satellite TV is poised to grow in the region as most of the Latin American markets lacks a developed wire-line copper and coaxial-cable infrastructure.

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