

Satellite Executive BRIEFING

Vol. 8 No. 6 June 2015

SATELLITE
Markets & Research

Industry Trends, News Analysis, Market Intelligence and Opportunities

DTH, Mobile Broadband Driving Asia-Pacific Satellite Market

by Peter Galace

The Digital TV boom, increased demand for mobile broadband, and the pressing need to provide access in the remotest areas of the region are fuelling the growth of the satellite industry in Asia. And with the region's vibrant economy predicted by the Asian Development Bank to grow 6.3 percent, with China and India poised to grow higher than 7.2% this year and in 2016, more advances in the satellite industry is to be expected.

But as the largest continent and also the most populous with 4.4 billion people, Asia remains a challenge to satellite service providers. Each of Asia's 48 countries has its own regulatory structure, and the whole region has a highly fragmented market

at different stages of development. With varied geography and dispersed huge population, Asia continues to be a highly competitive market largely in part because of the big number of domestic and regional satellite operators.

There are also other engines of growth on the horizon. The build-up to the Tokyo 2020 Olympics, rapid growth in the aviation and maritime sector, as well as America's "pivot" to Asia are being seen as

tailwinds for further growth.

Satellite TV Revenues to Overtake cable in 2015

One of the biggest revenue sources for satellite providers has been the surge in digital TV and DTH in Asia. The DTH boom has recently been confirmed by the impressive growth of pay TV revenues in 22 Asia Pacific countries, which had been predicted to rise by \$10 billion between 2014 and 2020.

According to a *Digital TV Research Asia Pacific Forecasts*, pay TV revenues will reach \$41.52 billion by 2020. Cable TV will

remain the highest pay TV earner, with revenues at \$23 billion by 2020. Digital cable TV revenues will grow by 63% between 2014 and 2020 to US\$ 22.54 billion, with analog cable TV falling from US\$ 6.20 billion to US\$ 0.56 billion.

Simon Murray, principal analyst at *Digital TV Research*, said: "The number of homes paying for IPTV will overtake pay satellite TV subscribers in

Continued on page 4



Ultra HD is coming to Asia, with the launch of two Ultra HD channels on Japan's SkyPerfectTV DTH platform last March. (image LG)

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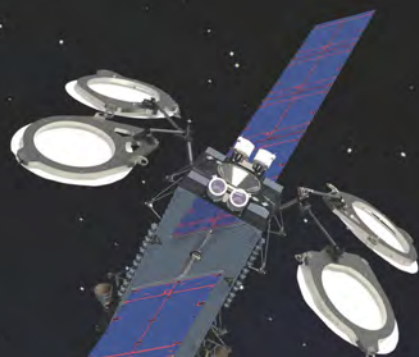
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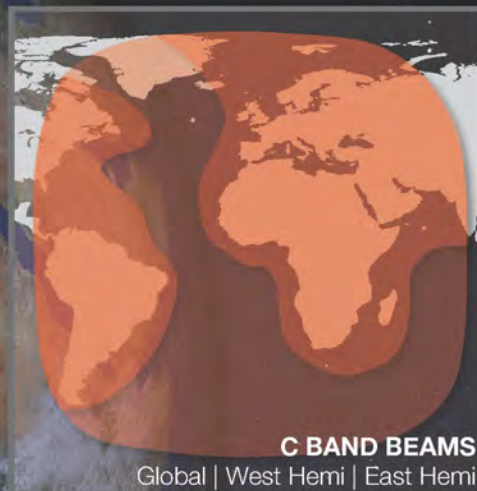
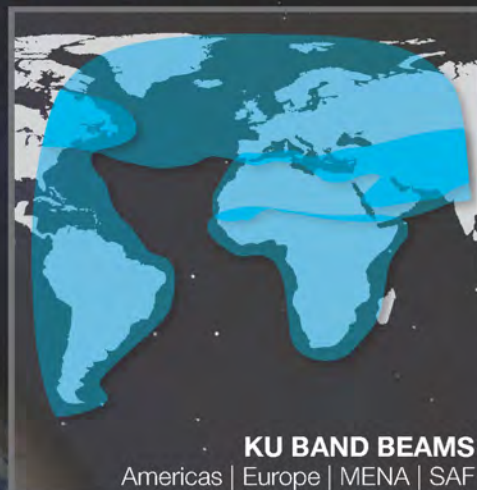


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Reading the Tea Leaves



Reading the tea leaves is a popular saying with origins in Asia, simply meaning to watch out for the signs. As you can see from our very comprehensive overview of the Asia-Pacific satellite market on the cover of this issue, there will be quite a number of new satellites coming online in the region in the next few years. Some of them are of the High Throughput variety (HTS) which will bring so much more bandwidth in the

region.

The sheer numbers alone of the AP region, which is home to more than half the world's population, would point that there will be sufficient demand for the new capacity that will be coming. But as those who have been in the Asian market for some time now realize, in Asia nothing is quite so simple. Already there are signs of a possible capacity glut—in fact some Asia-based operators reported last year diminished profits due to more price competition—a sign that there might be overcapacity.

However, it's too early to tell how the market will shape up. Unlike in past downturns in Asia, the industry is more diversified and new demand is coming from various segments including maritime, aeronautical and others.

The Pay TV Market in the Asia Pacific region is one bright spot. It is estimated to grow by \$10 billion between 2014 and 2020, according to Digital TV Research. The Digital TV Asia Pacific Forecasts report estimates that pay TV revenues will reach US\$ 41.52 billion by 2020.

Pay TV penetration will rise from 59.0% of TV households in 2014 to 68.4% in 2020, adding 142 million subs to take the total to 642 million. Even more impressive is that digital pay TV penetration will climb from 20.9% in 2010 to 44.2% in 2014 on to 67.0% in 2020. Digital pay TV subscribers will quadruple from 163 million in 2010 to 628 million by 2020.

China will provide 323 million pay TV households by 2020, with India supplying a further 179 million. China overtook Japan to become the most lucrative pay TV market in 2012. India will take second place from 2020. Together China, India and Japan will account for two-thirds of the region's \$42 billion pay TV revenues by 2020.

There is also a major opportunity in Asia for the inflight aeronautical market, which we cover in the executive roundtable on page 14 of this issue. Only 160 commercial aircraft currently have wi-fi available in Asia. This is projected to grow at CAGR of 20% to over 2000 aircraft by 2020. Like wise in the maritime market—Asia and the Pacific is the busiest sea lane in the world and expectations are very high for broadband connectivity in vessels. In both the aeronautical and maritime markets, satellite technology basically has no competition from other delivery platforms.

Whatever happens, you can count on us to monitor the developments in this exciting region.

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Satellite Executive Briefing
is published monthly by
Synthesis Publications LLC
and is available for free at
www.satellitemarkets.com

SYNTHESIS PUBLICATIONS LLC
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West Covina CA 91791 USA
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The Asia-Pacific Satellite Market ...From page 1

2018. IPTV revenues will climb to US \$7.13 billion by 2020, up from \$4.43 billion in 2014. However, pay satellite TV revenues will remain higher than IPTV. India will generate \$4.15 billion of the region's \$11.06 billion satellite TV revenues in 2020."

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Pay TV revenues will more than double in seven countries (Bangladesh, India, Indonesia, Laos, Myanmar, Nepal and Pakistan) between 2014 and 2020. However, revenues will fall (due to greater competition - including OTT - and subscribers converting to bundles) during this period in Australia, Hong Kong, New Zealand, Singapore and Taiwan, with low growth expected in Korea.

The rapid conversion to digital delivery is prompting satellite providers to focus on delivering digital content

and concentrate on the media business. For example, recent satellite launches for Asia during the past 12 months and in the coming years will all be used to expand video and data services.

Malaysia's launch of Measat-3b satellite last year will be used for DTH and data services across Malaysia, India, Australia and Indonesia. SES-9 satellite, scheduled for launch in third quarter of 2015, will expand primarily DTH broadcasting and maritime com-

Mobile Broadband, Internet Connectivity Fuel Further Growth

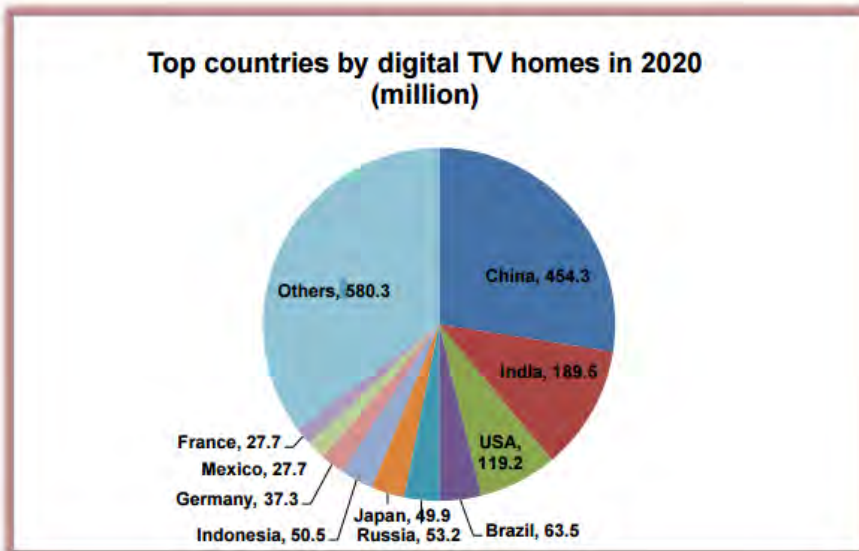
Nowhere in the world is the use of broadband mobile more prevalent now than in Asia. Asia Pacific is considered the world's largest mobile region and is also one of the most diverse regions in terms of the levels of both economic and mobile market development. According to a recent report by the *GSMA Intelligence*, Asia Pacific dominates the global mobile industry in terms of both unique subscribers and connections. The GSMA report says Asia Pacific already accounts for around half of the global subscriber base, while the region itself is dominated by four major markets: India, Indonesia, China and Japan.

"These together account for three quarters of the region's subscribers and over a third of the global subscriber base. Mobile trends in the region will increasingly be dominated by developments in these markets,

and in particular China, which is already the world's largest mobile market by subscriber numbers," the report said.

Bharat Book Bureau in another report says Asia now has 3.6 billion mobile phone users or around 52% of the mobile subscribers in the world -- spread across a diverse range of markets. It says the region is already rapidly advancing in its exploiting of mobile data/wireless broadband services.

Growth in high speed access to the internet by mobile wireless has been largely driven by highly competitive markets combined with preparedness to embrace new generation mobile



Source: Digital TV Research Ltd

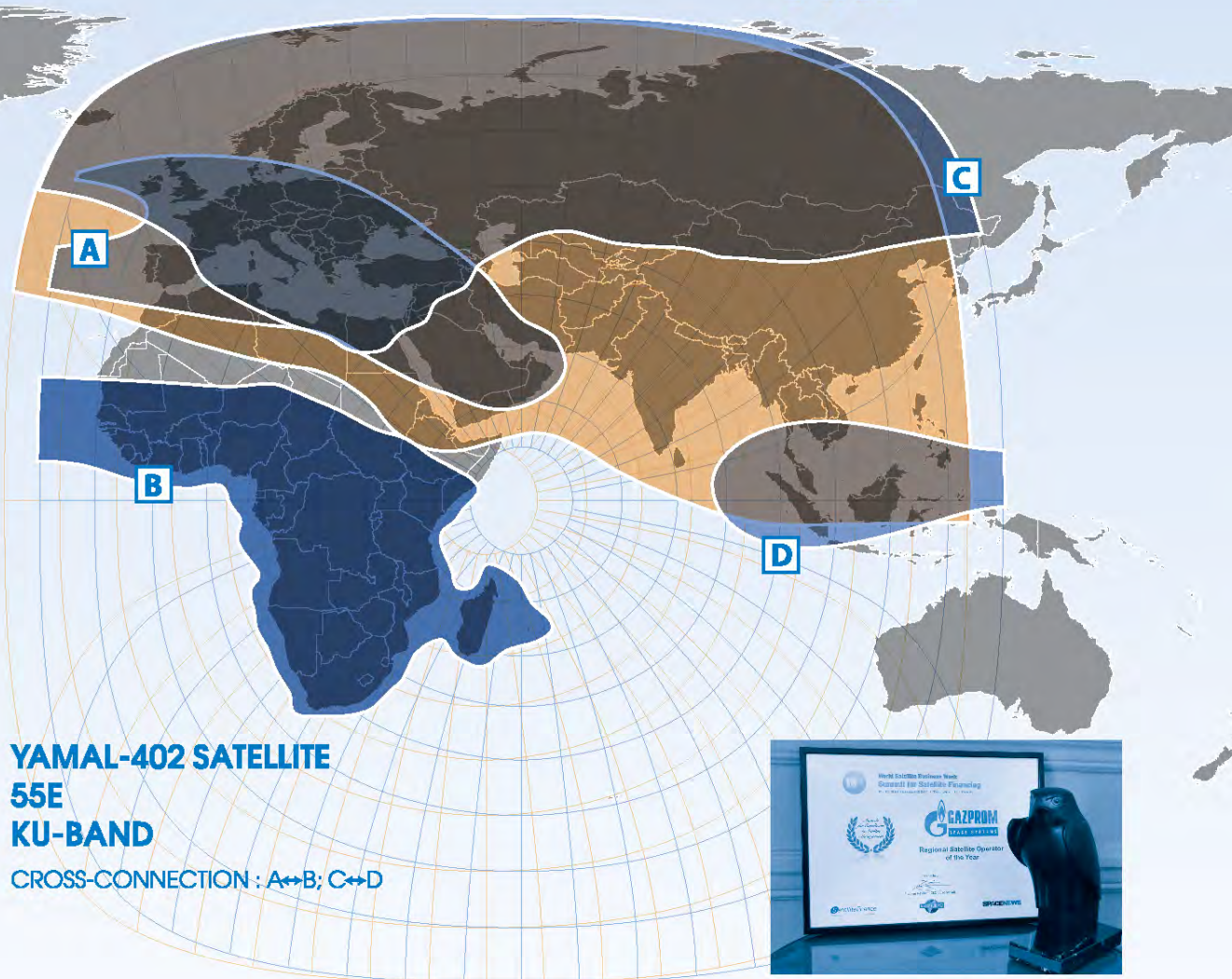
China will have 454 million digital homes by end-2020—or 27% of the global total—up by 169 million on 2014. India will overtake the US to take second place in 2015. India will add 95 million digital TV homes between 2014 and 2020 to double its total.

munications services in Northeast Asia, South Asia and Indonesia. SES-12, planned for launch in 2017, will be for DTH and enterprise customers. Intelsat's IS-36, to be launched 3rd quarter of 2016, will provide video services to customers who distribute content to South Asian cable communities. Two ABS satellites, ABS-3A, which was launched in March this year, and the second, ABS-2A, which will be launched fourth quarter of this year, will both cater to growing DTH customers.

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technologies. With 3G and 3G+ platforms extensively covering the region, mobile broadband services, many of which are dependent on satellite backhaul, are already well established.

Bharat Book says the rapid take up has been underpinned by increasingly cheaper smartphone prices and lower airtime tariffs combining to support even wider adoption with 4G/LTE providing a fresh impetus, especially in the region's pace-setting markets. By end-2014 mobile broadband subscriptions in Asia totaled just over 0.9 million or about 40% of all the mobile broadband subscribers in the world.

The more highly developed markets in the region, such as Japan, South Korea, Hong Kong, Singapore and Taiwan, have positioned themselves well to generally exploit mobile data and broadband wireless opportunities and lead the rest of the region into the next generations of mobile applications. As 3G transitions through 3.5G and onto 4G/LTE, *Bharat Book* sees consequential increases in speeds, as service improves, as content providers offer more services, and over-the-top (OTT) services gain greater traction, an exponential growth in data usage is occurring in the major markets.

While 3G licensing and the ongoing launch of 3G services in Asia has certainly provided the fundamental platform for growth in wireless data services, 3G has also been providing opportunities for both wireless access and content providers in domestic markets. In South Asia, in particular, more people own a mobile phone than a PC, giving the delivery of mobile data services huge potential there. Although one can obviously say that in terms of system sophistication 'the show has moved on' in the more advanced markets, 3G is continuing to provide the basis for ongoing development of mobile data across much of the region.

Bharat Book adds more recent mobile data development in Asia has essentially been built on the 3G and 3G+, now 4G/LTE technology. As a consequence, right across Asia, with the transition to a range of new generation

"...We continue to see strong growth in Direct-to-Home (DTH) in the region, with more local content being produced and with increased adoption of High-Definition (HD) content. According to an analyst report, the number of DTH pay-TV subscribers in Asia will double from today's 80 million to approximately 160 million subscribers by 2022. With the incredible volume of growth we are seeing in subscriber numbers, there is strong motivation for innovation across the entire value chain..."

-Deepak Mathur, SVP, Asia-Pacific & Middle East, SES



mobile platforms, there has been a major shift from mobile voice to mobile data.

The growth in the mobile broadband industry in Asia has opened up and expanded market opportunities in cellular backhaul, which is seeing explosive demand on the back of high growth rates in 3G and 4G.

Global analysis firm *Berenberg* said the increased penetration of smartphones, which is leading a growth in Internet applications and data demands from mobile users across the world, has become a gold mine for satellite operators offering backhaul services. As early as two years ago, Northern Sky Research (NSR) had already expected Asia to dominate the demand given the large population base and geographic coverage that requires satellite reach. Because satellites can reach places that no terrestrial technology can, it is largely seen as the ideal solution for mobile operators to reach remote and rural areas that are lacking 3G and 4G coverage.

Today, different Asian carriers are in various stages of growth and expansion and mobile backhaul continues to be a congestion zone that needs careful management.

One recent beneficiary of cellular backhaul is O3b which today delivers backhaul services to Malaysian tele-

coms provider Maju Nusa. The deal, awarded under the auspices of the Ministry of Communications in 2014, allows Maju Nusa to deploy mobile data services significantly further into mobile operators' networks, reaching rural communities in Malaysia where there is little or no access to broadband.

Maju Nusa is involved in a number of government initiatives providing broadband and 3G mobile voice and data coverage to rural Malaysia. Utilizing the O3b network allows Maju Nusa to deliver 3G service to customers over satellite.

But the business of providing cellular backhaul is spread across all satellite providers in the region.

Another interesting information to look at is the Internet penetration of Asia which stands at only 1.38 billion users as against 1.65 billion for the rest of the world as of middle of last year. According to the Internet *World Statistics*, Asia only has 34.7 Internet penetration, which could be another big opportunity for satellites providing Internet access. While this problem is being addressed by most Asian countries, it will still take several years to increase the access rate to a decent 51%, which is the average access for the whole world.

Other Drivers of Growth

Because of increased tourism, there is also a rapid growth of services in applications for the aviation and maritime sector.

In 2013, Northern Sky Research analyst Blaine Curcio had already predicted that in-flight connectivity is poised to take off in a big way with the region posting a nearly 10% increase in air traffic with eight of the 10 busiest air routes worldwide being in Asia.

In March this year, Panasonic Corp., engaged in the development in-flight entertainment and communications for about 275 airline companies, acquired ITC Global, a provider of satellite communication services for the energy, mining, and maritime markets. ITC Global serves customers at more than 1,200 remote sites across 70 countries and all the world's oceans.

"Panasonic Avionics' global capabilities and leadership in satellite-based communication will enable ITC Global to enhance our core service offerings to all of our customers," said Joe Spytek, ITC Global's founder and CEO. "This combination assures ITC Global's long-term access to next-generation satellite technology resources and strengthens our ability to deliver optimal value and service to meet our customer's current and future mission requirements."

Last year, it was reported that Panasonic Avionics, founded in Japan, was evaluating six separate offers from satellite fleet operators willing to build a high-throughput, spot-beam Ku-band satellite to cover Asia-Pacific air routes starting in 2017.

Todd Hill, director of global communications systems product management and capacity at Panasonic Avionics, said the company was looking at leasing between one-third and two-thirds of the total capacity of a satellite for five or 10 years.

Already, Panasonic is an anchor customer for Intelsat's Epic high-throughput satellite (HTS) system, whose first satellite is scheduled for launch in 2015. Panasonic has signed a

10-year commitment for Ku-band Epic HTS capacity aboard Intelsat's IS-29e satellite which is scheduled for launch in the first half of 2016. IS-33e, another HTS, will provide coverage of Africa, Europe and Asia and will be launched towards the end of 2016.

David Bruner, vice president of global communications services at Panasonic Avionics, recently said that Panasonic has received orders from 40 airlines and have approximately 1,800 aircraft committed to its broadband connectivity service.

"The growth has been very fast and has exceeded our expectations. Market forecasts predict that full broadband will be ubiquitous on all flights by 2020. This data traffic is totally incremental to all the other existing satellite segments – maritime, broadcast, etc.," he said.

Another engine for growth seen in the coming years is the buildup to the Tokyo 2020 Olympics.

Arianespace CEO Stephane Israel told *Nikkei Asian Review* in April this year demand for commercial satellite launches is increasing in Asia because of demand for 4K TV broadcasts before the Olympics. He believes this will increase demand for high-definition broadcasts of customers in Asia, necessitating an upgrade in equipment as well as increase in bandwidth requirements of enterprise customers.

Thus prospects look even better four or five years down the road for "ultrahigh definition" TV broadcasts, which will demand massive amounts of satellite bandwidth. Analysts have also observed that with the strong growth in DTH in the region, more and more local high-definition (HD) content are being produced.

Another area seen to spike demand is Obama administration's strategic "pivot" from the Middle East to East Asia. Even as demand for satellite bandwidth was drastically reduced with the pullout of the American forces in the Middle East, the demand will most likely shift to East Asia.

However, there is currently a limited supply of satellite capacity that

covers the waters of Asia-Pacific because satellites in these regions cover mainly land masses serving consumer and business needs for content and data in highly populated areas. Many commercial satellite operators in the region are focused more on commercial markets than government requirements.

"If the demand in the Pacific were to spike anything like what it did in Southwest Asia, it would be much, much harder for the commercial satellite industry to have that sort of capacity available overnight," said Skot Butler, vice president, Satellite Networks & Space Services at Intelsat General, in a *C4ISR & Networks* paper.

Because the U.S. government gets 80% of its military satellite usage from commercial operators, according to space and telecom consultancy Euroconsult, Obama's pivot to Asia could boost the sale of more satellite bandwidth for American ships operating in Asia, analysts say.

Upcoming Satellites

SES

SES-9 satellite is scheduled for launch at 108.2° East in third quarter of 2015. The spacecraft will be co-located with the existing SES-7 satellite. SES-9 will expand SES's capabilities to provide primarily DTH broadcasting and maritime communications services in Northeast Asia, South Asia and Indonesia, as well as maritime communications for vessels in the Indian Ocean.

The satellite is designed to operate for 15 years with a 12.7-kilowatt payload and 57 high-power Ku-band transponders (equivalent to 81 × 36 MHz transponders). The spacecraft will carry a xenon ion propulsion system (XIPS) for all on-orbit maneuvering and a chemical bi-propellant system for initial orbit raising.

With the launch of SES 9, SES will be operating a fleet of seven satellites in the Asian region. SES will have nearly 900 channels reaching over 44 million pay TV homes in Asia making SES one

of the leading DTH providers in the region.

Another upcoming SES launch scheduled for 2017 is SES-12 which will expand SES's capabilities to provide DTH broadcasting, VSAT, mobility, and HTS data connectivity services in the Asia-Pacific region in rapidly growing markets such as India and Indonesia. The satellite will replace NSS-6 positioned at 95 degrees East, and will be co-located with SES-8.

Deepak Mathur, SES senior vice president, commercial, for Asia-Pacific and the Middle East told *Satellite Markets and Research* during the recent CABSAT 2015 in Dubai that SES-12 is a response to the emerging opportunities in the mobility and the enterprise segment customers to allow them to deliver low-cost products to remain competitive.

"What is very unique about the satellite is it is hybrid, which means in addition to having high-throughput payload of over 220 transponders, it also overlays that with shaped beams, six independent shaped beams, so there is a complement between shaped-beam coverage and high-throughput spot beams."

Mathur adds that SES "has been delivering Ku-band slightly larger spots that allow full backward compatibility with customers' existing equipment. The only thing that is different is we're using Ka-band gateways in order to maximize the possible throughput that we can get. And there is also a digital processor on-board the satellite, which allows us to go up from any spot on the satellite to any spot on the satellite. So that remains a Ku-connectivity but then it also has a great Ka-gateway to Ku remote connectivity."

Mathur says SES-12 will address the needs of both their DTH and enterprise network customers. "The ability to deliver pan-Indian coverage on the shaped beam but then deliver linguistic specific content in the spot beam is an enormously important differentiator. And I think it is something we've picked up from our customers. And this is something they would like to see in-

fused in the satellite. So it is not just for the enterprise, the high throughput payload can only be a great complement to the shaped beam coverage for the DTH."

Intelsat

Intelsat is set to launch IS-36 in the 3rd quarter of 2016. Weighing 3.4 metric tons at launch, IS-36 will be orbited by an Ariane 5 ECA and will be built by Space Systems/Loral (SSL). Based on SSL's 1300 platform, the payload will enable media and content distribution services in Africa and South Asia.

The satellite will be located over the Indian Ocean to provide both Ku- and C-band services, with MultiChoice, Africa's leading pay TV provider, utilizing the Ku-band payload. The C-band payload will provide video services to other customers who distribute content to South Asian cable communities.

Intelsat currently offers hundreds of channels reach their audience from the 68.5° East and 66° East orbital locations, connecting Europe, Asia, Africa and the Middle East.

IS-20 at 68.5° East has close to 120+ million viewers across Asia. It offers over 275 SD & HD channels as well as C-Band. IS-17 at 66° East dominates the Indian video neighborhood with high viewership share of programming in key regional non-Hindi languages. It offers approximately 150 SD & HD channels and offers C-Band as well.

Also offering video distribution to cable systems throughout East Asia are IS-18 and IS-19, which connect the whole Pacific Rim and South Pacific islands and with reach back to the U.S. West Coast. Intelsat 19 at 166° East has 37+ million Pacific Rim viewers and close to 100% penetration of key cable MSOs across footprint. It also has U.S. connectivity. It offers approximately 160 SD and HD channels and has C-band with in-orbit protection available.

IS-18 at 180° East provides South Pacific cable distribution neighborhood with U.S. connectivity. It has about 30 channels and offers C-band.

ABS

On March 1 this year, Asia Broadcast Satellite launched aboard a SpaceX Falcon 9 rocket from Cape Canaveral, Florida ABS-3A. The revolutionary 702SP satellite is lighter and smaller than a conventional satellite due to the use of the all-electric propulsion system, making it more economical to launch. A conventional chemical satellite uses 50% of its weight during the ascent into orbit. Built by Boeing Space Systems, ABS-3A is equipped with 48 x 72 MHz C and Ku-band transponders and will offer expanded communications and broadcast capacity connecting the Americas, Europe, the Middle East and Africa at 3° West.

ABS-3A is the first of two satellites planned by ABS for launch in 2015. ABS-2A is due to be launched in the fourth quarter of 2015.

ABS-2A, a multi-beam 48 transponder Ku-satellite, will be located at 75° East and will cover the growing markets of Russia, India, Middle East, Africa, South East Asia and the Indian Ocean region. With 2.6 GHz of Ku-band spectrum, ABS-2A nearly doubles the available Ku-band frequencies available at 75° East. Together with ABS-2, ABS-2A will deliver a total of 100 x 54MHz Ku-band capacity to 75° East to a growing list of premium DTH customers, VSAT operators and maritime & mobility customers.

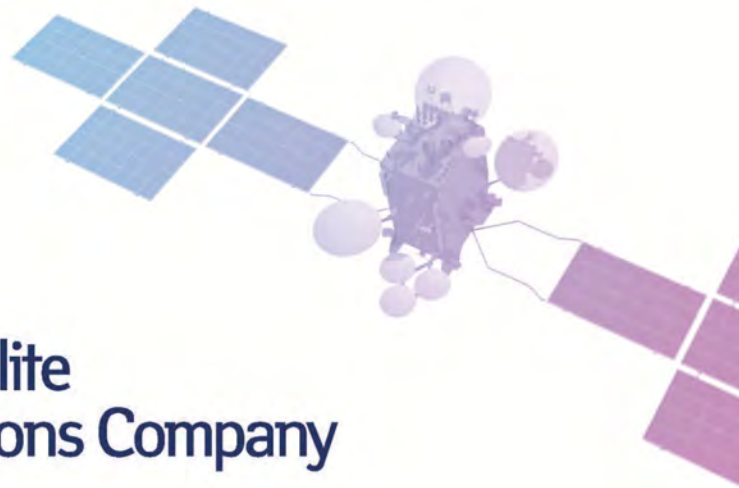
ABS-2A with 7.5kW of payload power is the second of the four Boeing 702SP all electric satellites that ABS is purchasing from Boeing Satellite in partnership with Satmex. It will be dual launched with its co-passenger Satmex-9, on SpaceX's Falcon 9 rocket.

O3b

Another company quietly ramping up its satellite services in Asia is O3b. In January this year, it partnered with Speedcast International Ltd. in delivering enhanced connectivity to Papua New Guinea. Under the deal, O3b will provide capacity via its Medium Earth Orbit (MEO) satellite constellation. The new service based on O3b capacity will



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address the growing demand from SpeedCast's customers in the region.

The service will allow SpeedCast to deliver high throughput and low latency internet services to local customers. SpeedCast's high bandwidth new IP Trunk from Port Moresby to the international Internet backbone will enable high throughput voice and data services, whose performance will be similar to or even exceed that of traditional fiber connectivity.

The new network will complement SpeedCast's existing global network, which utilizes traditional Geostationary Earth Orbit (GEO) satellite capacity and is the basis of SpeedCast's comprehensive coverage. SpeedCast's traditional network will further serve as a redundant back-up solution in the event of a primary network failure or other type of outage. With redundancy built-in at all layers of its network, SpeedCast can offer its customers unprecedented levels of reliability.

Earlier, O3b Networks also launched its services in Palau via Palau Telecom. Located in the western Pacific Ocean, Palau's 21,000 people are spread across 250 islands, which do not have access to undersea fiber cable. The use of O3b satellites, which are closer to the earth than conventional geostationary (GEO) satellites, reduces latency, increases Internet speed and improves voice and video quality for the user.

Palau Telecom is the second customer for O3b in Palau. Another client, Palau National Communications Corp. (PNCC), has successfully gone live on O3b's 'Fiber in the Sky' satellite network.

In 2014 PNCC and O3b signed a multi-year agreement for the delivery of trunking services to meet the growing demand of PNCC's customers. With the newly available broadband connectivity, communities across the Palau archipelago can use their internet and mobile network in ways that weren't previously possible.

O3b says its total capacity contracted in the Pacific region has now reached 5 Gbps. O3b said it connects as



ABS-3A, launched last March, is currently in an extended orbit-raising phase to geostationary position at 3°W. It is equipped with 48 x 72 MHz C & Ku-band transponders and will offer expanded communications and broadcast capacity connecting the Americas, Europe, the Middle East, Africa, and the North Atlantic Ocean.
(image: ABS)

many Pacific islands as fiber and it is anticipated O3b will outstrip fiber for international connectivity to individual countries in the region through 2015.

AsiaSat

Asia Satellite Telecommunications Co. Ltd. is set to launch in 2016 AsiaSat 9 featuring C-, Ku- and Ku-band transponders and will be stationed at 122.2° East. It will replace the aging AsiaSat 4. The additional Ku-band transponders on this satellite will enable the company to serve markets in China, Australia, Mongolia and Indonesia.

Besides the communication payload, the satellite will also deploy a commercial meteorology payload for GeoMetWatch Corp. The STORM (Sounding and Tracking Observatory for Regional Meteorology) payload is a hyperspectral sensor designed to provide high-resolution soundings of atmospheric conditions, including temperature and humidity, for weather forecasting and storm tracking.

AsiaSat 9 was originally scheduled for launch in 2017 on a Proton-M Briz-M booster. However last March 2015, the launch date was moved to mid-

2016 in order to replace AsiaSat4 at 122° East.

In early 2015, AsiaSat reported a nine percent revenue drop and a 27% drop in contracts for 2014. At that time, AsiaSat had four comsats in operation and had recently launched two more—AsiaSat 6 and AsiaSat 8—which had added 22% additional bandwidth capacity into its market. Although revenues were down just 9%—to US\$176.09 million (HK\$1,365 million)—2014 profits declined by 25 percent over 2013, to US\$72.11 million (HK\$559 million).

Last year, AsiaSat launched two new satellites, AsiaSat 6 and AsiaSat 8, which increased the company fleet from four to six and its transponder capacity by 22%. These satellites support its strategy by adding high power C and Ku-band capacity in the key growth markets of South Asia and China and enhancing its ability to address new technologies and applications.

Thaicom

Thaicom, Thailand's satellite operator, recorded a consolidated net profit

of US\$16.09 million (540 million Baht) – a 35.3% increase when compared with results from the first quarter of 2014. For the same period in 2015, consolidated revenue from the sale of goods and rendering of services totaled US\$91.65 million (3,074 million Baht), an increase of US\$6.83 million (229 million Baht) (8.0%) compared to US\$84.77 million (2,845 million Baht) in first quarter 2014.

Suphajee Suthumpun, CEO, attributed the performance to revenue growth from Thaicom-7 which has been generating income since November 2014.

The revenue growth achieved mainly came from Thaicom's satellite, Internet services and media businesses, as well as efficient selling and administrative expense control. Thaicom says its "Connecting the Future" in 2015 will make available more HD channels to Thaicom customers and further developments in its UHD services.

Thaicom announced in April 2014 it selected satellite builder Orbital Sciences and launch-services provider

Space Exploration Technologies (SpaceX) for the construction and launch of a Thaicom 8 following approval of the \$178.5 million project by its board of directors.

Thaicom 8, a 3,100 kilograms class satellite, will be operated from 78.5° East co-located with Thaicom 5 and Thaicom 6 and will carry 24 active Ku-band transponders. The launch is scheduled next year on a Falcon-9 v1.1 rocket. Thaicom 8 is expected to weigh 3,100 kilograms at launch and will carry 24 Ku-band transponders.

Measat

Measat has capacity across six satellites and provides satellite services to over 150 countries representing 80% of the world's population across Asia, Middle East, Africa, Europe and Australia.

The Measat fleet includes Measat-3, Measat-3a and Measat-3b satellites co-located at 91.5° East, supporting Asia's premium DTH and video distribution neighborhood; Measat-2 at 148.0°

East; and, Measat-5 at 119.5° East. In Africa, the Africasat-1a satellite at 46.0° East provides satellite capacity across the African continent with connectivity to Europe, the Middle East and South East Asia. The Measat fleet will be further strengthened with the addition of Measat-3c at 91.5° East in 2016 and Measat-2a at 148.0° East in 2017.

Measat also provides a complete range of broadcast and telecommunications solutions. Services include ultra high definition, high definition and standard definition video playout, video turnaround, co-location, uplinking, broadband and IP termination services.

The company launched Measat-3b in September last year. The satellite is equipped with 48 high-power Ku-band transponders to expand direct-to-home broadcasting and VSAT services across Malaysia, India, Indonesia and Australia. Measat-3b is co-located at the 91.5° East orbital position along with the Measat-3 and Measat-3a satellites.

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APT Satellite Co.

APT Co. Ltd. is set to launch Apstar-9 in fourth quarter of 2015. Apstar-9 is based on DFH-4 series platform provided by China Aerospace Science and Technology Corp. It will be located at 142° East to replace Apstar-9A satellite. Apstar-9 will be equipped with 32 C-band and 14 Ku-band transponders. The C-band transponders will consist of one broad beam for the Asia-Pacific region and one enhanced beam for South East Asia, suitable for video broadcast, VSAT networks and cellular backhaul services. The Ku-band will cover West Pacific and East India Ocean region, providing DTH, VSAT, maritime and in-flight connectivity services.

In May this year, APT announced that TS Global Network Sdn Bhd, a Malaysian satellite communications services and solutions specialist, invested on Apstar 9 and will have a designated payload to be known as TSGN MySAT-1.

The satellite payload will propel

privately-owned TSGN's growth trajectory and ambitions to play a regional role in delivering affordable satellite communications and solutions to a wide spectrum of government and commercial customers. It will also play a pivotal role in bridging the digital divide by offering similar services to the underserved and un-served areas in Malaysia and the region in general.

Targeting the ASEAN and Asia Pacific markets, TSGN aims to build on a strategic business model based on smart collaborations successfully built to date in Brunei and Indonesia to gain rapid access to serve its target markets.

Both APT and TSGN said the companies' collaboration on the satellite will ramp up broadband data, video and other services in the ASEAN Region.

Conclusion

Regulatory constraints and high competition remain to be formidable challenge for satellite players in Asia. The increasing demand for satellite services in practically all sectors of the industry are strong motivation for innovation across the entire value chain. There remain plenty of opportunities to both national and global satellite companies to ensure growth and create a truly open and vibrant satellite sector. But it is important for players to fully understand the market dynamics in this vast region. Cooperation rather than competition can be the driving force to sustain the momentum for growth for many players in Asia.



Peter I. Galace is contributing editor for Satellite Markets and Research. He writes extensively on telecommunications and satellite developments in Asia and other regions for numerous publications and research firms. He can be reached at peter@satellitemarkets.com.



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The Inflight Broadband Satellite Market

by Bernardo Schneiderman

Recent NSR forecasts that the commercial aircraft connectivity market to reach retail revenues of US \$3.2 billion by 2024. In-flight connectivity (IFC) FSS Ku-band and HTS installs on wide-body and narrow-body airplanes will drive the market growth. Today with majority of passenger carrying smart phone, tablet the demand for connectivity is only growing. The report expect that 100,000+ airframes in the addressable market, NSR projects that today's business is a fraction of the potential for satcom connectivity with only 47,500 in-service satcom units deployed.

As more satellites are available to link aircraft with the ground for popular social media applications or bandwidth-hungry video applications, every indications points to a surge in capacity demand that could shake-up the market and extend connectivity to more airlines for both long and medium-haul. Building on passengers' thirst for connectivity, the market will be expanding globally. The applications will reach further into the operations of aircraft fleets, and bring more safety during flight. Mostly an L-band market today, customer requirements are moving airlines to adopt more FSS Ku-band and GEO/Non-GEO HTS satellite bandwidth. By 2024, NSR forecasts the market for Aeronautical SATCOM connectivity will reach 160 transponder equivalents for FSS Capacity, and 81 Gbps of bandwidth across GEO/Non-GEO systems.

To shed light on this growing market we invited service providers such as Global Eagle Entertainment (GEE), Thales InFlyt, Panasonic, GOGO and Viasat to a executive roundtable discussion. Participating in this roundtable are **Aditya Chatterjee** Chief Technology Officer & Senior Vice President of Engineering, **GEE**; **Anand Chari**, Chief Technology Officer, **GOGO**; **Mike Moeller**, Vice President Business Development, Connectivity, and TV, **Thales InFlyt**; **David Burner**, VP Global Communications, **Panasonic Avionics Corporation**; and **Don Buchman**, Vice President and general manager, Commercial Mobility Business, **ViaSat**. Excepts of the exchange follows:

Satellite Executive Briefing (SEB): *How do you see the market for your product line focusing on the inflight broadband market?*

Aditya Chaterjee, Global Eagle Entertainment (GEE): GEE has several projects underway including:

- The launch of our revolutionary three-axis Global Ku Antenna (see question 4 for details).
- Increased global capacity through wide beam and HTS satellites through our partner SES.
- Continued and enhanced support of our existing airline customers including Southwest Airlines and NAS.

- Enhancement of our connectivity portal, AIRTIME, to provide an innovative and engaging connected inflight entertainment solution to airlines.
- Using connectivity as a tool through our Operations Data Solutions business group which will launch a series of innovative products and solutions to support airline productivity.
- Identifying ways to expand our connectivity, content and digital media offerings beyond commercial aviation market to verticals such as maritime and business aviation.

Anand Chari, Gogo: We see a tremendous market right now for our next generation satellite solution – 2Ku. We see this as the future of global in-flight connectivity and we have five airlines signed up for either full-fleet deployment, partial-fleet deployment or a trial of the new service. We see this technology as the first commercially viable service for global aviation in terms of coverage cost and capacity.

David Burner, Panasonic: Airlines have started to recognize the importance of a connected aircraft regardless of airframe type or the mission that it flies. They want all of their aircraft to be connected because passengers love Wi

-Fi and because airlines want to leverage the operational communication capability, they need the system installed across an entire fleet.

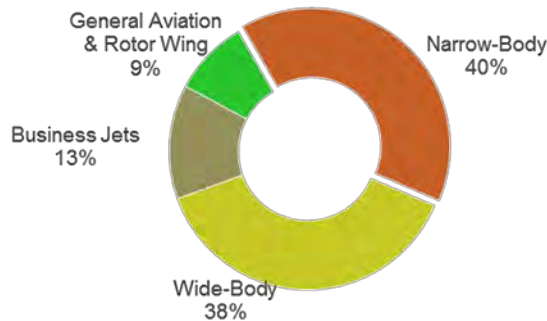
Looking at the airframe production forecasts, there are 12,000 narrow body aircraft forecast in the next 10 years alone. We expect that the vast majority of these aircraft will be connected by broadband service. It's why we introduced our ultra low profile antenna – to better serve this market with a solution that provides broadband, but also offers huge advantages in weight and performance compared to other antennas available today.

We also expect to see tremendous growth in Asia – specifically China. We've worked long and hard to open up the Chinese market, and with our partnership with China Telecom Satellite, we're already operating connected aircraft in that region. The potential for growth in China alone is tremendous.

Mike Moeller, Thales InFlyt: The Thales InFlyt Experience, a single-source supplier, is revolutionizing the travel experience in partnership with our airline customers and technology partners. Winning the hearts and minds of passengers, we are creating live, connected and personalized experiences, which enrich, entertain and allow people to be more business-productive in the air.

Today, we see the market at the brink and now really ready to take off. Over the past year we installed over 300 Ka-band systems on JetBlue and

Aeronautical Satcom Total Retail Revenues by Airframe, 2024



Source: NSR

United and continue to grow the fleet this year into the coming years.

Shifting to streaming content rather than relying on onboard servers is bringing more choice to consumers. It is this demand for consumer choice which will shape the inflight broadband experience as connectivity becomes more available and bandwidth becomes cheaper.

Airlines are also turning to connectivity solutions to drive a competitive advantage. Using real-time reporting of onboard information, airlines can more quickly address maintenance requirements, better serve passengers and provide critical information to pilots.

Don Buchman, Viasat: We know consumers want faster internet speeds, instantaneous access to bandwidth-intensive applications and an overall richer in-flight experience; however, average passenger take rates will only increase if enough capacity is available – at the right consumer price point. Today, while there are a number of

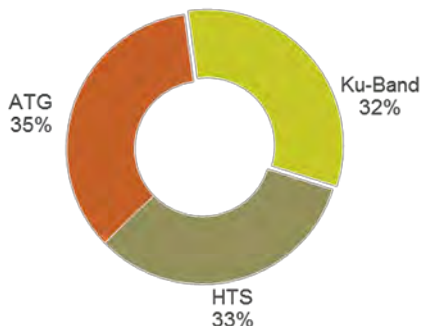
players in the IFC market, none can offer the speed, performance and bandwidth economics delivered by ViaSat's Exede in the Air® Ka-band high capacity system. That's why in the near-term, we believe competitors, new and traditional, will investigate satellite-based IFC systems but will find they lag in their ability to match the ViaSat service.

Looking at the longer-term 3-5 year vision, we believe high take rates and a captive in-flight audience will push airlines to investigate more flexible and sustainable business models – where new interest from advertisers, corporate sponsors and content providers will increase revenue opportunities. These opportunities play well for Viasat. Only Viasat's high-capacity Ka-band satellite network has been designed to enable airlines to meet current and future bandwidth demand for increasingly graphic-heavy websites and data-intensive media streaming applications in the air. The ViaSat Exede In The Air service is up to eight times faster than competitive services, enabling video streaming over the internet, which will allow airlines to establish a competitive advantage over other services that block video streaming.

SEB. What applications will be driving demand for satellite services in the aviation sector?

GEE-We believe that bandwidth demands will increase from the passengers as a natural progression of broad-

Air-to-Ground, Ku-Band and HTS Connectivity Marketshare by In-Service Units, 2024



Source: NSR

band use. Social media applications, in general, are already prevalent amongst airline passengers and this would continue to increase the demand of bandwidth from the planes to the ground. Crew centric applications are on the rise. And various Operational data applications will add to the ever-increasing demand.

Gogo - While bringing more affordable capacity on a global scale is key for Gogo in this market, we see the connected aircraft and connected fleet as the future driver of demand for service. Our business today has been focused solely on passenger connectivity. Over time, we see demand for airline operational connectivity in-flight outpacing demand for passenger connectivity.

Panasonic- Passengers love inflight Wi-Fi. They want to be connected to friends, families, co-workers, live news and sports, and their social networks at all times, even when they fly. At the same time, airlines want to leverage the broadband pipe to streamline their operations. They want to adopt electronic flight bag applications, monitor engine performance, enable live credit card transactions, manage inventory control in real time, and also see live data about passenger preferences, entertainment choices, and so on, so that they can continually improve the quality of their product in flight, streamline their operations, and ultimately improve their bottom line. Television is a true differentiator as well. Today we have over 200 aircraft using our global live television service eXTV. We currently offer eight channels of live programming including news and the world's most popular sporting events in partnership with IMG and their Sport 24 network.

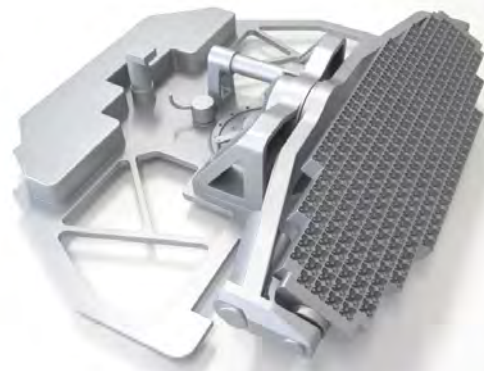
Thales - The demand for connectivity in commercial aviation is quickly increasing. Airlines want to be able to monitor

all aspects of operations in real-time and passengers demand reliable and adequate bandwidth which provides the same connectivity in-the-air as on-the-ground.

The recent announcement that JetBlue is working with Amazon to stream the Amazon library free of charge shows the excitement airlines have for a true broadband experience. The sky is truly the limit and having a big pipeline to the internet is key for future airline connectivity.

Viasat- Bandwidth-intensive applications and streaming media content to the passenger seat, such as movies from Amazon, Hulu and Netflix as well as YouTube content and music, will drive demand for satellite services in the IFC market. However, to really drive airlines to adopt IFC is a different yet just as important story. High levels of passenger engagement – which will be the real key to growth in the global in-flight connectivity market – is needed. To be successful, bandwidth cannot be constrained, or so costly, that high retail pricing will limit the number of users per flight – otherwise internet connection speeds would be pretty much unusable.

The most impactful internet services have grown by starting with high rates of adoption and user engagement – and have scaled even further through convenient access on mobile devices. There are little or no examples of services that have scaled by limiting usage through high pricing. On the contrary, Exede in the Air is unique in that it can draw in passengers not by walled gardens of flight tracking, weather and shopping sites – but by enabling each passenger to connect to media con-



Global Eagle Entertainment's Ku-Band antenna.

tent, e-mail, messaging, web and mobile apps they have in their home or office. This is a totally different approach to in-flight connectivity, and one we believe is a powerful one. Fundamentally it will be successful only to the extent that it yields economic benefits to the host airlines that embrace and adopt it.

SEB-How do you see the growth in Ku-Band capacity impacting the inflight broadband market?

GEE-Passenger expectations have changed drastically in the last few years, in particular with the growth in passengers' use of devices such as smartphones and tablets. Broadband connectivity is starting to become an expectation for passengers. Airlines therefore need to ensure that bandwidth is sufficient to maintain and enhance passenger loyalty and satisfaction. Almost all Ku-band satellite providers have invested and continue to invest in Wide-beam, regional and spot beam satellites. Some of these are purpose built for mobility users such as GEE. To support GEE with our Ku-band wide beam coverage, our satellite partner SES has invested over a billion dollars to launch and operate three Ku-HTS satellites providing ubiquitous high throughput coverage over the most prevalent travel routes on the globe. To add to that, there are also plans for several wide beam satellites as well. In

short, this acceptance of Ku as the primary means to provide airlines connectivity spells a guaranteed, sustainable and scalable connectivity offering for many years to come.

Gogo: We see Ka-Band vs. Ku-band as just spectrum bands. To us, it's about the right technology for each individual aircraft depending on where they fly. Right now, there are more Ku-satellites in the air so there are redundancies there that are attractive and 2Ku is designed to take advantage of this, but we are also a value added reseller of Inmarsat's GX service, which is a global Ka-Band service. Ideally more, cheaper bandwidth is needed no matter what spectrum band is used.

Panasonic- Right now, Panasonic is a Ku-band service provider. Our mission, however, remains the same – to provide our customers with the best global performance for the absolute lowest cost per bit.

Too much focus has been spent on the frequency bands that in-flight operators use than is merited by the technical differences between the technologies. Ka-band providers typically downplay the merits of Ku-band because they don't have the orbital slots to offer Ku-band service. It's not that Ka-band is vastly superior from a performance perspective.

The future of in-flight connectivity is in high throughput services. High Throughput Satellite (HTS) payloads will greatly increase the amount of bandwidth available to in-flight applications, allow higher data rates to and from the aircraft, and make in-flight connectivity more affordable. The benefits of HTS technology are independent of frequency and both Ku and Ka-band operators are taking advantage of them.

Marketing rhetoric aside, service providers will likely select the band they use based on where they have access to spectrum because there is

virtually no difference in the performance difference between the bands in the aeronautical market. Users of in-flight connectivity services, in turn, will select their service providers based on coverage, services and the price-point that best fits their requirements.

So we will

continue to monitor the developments in satellite communications and continue to offer a solution that makes the best sense for our customers.

Thales: When it comes to bandwidth services, airlines have options. Since bandwidth comes at a price, airlines must balance what they are willing to invest against what will support their operations while increasing customer loyalty. In the coming years, we will see new Ka-band service providers enter the market. Armed with the latest technologies – Thales is also a global leader in the manufacture of satellites – connectivity providers will have higher throughput capacity enabling faster speeds and more access. With more bandwidth to go around, the cost of data will likely decrease making connectivity solutions more affordable to airlines.

Viasat: First, it is important to recognize that not all Ka-band satellites are the same. ViaSat-1, the world's highest capacity Ka-band satellite, delivers unmatched price-performance benefits. With ViaSat-1 we provide coverage over major U.S. flight routes, where huge demand for bandwidth would produce significantly high capacity utili-



The Viasat-1 satellite is currently the world's highest capacity Ka-band satellite. (image from ViaSat)

zation. The unmatched capacity and bandwidth economics of ViaSat-1 allow airlines to offer in-flight broadband at a competitively low price point or free to the passenger. Other Ka-band satellite providers spread a thin layer of capacity across the globe irrespective of bandwidth demands that vary dramatically by region. While this spreading of capacity has merit and may meet the needs of some of the customers for whom global coverage with Ka-band is important, we believe this deployment plan is not cost-effective and will be uneconomical for the vast majority of commercial airlines and passengers.

Second, we believe none of the existing ground or satellite based networks – even those using planned Ka- or Ku-band spot beam satellites, which won't be in service for several more years – can replicate a comparable user experience, at comparable scale, and at comparable unit costs as our satellites. We believe future HTS offerings using either Ku- or Ka-band will still fall short on capacity and bandwidth economics when compared to ViaSat-1 and even more so when we introduce ViaSat-2, our next-generation Ka-band satellite. With the launch of ViaSat-2 in 2016, we'll be able to expand our coverage to parts of Latin America, the Caribbean

and air routes across the Atlantic to Europe – with twice the bandwidth economics of ViaSat-1.

SEB: *Do you have any products that you are planning to introduce in the near term?*

GEE: We recently launched a revolutionary Global Ku Antenna that has a unique three-axis mechanically steered array. The antenna, co-developed with antenna manufacturer QEST, is the first in the market to offer truly global Ku-band connectivity, including coverage on both high latitude and equatorial flight routes and its unique technology enables consistent high-performance at a far greater range of elevation and skew angles than competitive systems. Its design is also compatible with future line fit installations and GEE's current certifications, allowing for upgrades from the existing GEE systems, and is fully ARINC 791 compliant.

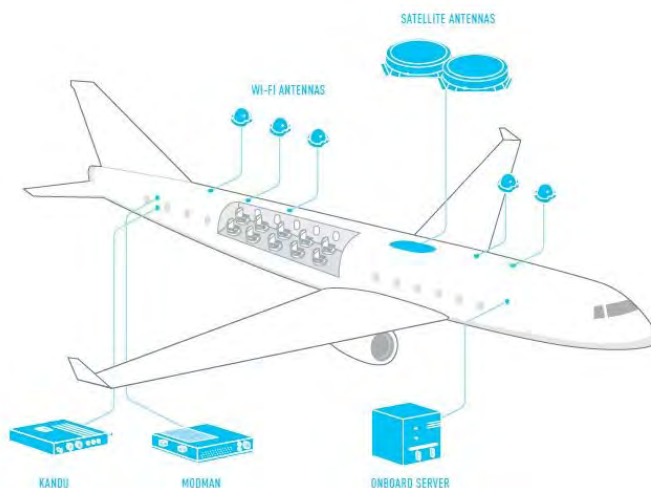
We're also supporting SES as they look to launch their next generation satellites, which will enable us to offer HTS connectivity to our customers in the future.

Lastly, we have several airline customer trials underway - one with Air France and Orange, another on Air China, and of course, we support our current airline customers which include Southwest Airlines and NAS.

Gogo: Yes, I mentioned earlier that we will introduce 2Ku this year. The advantages of 2Ku will be significant. We see this as the best performing service

in the market in terms of coverage, cost, capacity and reliability.

Panasonic: We have a new single panel antenna that we will be introducing to both narrow and wide body aircraft this summer. The antenna offers less weight and better performance than our legacy technology. It's an exciting proposition for our customers. In December, HTS will launch over North America and the Atlantic corridor, and that means massive capacity for all Panasonic-equipped aircraft flying missions over that geographic region. HTS for Europe will follow in 2016



GOGO's 2Ku Satellite Internet System

and Asia in 2017. We also plan to expand our channel line-up for eXTV and continue to expand the applications we support from an operations standpoint. There are also quite a few other new technologies that we plan to introduce in the coming months, but you'll have to wait until we get a bit closer to launch.

Thales : The FlytLIVE portfolio of services is Thales' connectivity solutions business. It has a number of advanced solutions available to customers including both ground and space based capabilities. At the 2015 Aircraft Interiors International show, we displayed our latest connectivity tools for airlines which allow our customers to monitor

their connected fleet in real-time while also capturing passenger usage data. These features enable airlines to optimize revenue and customize the portal in real-time. These are the type of products that will change the way airlines manage the experience and optimize revenue or lower cost.

Viasat: At ViaSat, we are putting high emphasis on growing our Exede In The Air business with airlines providing North American, Latin American, Caribbean, Trans-Atlantic and European flight routes. We will focus near-term service expansion to airlines providing passenger transport throughout the world's major flight routes. We expect to announce new customer wins and partnerships with integrators, aircraft manufacturers, content providers, ISPs, sponsors, and advertisers to meet consumer demands for a rich in-flight connectivity and entertainment experience.

SEB: *What differentiates your products and services from others in the market?*

GEE: One of the main differentiators of GEE compared to other connectivity companies in the market is that we are a complete customer-centric media company with a variety of market-leading expertise that we provide to approximately 150 airlines worldwide. This includes connectivity, but also in inflight entertainment content, where we are the leading provider of IFE content services and solutions, digital products and digital media solutions such as advertising and sponsorship. We also provide our products and services to other non-theatrical markets such as the maritime industry and institutions. Our holistic approach to IFE&C products, solutions and ser-

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vices provides a differentiated approach that underlines the added value that content can provide to an airline's connectivity offering, and supports

airlines exploring ancillary revenue opportunities through their connectivity.

Gogo: I think there are several differences. First, we invest more in research and development than our competitors and we are also not wedded to any particular technology. Our goal from a technology perspective is to provide the best possible solution for each airline partner, whether that's Ku/Ka or our Air to Ground service in the United States. Most of our competitors are focused on one, maybe two technologies. To us, there isn't one size fits all that will cover both business and commercial aviation.

Panasonic: Our service is truly unique compared to our competitors. We are the only provider operating a truly global, broadband network. We already cover 99.6% of all commercial aircraft routes, and we're already making commitments to bring even more capacity – up to 200 Mbps – to aircraft flying all over the globe.

Our product offering is also unique because we offer more than just one or two services. Today, our airline customers can offer passengers Wi-Fi, live television and mobile phone services. Most importantly, we're line fit offer is able on every Boeing platform, and most Airbus airframes. No provider can offer airlines a connected aircraft right from the OEMs – except Panasonic. This is a huge advantage to airlines, and we're very happy to be in a position to offer them a service available as soon as their aircraft is delivered.

Thales- The Thales InFlyt Experience provides a comprehensive offering – AVANT, FlytLIVE and FlytCARE. Our solutions are drawing upon open-market standards like Android, are highly configurable through an already available portal and are building part-

“...Passenger expectations have changed drastically in the last few years, in particular with the growth in passengers' use of devices such as smartphones and tablets. Broadband connectivity is starting to become an expectation for passengers...”

—Aditya Chaterjee, Global Eagle Entertainment

nerships with satellite service providers.

Doing these things, we have focused on the core fundamentals for connectivity. We call them the ABC's of connectivity:

Access to your world – We want the best experience for passengers which airlines will be proud of and can place their confidence in to call them their systems. Airlines will no longer have to apologize to their customers about slow internet.

Best technology – We bring the best technologies in broadband connectivity to bear optimizing coverage, cost and capacity. This may change depending on regions or type of aircraft.

Comprehensive Platform – This is where the magic happens. From passengers to crew to airline operations, we have a full suite of tools for the airlines to leverage the biggest pipeline to the internet.

We constantly invest to keep our solutions and services at the forefront of the industry (global Ka capability). We know what the world's leading airlines want through deep relationship with them and the OEM (in the avionics and cabin domain) and we apply that knowledge for our customers' benefit.

Viasat: The ViaSat Exede In The Air service provides passengers access to high-speed web browsing, streaming media, and productivity applications they have at their home or office at a competitively low price or free in contrast to dial-up-like speeds and pay-only models of other in-flight offerings. ViaSat

offers the only in-flight Wi-Fi service with a passenger-level SLA delivering 12 Mbps to each passenger regardless of how many devices are connected or how many Exede In The Air-equipped aircraft are on the network. This provides a highly-differentiated experience compared to other services that aggregate bandwidth to the plane leaving passengers contending for service.

Additionally, Exede In The Air is the only IFC system capable of enabling video streaming over the internet while other services, strapped by limited capacity, block video streaming from commonly used services like Netflix, Hulu and YouTube.

Finally, Exede In The Air is well established on JetBlue and United, and coming soon to EL AL. Exede In The Air has won a number of industry awards including APEX Avion Best Technology Award, Via Satellite Excellence Award and the Crystal Cabin Award. Only JetBlue and United Airlines, early adopters of Exede In The Air, were rated “Best Wi-Fi” by Routehappy as providing the “most technically advanced systems available capable of streaming video.”



In the next issue (July-August 2015) we will focus on the satellite operators perspective on the inflight broadband market. Watch out for it.



B. H. Schneiderman is the Principal of Telematics Business Consultants. He can be reached at : info@tbc-telematics.com



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A Changing Maritime Satcom Market

by Capucine Fargier

Over the past ten years, the maritime satcom market has seen tremendous changes, notably with the introduction and growth of maritime VSAT services in C- and Ku-band that allowed for higher throughput and therefore a range of new, previously unthinkable IT applications at sea. 2015 should mark another milestone in the maritime satcom industry and the entry into the next era of maritime satellite communications with the arrival of High Throughput Satellite (HTS) systems targeting the maritime sector that will allow for yet another major leap forward in terms of telecom applications allowed on board vessels.

On the capacity supply side, the landscape is expected to significantly change in the coming years. Indeed, MSS operators are currently launching their second generation constellation, FSS operators are highly investing in HTS systems, and new players might enter the market, following recent announcements of a number of new LEO constellation projects. As a result, overall capacity available in maritime regions should be multiplied by a factor of more than eight in the coming years. However, given the size of maritime areas, that capacity will not be equally shared among all the maritime areas.

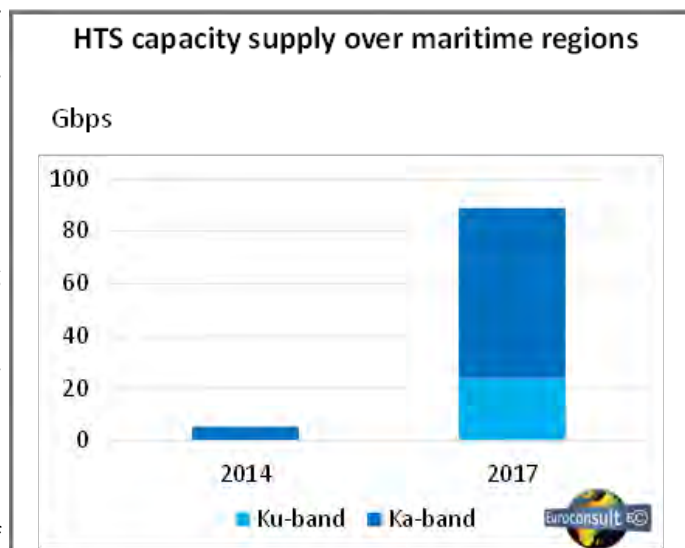
In total, Euroconsult expects that with the launch of currently announced HTS systems, the Ku/Ka-band HTS capacity available over ocean regions will increase from more than 5 Gbps in 2014 to approximately 89 Gbps in 2017, a sixteen-fold increase in raw capacity. As HTS systems will also be more efficient in terms of Mbps provided per MHz, it will have a positive impact on pricing and offerings from service providers. The Pacific Ocean is, along with the North Pacific Ocean, one of the two maritime regions with the highest traffic density. As a result, satellite operators invested a large amount of HTS capacity over those regions. To illustrate, in 2014, 1 Gbps of HTS capacity was available over the Pacific Ocean, while by 2017, around 28 Gbps will be available in the region.

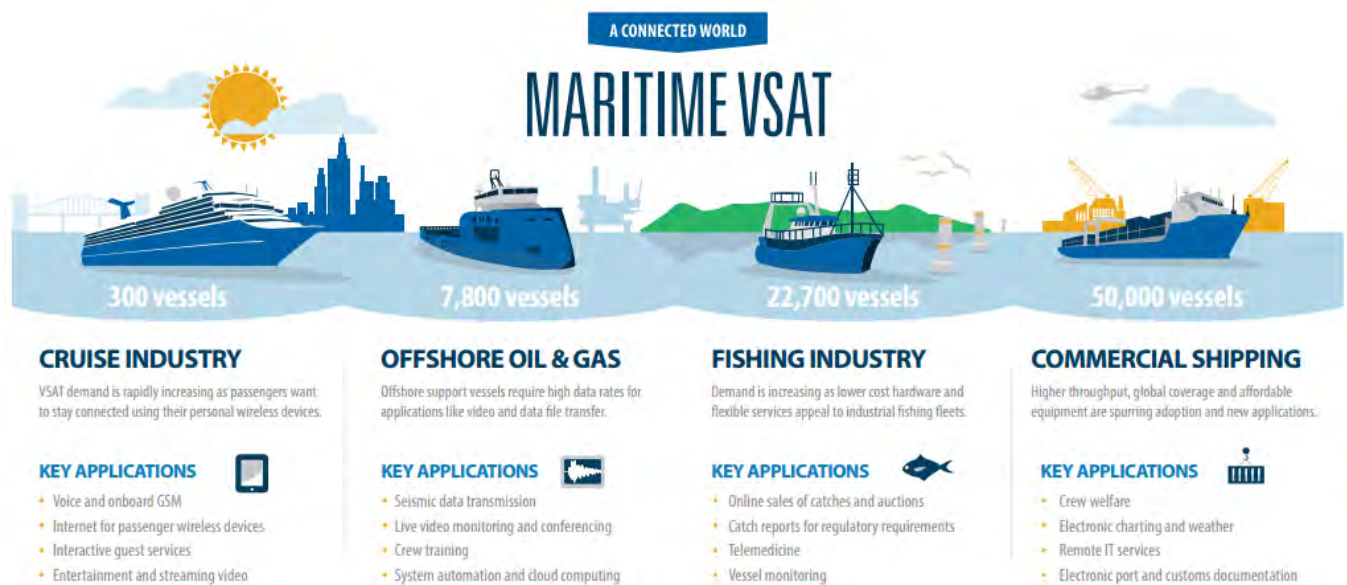
In addition to those HTS constellations, expected to enter the market from the end of the year, a number of large LEO constellations have recently been announced. Projects such as Google Loon, OneWeb, and the SpaceX project intend to launch hundreds of small satellites, with global coverage and very high data rates. Such projects would have an impact on the maritime capacity supply. However, at the moment, they remain long-term projects which still need to acquire funding.

To adapt to those new upcoming systems and provide better performances to end users, the equipment manufacturers are also evolving quickly, with a number of innovations on the equipment side. Until the last few years, VSAT terminals were very large with a long installation timeframe. However, now that they are smaller, lighter, and easier to install, VSAT terminals have grown strongly over the last five years with a CAGR of 13%. Innovations are moving on, with flat antennas currently being developed and pioneered by Kymeta. To illustrate, Intelsat's Epic HTS system will be offered over Kymeta's antenna to the maritime market, among other traditional VSATs terminals. A new trend is also centered on the development of multiband antennas. Such antennas are now combining up to three different

frequency bands: C-, Ku-, and Ka-band. To lower communication costs, hybrid terrestrial/satellite antennas are also entering the market. As an example, such antennas are provided by MTN onboard cruise ships and are automatically switching from terrestrial networks while vessels are near ports to satellite networks while at sea.

Maritime VSAT services are usually offered to the end customer at a monthly flat fee, including all-you-can-eat connections, technical support, value-added services, and increasingly, the equipment lease. The price generally depends upon factors such as maximum data rates for upload





Graphic source: iDirect

and download, guaranteed throughput, quality of service options, length of contract, and so on, which provide the end-user with unlimited capacity and an “always on” connection. However, some service providers apply a fair usage policy, preventing the use of inappropriate amounts of satellite bandwidth. At present there are approximately 60 service providers with serious maritime business. Among the top ten maritime service providers, which together hold approximately 83% of the market in number of terminals, two are based in Asia: SpeedCast and Singtel.

On the demand side, end users’ requirements are also evolving and communications’ needs are growing. Dedicated crew welfare and entertainment satcom systems are gaining popularity as ship owners try to make life on the vessel more attractive for crews. Usually these systems include e-mail, voice, and messaging applications that allow the seafarers to stay in contact with their families. VSAT is often a cost-effective solution for these mainly low- and medium-data applications. New applications, such as video streaming, will require even more bandwidth. Asia remains the first supplier of seafarers, led by the Philippines and China, the world’s largest suppliers of maritime officers and ratings, respectively. According to the Philippine Joint Manning Group, almost 30% of the world’s employed seafarers come from the Philippines, and this number is expected to reach 50% by 2016. As a result, a significant proportion of the satellite crew communications have the Philippines as the destination. Crew communications in the fishing industry are also growing, and particularly radio broadcasting is appreciated by fishermen. Asia is the leading region as about 85% of the fishermen are located in the region.

The smart ship concept is also gaining in popularity as ship operational communications requirements play an increasingly critical role in the decision of satcom adoption in the merchant shipping market. Common applications include coordinated file transfers, e-mail, Internet access, route optimization, engine diagnostics, and remote management applications. Given the actual global economic situation and high competition in the market, merchant ships are increasingly interested in implementing the smart ship concept. In the merchant shipping market, Asia is one of the leading region, and the most important loading and unloading area. In the region, about 40% of total goods are loaded and 55% of total goods are unloaded. It is also the second region, after Europe, in number of merchant ships owned.

Following the current market trends, VSATs should grow from around 12,000 terminals in 2014 to around 39,000 terminals in 2023, with a CAGR over the 10-year period of 13%.



Capucine Fargier is a consultant at Euroconsult and a main contributor to the research report, *Maritime Telecom Solutions by Satellite - Global Market Analysis and Forecasts*. She can be reached at: fargier@euroconsult-ec.com

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Would You Rather Have Chocolate or the Internet?

by Robert Bell

Standards are the glue that holds together our technology-enabled world. Take away GSM or CDMA, take away DVB or – heaven forbid – take away the Internet Protocol, and you can give up worrying about getting home in time for that TV show. You can say goodbye to anxiety about the battery level on your mobile phone or the stress of all those messages flooding your inboxes.

That doesn't sound so bad, does it? But few of us would volunteer to live in that world. According to surveys by tech companies and PR firms, most of us would be willing to give up alcohol, chocolate, fast food, coffee and TV in order to have Internet access. So standards are not going out of fashion.

Defining the Quality of a Teleport

In fact, this year will see the introduction of a new one. The World Teleport Association will release the first generation of standards that define quality in a teleport, that technology hub where the skyway of the satellite world meets the highway of terrestrial transport, and where so much intelligence is injected into the satellite network. A standards committee of teleport executives has been at work since September of 2014 on defining standards for facilities and for operating procedures. WTA will begin publishing those standards in June for comment from its membership. A beta test with a selection of member teleports will follow, and the full certification program will launch at year's end.

Why a Teleport Standard?

WTA began this project at the request of member companies. The goal is to create an objective, transparent and internationally accepted way for teleport operators to document their quality, and for customers to select teleport vendors that deliver the price-

How Will It Work?

The standards will form the basis of a questionnaire to be completed for each teleport undergoing certification. (WTA will certify teleport facilities rather than companies.) WTA will score the questionnaire and issue a Provisional Certification, making clear that it is based on self-reported information. The teleport will then have up to 1 year to apply for Full Certification, which involves a site visit by an auditor to validate the data and identify additional factors that may affect the facility's rating. That Full Certification will be good for 3 years, after which the facility will need to be audited again. WTA will manage a public database of certifications and issue credentials to support our certified teleport operators.



Echostar's teleport in Cheyenne, Wyoming.

performance level they need.

Some applications, like live TV sports, require the maximum in quality, availability and redundancy, which come at a price. Others, like Internet access, may be better served by a lower performance standard that comes with a lower price. It is up to the customer to decide, and certification makes the decision clear.

There will be four levels of certification from Tier 4 at the top down to Tier 1 at the bottom – the same structure used by the Uptime Institute's certification program for data centers. It's a good fit, because most teleports have already evolved into data centers with antennas.

Like all certification programs, the standards for teleports will have to survive the chicken-or-egg dilemma: a certification has value only if a lot of certifications are out there in the market. But early reactions from the leaders in the industry suggest that demand will be strong, and that the industry will create a critical mass of certified facilities in short order. Especially if we don't ask people to give up alcohol, chocolate, fast food, coffee and TV in order to get their hands on a certification.



Robert Bell is Executive Director of the World Teleport Association, which represents the world's most innovative teleport operators, carriers and technology providers in 20 nations. He can be reached at: rbell@worldteleport.org

Innovative Antenna Alignment in Maritime Vessels

by Alvaro Sanchez

Over last few years the maritime sector of the satellite industry has been growing significantly, driven by a significant increase bandwidth on global coverage demand. In order to fulfill customer requirement new satellites are being launch with much higher capabilities. High throughput satellites (HTS) bring unlimited possibilities for satellite service providers; which requires throughput and faster broadband connectivity.

Currently, emerging HTS satellite operators are going to provide this new satellites capacity with a global coverage. So an evolution is coming for the VSAT industry on the maritime segment providing passenger and crew a much better experience for browsing, skipping and downloading.

Passengers on cruises are demanding high speed internet connectivity for video and audio applications which consumes a lot of bandwidth therefore a much faster connectivity is required. This new applications have to coexist with the ship systems which requires connectivity.

VSAT antennas are automatically pointed to the right satellite based on the GPS position, and accurate antenna tracking. This allows an accurate antenna pointing while the ship is moving. Nevertheless, these antennas prior to be operational should be line-up and commissioned by a certified satcom field engineer, which has to travel long distance to a given port on tight schedule and arrange a call with the NOC. This process is very time consuming and labor intensive.

Additionally, maritime antennas usually create cross pol interference as the ship moves through the globe and the

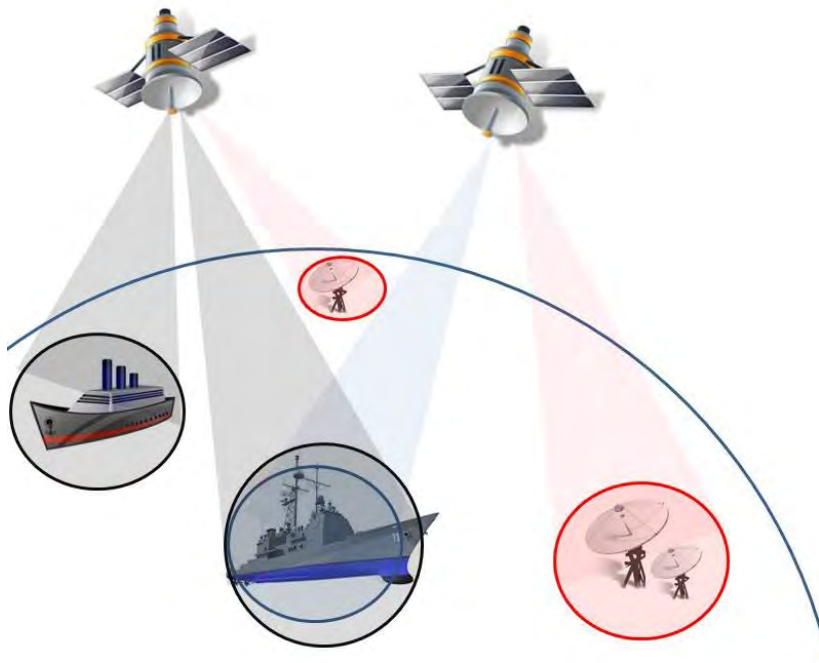
antenna matrix is not correctly aligned with the satellite polarization. So most of the times, the satcom installer must travel to a given port to solve this issue, being very expensive as the ship stops at the port for a given time slot. Also as the maritime dishes are small, the transmission of these dishes creates a wider beam width which may affect the satellites close in angle from the target satellite, creating ASI (Adjacent Satellite Interference).

Integrasys has developed the right tool for enabling crew members to point peak and pol while interferences are minimized rapidly. Targeting that no more Satcom field experts are needed, just Satmotion Pocket which guides the crew member on the line up for a proper alignment on the right satellite and pol, without the need to arrange a call or certified installer presence.

Line-up is measured at the hub with Satmotion server, measuring Copol, CrossPol and ASI simultaneously and displaying the measurements at the ship in a very intuitive way, for crew understanding. The crew should have access to antenna control unit for fine tuning. By controlling and guiding the crew, the line-up is managed and reported to the hub without the need of third party personnel at the ship or schedule any call with hub and NOC operators.

This brings a significant cost savings on the certified field engineer fees, travel expenses, ship delays, passenger experience, and interference penalties.

Nowadays, most of the stabilized maritime antennas use an open loop approach to align the linear polarization axis



Passengers on vessels are demanding high speed internet connectivity for video and audio applications which consumes a lot of bandwidth therefore a much faster connectivity is required.

to that of the wanted satellite, continuously computing and adjusting the required angle according to current ship position and orientation. In order to maintain a high alignment accuracy, this process requires low-drift and high-sensitivity inertial sensors and mechanical components, namely feed rotors and positioners. Inadequate polarization alignment limits pointing tracking accuracy as well as signal acquisition range and speed; eventually resulting into loss of the tracking signal, which usually leads to stop VSAT transmission and start a rather long initialization procedure. In order to provide proper protection from open-loop polarization errors, preventing intra and inter system interferences, the transmitted power is proportionally backed-off, resulting in turns into a decrease of the usable bitrate.

Similarly to fixed VSATs, the critical signal direction for polarization alignment in stabilized VSATS keeps being the uplink path. Achieving high accuracy levels by means of an open-loop adjustment approach requires not only high-quality electronic and mechanical components as mentioned above. A second and equally important requirement is the need to perform an initial, accurate polarization alignment over the intended satellite. This is realized with a traditional clean-wave line-up procedure which effectively compensates all of the mechanical and electrical offsets in the end-to-end chain, providing an optimum starting point for the open loop algorithm with minimum error. This line-up process must be performed for every target satellite to be used by a given VSAT and must be periodically repeated as maintenance action to account for VSAT components degradation or replacements which are recurrent in the harsh maritime scenario. Line-up polarization adjustment is typically carried out by external qualified installers, being it docked on port when possible, as some satellites may be properly visible only in open seas. The lack of a high-quality uplink polarization initialization for a given satellite with regular cross-polarization requirements usually prevents the VSAT from using such satellite.

Today Satmotion customers benefit from on the line-up, using the right pol by the crew members, fully independent, minimizing the time which the service is down and maximizing the VSAT performance after the lineup is finished successfully.

Currently Integrasys is following the technology upgrades which iDirect has done to their product line for Velocity and Evolution with iDX 3.3 software release allowing maritime service providers to experience "powerful capabilities in some of the most demanding environments" for providing customers with "better quality, more resilient service at higher performance" and Integrasys actively works with iDirect on iDX 3.3 to help their customers for much more reliable communication at sea.

Integrasys is very exciting on being the first company to be able to address and solve major challenges for global maritime networks worldwide with such as innovative technology. Satmotion Pocket has been awarded with the Most



Satmotion Pocket supports multiple VSAT platforms of the major manufacturers worldwide, allowing most of the service provider to benefit of this unique technology, which allows a significant OPEX savings and maximizes quality of service.

Innovative Technology Award at SATCON 2014 in New York City.

Currently Satmotion Pocket supports multiple VSAT platforms of the major manufacturers worldwide, allowing most of the service provider to benefit of this unique technology, which allows a significant OPEX savings and maximizes quality of service.

Integrasys will be demonstrating the Satmotion Pocket at CommunicAsis booth 1P6-03 on June 2nd to June 5th at Singapore Marina Bay Sands Convention Center.



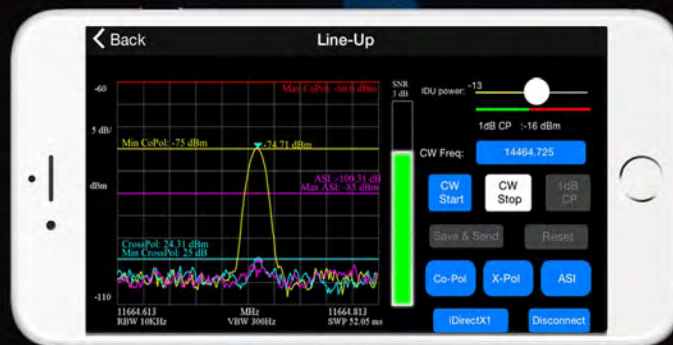
Alvaro Sanchez is Sales & Marketing Director at **Integrasys**. Alvaro is responsible for Satellite Carrier Monitoring at Integrasys, providing most innovative solution to satellite operators and service providers. Currently Alvaro is the head of the USA office in DC area. Alvaro prior to join Integrasys was signal

analysis expert at CERN European Organization for Nuclear Research. He can be reached at:

alvaro.sanchez@integrasys-sa.com



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Comtech EF Data's Heights Networking Platform

Comtech EF Data Corp. will be showcasing its new Heights™ Networking Platform at the CommunicAsia 2015 in Singapore. Designed with the service provider in mind, Heights is a scalable networking platform that meets the evolving demands of a diverse end user community. The most powerful and net efficient platform in the industry, Heights leverages a single comprehensive user interface teamed with a powerful traffic analytics engine that allows simplified design, implementation, monitor, control and optimization of networks. The result is an elevated Quality of Experience (QoE) for end users. Equipped to support the most demanding networks on traditional wide beams, new High Throughput Satellite (HTS) spot beams or a combination of both, users can increase market share and grow revenues while controlling costs via Heights.

The Heights Networking Platform is a robust carrier class solution that supports multiple business models simultaneously, from full hub ownership, to collocation at a third party teleport facility to Virtual Network Operator (VNO) operations. Modular in design, the platform consists of scalable hubs that support any satellite architecture at any frequency band and allows for multiple cost-effective expansion paths. Two Hubs are offered, each seamlessly enabling connectivity with existing IP infrastructure and capable of providing user IP throughputs of up to 450 Mbps per outbound.

The four remote gateway options within the Heights Networking Platform meet the unique, vertical-specific

needs of end users at user IP throughputs of up to 64 Mbps. Each remote gateway in a network is assigned inbound bandwidth on-demand from a shared pool by the Heights' dynamic bandwidth allocation engine blending the flexibility of MF-TDMA with the efficiency of SCPC. In addition, each remote gateway in the network leverages its own optimal modulation and

nections.

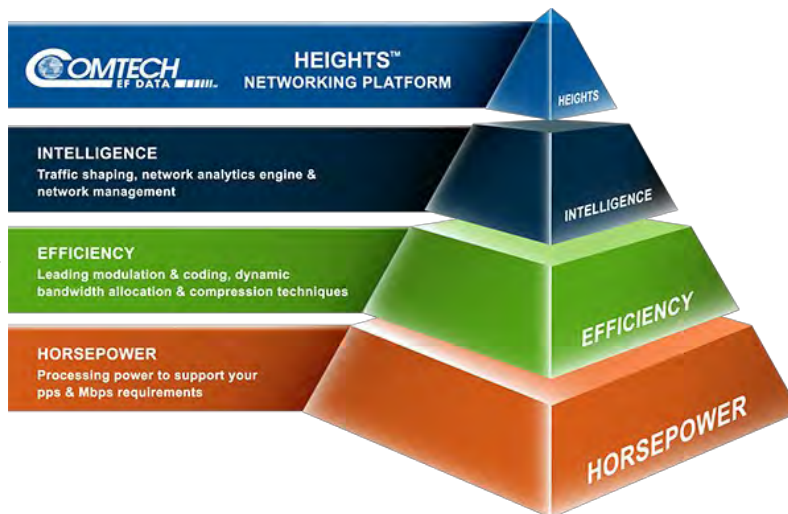
Efficiency – to create the service economics required in today's evolving world of satellite networking, a great deal of focus needs to be placed on the overall net efficiency of the network. The Heights platform provides the most attractive economics for mission-critical premium enterprise services via multi-layer optimization, specifically, Efficiency Boost Waveform for the outbound, VersaFEC-2 Waveform for the inbounds, Adaptive Coding & Modulation in both directions, Dynamic Bandwidth Allocation, Compression and Quality of Service traffic shaping.

Intelligence – throughout the life of a network, a great deal of intelligence is required to ensure end users are delivered a maximized QoE. The Heights platform provides different layers of intelli-

gence through network design tools, a powerful analytics engine and a deep bench of industry experts available as an extension of a service provider's operations.

"The Heights Networking Platform is the most robust carrier class networking solution in the market, and is ideally suited for the increasing demands of Oil & Gas, Cruise & Cargo and Corporate Enterprise networks ranging from tens to thousands of sites," said Steve Good, Vice President, Marketing for Comtech EF Data. "By leveraging the unparalleled mix of horsepower, efficiency and intelligence, users and service providers can realize the tremendous benefits of service differentiation, including increased market share, improved margins and overall business growth," he added.

View a demo of the Heights Networking Platform at CommunicAsia in Singapore at booth # 1T2-07.



coding method and is not limited to a fixed combination that disadvantages remote gateways to allow for worst-case remote operation, as is the case with a static or adaptive TDMA method.

The Heights Networking Platform leverages Comtech's industry-leading *horsepower, efficiency and intelligence*.

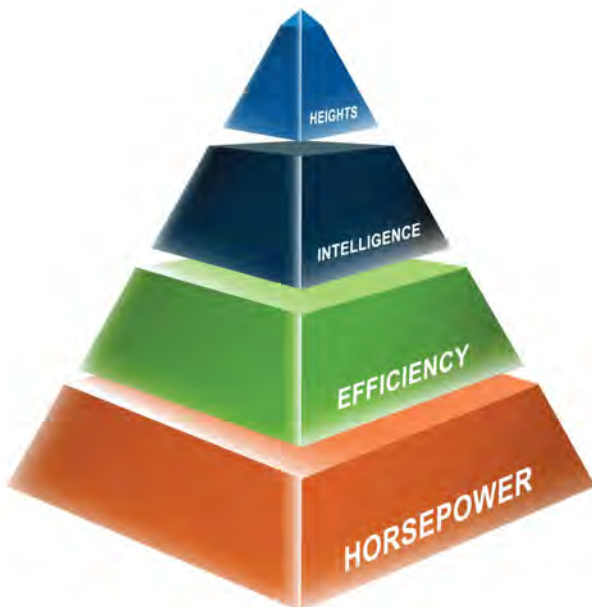
Horsepower – the Heights platform is designed to support the traffic load of demanding premium enterprise users on traditional or HTS satellites, with remote gateways capable of processing from 35,000 pps up to 140,000 pps with all features enabled. These performance levels make the Heights Remote Gateway suite the most powerful IP packet processing engines in the market, providing the best support for simultaneous high definition video sessions working in tandem with high data rate mission-critical business applications, Internet access and voice con-

Elevating Your Services

with Unparalleled Horsepower, Efficiency & Intelligence



Heights™
Networking Platform



The Heights Networking Platform is scalable, flexible and meets the evolving demands of a diverse end user community. Designed with the service provider in mind, the platform enables service differentiation via:

- **Unparalleled horsepower** – processing power to support your pps and Mbps requirements
- **Groundbreaking efficiency** – leading modulation & coding, dynamic bandwidth allocation & compression techniques
- **Robust intelligence** – traffic shaping, network analytics engine & network management

Heights is equipped to support the most demanding networks ranging from tens to thousands of sites on traditional wide beams or new HTS spot beams. By leveraging the capabilities of this powerful platform, you can increase market share and grow revenues, while controlling costs. Contact us – We'll help you determine how Heights can elevate your services.



Products and Services MarketPlace

■ A guide to key products and services to be showcased at CommunicAsia 2015 at the Marina Bay Sands Convention Center in Singapore from June 2-5, 2015.

ABS

booth # 1R3-01

www.absatellite.com



ABS is one of the fastest growing global satellite operators in the world. ABS offers a complete range of tailored solutions including broadcasting, data and telecommunication services to broadcasters,

service providers, enterprises and government organizations.

ABS operates a fleet of satellites; ABS-2, ABS-3, ABS-4/Mobisat-1, ABS-6, ABS-7 and the recently launched ABS-3A. The satellite fleet covers over 80% of the world's population across the Americas, Africa, Asia Pacific, Europe, the Middle East, CIS and Russia.

ABS-3A is currently in an extended orbit-raising phase to geostationary position at 3°W. It is equipped with 48 x 72 MHz C & Ku-band transponders and will offer expanded communications and broadcast capacity connecting the Americas, Europe, the Middle East, Africa, and the North Atlantic Ocean.

ABS-2A, the second of the pair of 702SP satellites procured from Boeing, is planned to launch in late 2015. ABS plans to add more satellites over the next 2-3 years to its growing fleet.

Advantech Wireless

booth #1U1-07

www.advantechwireless.com

Advantech Wireless is the leading wireless broadband



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communications
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for Commercial, Critical Infrastructure & Government and Military clients. We design turnkey terrestrial and satellite communications solutions that maximize performance and minimize operational costs, all with uncompromising quality. With our customized approach, award-winning R&D and innovative engineering, we empower you to achieve excellence in communication, while you experience reduced CAPEX and OPEX overall.

The company's products include World-leading GaN technology based High Power Amplifiers, SSPAs, BUCs, Next Generation VSAT Hubs and Terminals, Microwave Radios, Antennas and Controllers, Frequency Converters, Routers, Satellite Modems and Ruggedized Products.



Advantech Wireless was awarded the Vision Award for "Most Promising Company of the Year 2014." The Vision Award recognizes the company that has experienced substantial growth in the market while demonstrating long-term viability of their enterprise.

AVL Technologies

booth # 1N1-01

www.avltech.com



AvL Technologies' booth at CommunicAsia 2015 will showcase a new 1.0m vehicle

-mount Mobile VSAT antenna with a cowling. The 1.0m antenna will easily fit onto the roof of a small vehicle, such as an SUV, and operates in Ku- or Ka-band. The antenna features our proprietary zero-backlash AvL Cable Drive, stows to 34cm (13.5"), and is operated with AvL's new AAQ controller.

AvL will also show our newest 60cm and 2.4m Manual Fly-Away antennas. These antennas are lightweight, compact, portable and robust with carbon fiber reflectors. The 60cm antenna weighs less than 15 kg when packed, and packs into a small backpack that can be carried onto a commercial flight. The 2.4m antenna assembles in 15 minutes, weighs 108 kg when assembled, operates in Ku-, Ka-, C- or X-band, packs easily into four rugged cases, and can be air-freighted.



**AVL's 60cm
Manual K, Ka or X-Band
antenna with Carry-on
Backpack**

The case-based version of our 9066 FlyAway antenna will also be displayed. This high-volume production antenna has

been used worldwide by broadcasters and militaries because of its reliability, ruggedness and high-performance.

AvL antennas are the industry benchmark of excellence for SNG, mobile broadband Internet access, Disaster Relief, Oil & Gas Data Backhaul, and Defense & Homeland Security solutions.

C-COM Satellite Systems Inc.
booth 1Q4-12 at the US Pavilion
www.c-comsat.com

C-COM Satellite Systems Inc. develops commercial grade mobile satellite-based technology for the delivery of two-way high-speed Internet, VoIP and Video services into vehicles in remote areas.

The iNetVu® VSAT's have been adapted to be airline checkable and easily transportable for crucial access to communications. C-COM's broadband satellite-based products and services deliver high-quality, cost-effective solutions for both fixed and mobile applications throughout the world such as Broadcasting, SNG, Oil and Gas, Exploration, Military Communications, Disaster Management, Emergency Communications Backup, Cellular Backhaul and many others.



C-COM 's Ka-75V antenna

Come visit C-COM's booth at CommunicAsia featuring the iNetVu® FLY-981 and Ka-75V Driveaway and discover the iNetVu 981 Driveaway, FLY-75V and ACFLY-1200. Both the 75cm ka-band driveaway and flyaway antennas are "Authorized for use on ViaSat Exede® Enterprise and on KA-SAT News Spotter News Gathering service by Eutelsat."

COMTECH EF Data
Booth #1T2-07
www.comtechefdata.com



Comtech EF Data Corp. is the global leader in satellite bandwidth efficiency and link optimization. Our integrated SatCom infrastructure solutions encompass Advanced VSAT Solutions, Satellite Modems, RAN & WAN Optimization, Network & Bandwidth Management and RF Products. The offerings feature groundbreaking efficiency (industry-leading coding, modu-

lation, compression and physical layer operation), robust intelligence (traffic shaping, dynamic bandwidth allocation and integrated network management) and unparalleled horsepower (processing power for your pps and Mbps transmission requirements). Commercial and government users utilize our solution suite to reduce OPEX/CAPEX and to increase throughput for the most demanding fixed and mobile networks.

At CommunicAsia, Comtech EF Data will be showcasing its new Heights™ Networking Platform which leverages our industry-leading horsepower, efficiency and intelligence to enable differentiation of your services today while preparing you to unleash the power of the new spacecraft designs of tomorrow.



Designed with the service provider in mind, Heights is a scalable and flexible networking platform that meets the evolving demands of a diverse end user community. The most net efficient and powerful platform in the industry, Heights leverages a single comprehensive user interface teamed with a powerful traffic analytics engine that allows you to easily design, implement, monitor, control and optimize your network. The result is an elevated Quality of Experience (QoE) for your users. Equipped to support the most demanding networks on traditional wide beams and/or new High Throughput Satellite (HTS) spot beams, Heights enables you to increase market share and grow revenues while controlling costs.

COMTECH Xicom Technology
Booth #1T2-07
www.xicomtech.com



Comtech Xicom Technology provides a broad product line of KPAs, TWTAs, SSPAs and BUCs for worldwide satellite uplink covering C-, X-, Ku-, DBS-, Ka-, Q-band, Tri- and Multi-band with power levels from 8 to 3,550 watts and available in rack-mount and antenna-mount ODU packages.

At CommunicAsia 2015, Comtech Xicom will be showcasing its new SuperPower TWTAs with radically improved efficiency that will help you achieve your savings goals. Comtech Xicom's new high-efficiency, high-power TWTA technology doubles available output power and makes our new SuperPower™ TWTAs the first true Klystron replacement.

Advanced space tube technology applied to amplifiers for fixed satellite communications uplinks changes the equation on power, efficiency and reliability. With the highest power and longest warranty ever offered in outdoor antenna-mount and indoor rackmount TWTAs, Comtech Xicom's



Comtech Xicom's new Superpower TWT

SuperPower™ 2 kW Ku-band and 1.5 kW DBS-band TWTAs are revolutionizing satcom uplinks and opening up new possibilities in ground stations around the world. These amplifiers dramatically reduce the space, weight, power consumption, thermal load, and cost of high power for uplinks.

Gazprom Space Systems

Booth #1Y1-07

www.gazprom-spacesystems.ru



Gazprom Space Systems (formerly Gascom) is a private commercial, non-governmental satellite operator based in Russia. The main shareholder is Gazprom, one

of the largest energy companies in the world. Gazprom Space Systems' orbital fleet consists of four satellites under the Yamal brand. Gazprom Space Systems' ground infrastructure consists of four teleports in the city of Moscow and in the surrounding Moscow region, which are connected to the main telecom backbones by means of fiber-optic lines. The company also has a wide network of earth stations across Russia.

In Russia Gazprom Space Systems is not only a satellite operator but also a service provider and system integrator. Within Russia, along with satellite capacity, it provides satellite services including satellite links, video distribution, Internet access and network development and management.

INTEGRASYS

Booth #1P6-03

www.integrasys-sa.com



INTEGRASYS is the technology leader in signal monitoring software systems for satellite, broadband and telecommunications market.

Our software products are the state-of-the-art in Control Systems in terms of speed, flexibility, efficiency and scalability

ity and introduces a new concept in signal monitoring communications.

At CommunicAsia 2015, Integrasys will be showcasing its Satmotion Pocket is the most innovative technology worldwide for VSAT commissioning and maintenance, minimizing OPEX time and interferences. Satmotion Pocket is the winner of the "Most Innovative Technology of the Year" Award 2014.



Newtec

booth #1P2-01

www.newtec.eu



Founded in 1985, **Newtec** is celebrating 30 years of connecting people this year. The global leader in satellite communications equipment and technologies is marking this milestone with 20% growth

and new market expansion, including cellular backhaul, multiservice and High Throughput Satellites (HTS).

Solutions for these, including the Newtec Dialog® multiservice platform, with new patented technology Mx-DMA™ which combines SCPC and MF-TDMA qualities, will be demonstrated at CommunicAsia 2015. Technology for established markets, like broadcast and VSAT, including the new DVB-S2X transmission standard as software-upgrade available will also be showcased.



Newtec will also be introducing its new multi-carrier gateway, the Newtec MCX7000 – bringing **increased bandwidth efficiency of up to 51%** for distribution to transmission towers and head-ends, in addition to OPEX and CAPEX savings.

ND SatCom

Booth #1U2-03

www.ndsatcom.com

ND SatCom will be officially launching the SKYWAN 5G at the CommunicAsia in Singapore on June 2nd. ND SatCom's SKYWAN **5G** will transform the way communication networks are created and behave by converging VSAT & comprehensive IT capabilities into ONE single hardware device. SKYWAN **5G** enables the most flexible, scalable and reliable VSAT networks in history. The all-in-ONE unit fits all topolo-

gies, plays any network role, like hub, remote or integrated in Manpaks or Fly-Aways, and allows stacking of units to further boost performance of the network. Never before has a ONE rack unit VSAT hub been so powerful!



SKYWAN 5G includes an MF-TDMA modem with integrated DVB-S2 receiver and is capable of achieving significant data rates. Designed as an all-in-ONE device with high network redundancy and a wide range of IP support, the ONE device allows data to be transmitted in single-hop directly from their origin to their destination, thereby avoiding double hops and extra delays. Bandwidth is dynamically allocated as required, which brings substantial savings on satellite capacity cost.

No matter if a star, multistar, hybrid or full mesh network is needed, the unique hardware design of SKYWAN 5G reliably fits all topologies within the VSAT world. Following the approach of a single hardware unit for all purposes, each SKYWAN 5G has the full functionality on board. ONE small hardware for all network roles simplifies logistics and customs' handling and unprecedented scalability enables the gradual growth of the network.

"We are very proud to present the new member of the SKYWAN Family, the SKYWAN 5G, at the CommunicAsia. We are certain that this platform will become a game-changer in the VSAT market thanks to its powerful performance, yet extremely compact design. We invite everyone to stop by at our booth and have a look at its extraordinary capabilities", says ND SatCom's CEO, Andreas Bernhardt.

The official presentation of the SKYWAN 5G will take place on June 2nd at 12 o'clock on ND SatCom's booth **1U2-03**. Everyone is cordially invited to attend the festive launch of **"The ONE – Mastermind of Satcom Networks."**

For more information go to: www.skywan5g.com

RF-Design

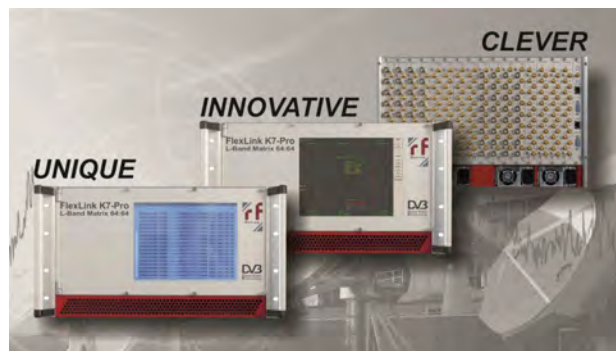
Booth #1L3-03 at the German Pavilion
www.rf-design-online.de

RF-Design specializes in developing, manufacturing and marketing high quality RF-distribution solutions for the Satellite, Broadcast and Broadband communication industry. Our product range includes LNB-supply/control systems, Switch/Routing Matrices, RF-over-Fiber solutions, Splitters/Combiners, Switches/



Redundancy-Switches, Line-Amplifiers and Signal-Quality Analyzers (RF & DVB monitoring), especially designed for applications in Teleports, Satellite Earth-Station as well as for Broadcast- and Broadband RF-distribution infrastructures.

We also have strong capabilities to design custom-made RF-distribution solutions for your individual needs. All our products are designed, manufactured, tested and approved in our own facilities in Lorsch/Germany and characterized



by high quality, reliability and superior RF performance.

At CommunicAsia 2015 we will demonstrate our new unique, innovative and clever L-Band Switch Matrix system "FlexLink-K7-Pro", the new Signal Quality Analyzer "SQA-16" for RF and DVB monitoring as well as our new outdoor RF-over-Fiber system "FiberLink ODA". We look very much forward to welcoming you at our stand and to discussing your individual RF-distribution requirements.

RSCC

booth #1V1-07
www.rsc.ru

The Russian Satellite Communication Company (RSCC) is the national state satellite operator whose spacecraft provide a global coverage. RSCC belongs to the ten largest world satellite operators and owns five teleports and its own optical fiber infrastructure.

The company possesses the largest satellite constellation in



Russia located in the geostationary orbital arc from 14 West to 140 East and cover the whole territory of Russia, the CIS, Europe, the Middle East, Africa, the Asia Pacific region, North

and South America, and Australia. RSCC offers a full range of telecommunications services such as TV and radio broadcasting, data transmission, telephony, multimedia and others using its own terrestrial engineering facilities and satellite constellation.

ScheduALL
Booth #1R3-09
www.scheduall.com

ScheduALL, the leading global provider of Enterprise Resource Management (ERM) solutions for media, broadcast and transmission businesses since 1989, will showcase their award-winning self-provisioning scheduling solution, ScheduALL Portal™ at the CommunicAsia 2015 Show. ScheduALL will also feature their revolutionary end-to-end provisioning solution, ScheduALL Connector™ during the show.

Portal recently won the TV Technology's Best of Show award during NAB 2015. This unique product simplifies making complex bookings of Occasional Use transmission feeds in real-time, directly into a transmission provider's system. Utilizing a browser-based, user-friendly wizard for selling transmission feeds, Portal allows users to quickly make transmission bookings without requiring in-depth network expertise. Meanwhile, behind the scenes, Portal leverages all of the unrivalled power and complexity of ScheduALL's transmission scheduling and conflict resolution.

Connector takes advantage of ScheduALL's large global community of transmission inventory consumers and pro-

viders across more than 50 countries that use the ScheduALL system to manage their feeds. Connector provides a direct link between OU providers and their customers, uniting ScheduALL systems across global trading partners.

SES
Booth #1R2-01
www.ses.com

SES is the world-leading satellite operator with a fleet of more than 50 geostationary satellites. The company provides satellite communications services to broadcasters, content and internet service providers, mobile and fixed network operators and business and governmental organizations worldwide.

SES stands for long-lasting business relationships, high-quality service and excellence in the satellite industry. The culturally diverse regional teams of SES are located around the globe and work closely with customers to meet their specific satellite bandwidth and service requirements. SES holds a participation in O3b Networks, a next generation satellite network combining the reach of satellite with the speed of fiber.



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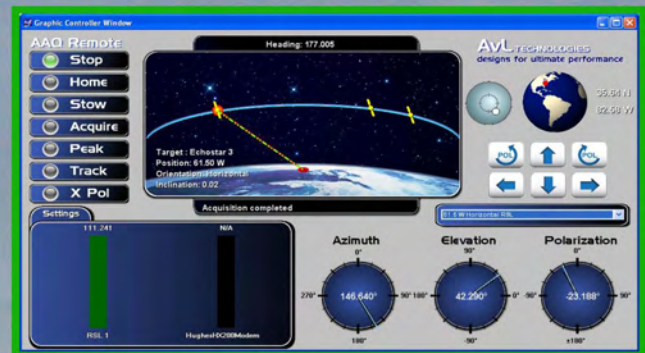
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Satellite Industry Rush to Nepal's Aid

by Virgil Labrador, Editor-in-Chief

The 7.8 magnitude earthquake that hit Nepal on April 25th and the subsequent aftershocks have disrupted last mile communications to communities with millions of people needing medical and other relief support. As in previous natural disasters, the satellite industry has once again contributed vital resources to help in rescue and recovery efforts.

Satellite operator Intelsat, among others, donated its satellite services to two organizations making a difference in the region: the American Red Cross working in partnership with the International Federation of Red Cross & Red Crescent Societies (IFRC), and Team Rubicon. These organizations are deploying satellite-based broadband networks to support critical medical and logistical operations in the region.

The Red Cross network is utilizing capacity on Intelsat 906 located at 64° E, linking via the IntelsatOne® terrestrial network at Intelsat's Fuchsstadt, Germany Teleport to support internet and Voice over Internet Phone (VoIP) service to remote hospitals in Nepal, providing field aid workers with connectivity that improves safety, morale and peace of mind in the wake of the disaster.

Separately, Intelsat is also supporting a network established by Team Rubicon, a disaster response organization that unites the skills and experiences of military veterans with first

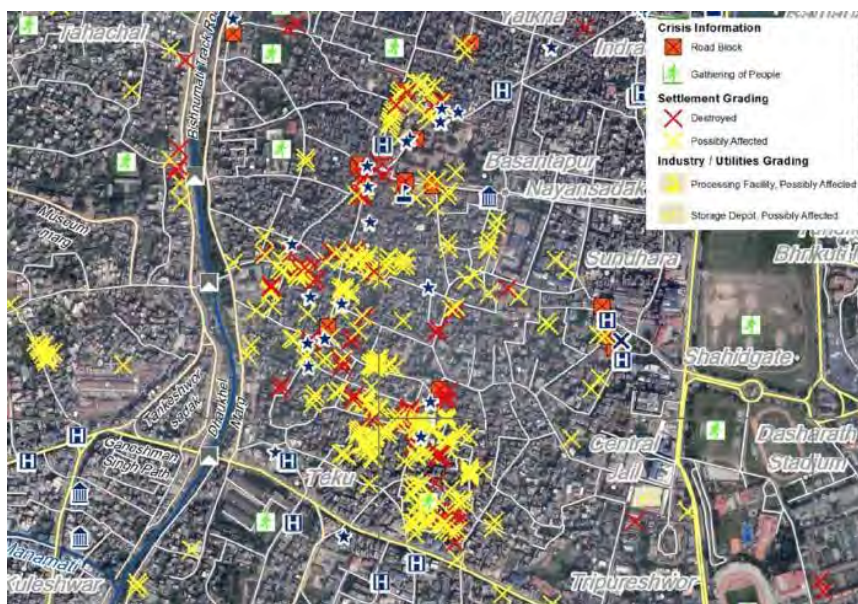
responders to deploy emergency response teams, to further aid in their relief efforts. Team Rubicon brought medical supplies and sent several teams to aid the Nepalese people.

To assist the recovery operations, Thaicom deployed a satellite communications network in the affected areas, along with an engineering team to get the system up and running so vital

Huntsville, Alabama, are coordinating image tasking, processing, compression, and distribution efforts with colleagues from Goddard Space Flight Center in Greenbelt, Maryland, and the Jet Propulsion Laboratory in Pasadena, California.

NASA technology that can locate people trapped beneath collapsed buildings is being deployed to Nepal. A

remote-sensing radar technology called FINDER (Finding Individuals for Disaster and Emergency Response), developed by JPL in conjunction with the U.S. Department of Homeland Security's Science and Technology Directorate, can locate individuals buried as deep as 30 feet (9.1 meters) in crushed materials, hidden behind 20 feet (6 meters) of solid concrete, and from a distance of 100 feet (30.5 meters) in open spaces. This technology, licensed by the



Satellite imagery provided by NASA and the European Copernicus System help rescue and recovery efforts by identifying the extent of the damage and prioritizing resources.

communications can be reinstated.

The communications network provided by Thaicom has been delivered in conjunction with partners from various sectors, such as Thaicom's country representatives, business partners and government agencies.

NASA is helping get satellite data into the hands of government officials in Nepal where Internet bandwidth is limited. The joint NASA-USAID SERVIR project is supporting disaster response mapping efforts through the SERVIR-Himalaya office at the International Center for Integrated Mountain Development in Kathmandu. SERVIR staff at NASA's Marshall Space Flight Center,

private entity R4 Incorporated of Edgewood, Maryland, has been taken to Nepal to assist with recovery efforts.

NASA and its collaborators are pulling optical and radar satellite data from international and domestic partners and compiling them into a variety of products. The products include "vulnerability maps," used to determine risks that may be present; and "damage proxy maps," used to determine the type and extent of existing damage. Such products can be used to better direct response efforts.





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Amino Acquires Booxmedia

Cambridge, UK 20 May 2015—IPTV provider Amino has acquired Finland-based cloud TV platform provider Booxmedia for an initial consideration of €7.9m including its estimated net cash at completion of €0.5m.

The initial consideration will be satisfied by €7.2m in cash and €0.7m in Amino shares. Additional consideration of up to €2.6m, shared equally between cash and new Ordinary Shares, will be payable on the basis of Booxmedia's future performance including its revenue generated for the three financial years ending 31 December 2017.

The acquisition will enable Amino to offer "TV everywhere" solutions to new market segments in OTT multiscreen TV, according to the company.

Industry analysts forecast major growth in TV viewing on mobile devices with predictions of a 13-fold increase over the next five years. Looking further ahead, analysts predict mobile video will account for more than 20 per



cent of total viewing minutes by 2025. Founded in Helsinki in 2009, Booxmedia is a Software-as-a-Service (SaaS) cloud TV platform provider. Its core product suite enables operators and service providers to launch "TV everywhere" services using an "off the shelf" cloud platform, removing the need to build their own bespoke technology

infrastructure.

The solution encompasses media capture, encoding, transcoding, storage and delivery and provides ready-to-deploy "TV as an app" for iOS, Android and Windows mobile devices as well as any browser enabled devices, including smart TVs, games consoles, set-top boxes and home gateways.

The acquisition will also strengthen Amino's core IP entertainment software capabilities which will now extend to include IPTV devices, mobile devices and the cloud, where Booxmedia has a number of patents granted and pending. It will accelerate Amino's "time to market" with new solutions to address the growing mobile and OTT customer segments.

Pico Digital Purchases Broadcast Products Business of IDC

San Diego, Calif., April 22, 2015—Pico Digital Inc., a provider of multimedia delivery solutions to customers in the broadcast, cable, satellite, and broadband markets, announced that it has entered into an agreement to acquire the broadcast products business from International Datacasting Corporation, a technology provider for broadcasters in radio, television, data and digital cinema.

The acquisition includes IDC's product portfolio, customers, and supplier relationships. Upon closing of the acquisition, the majority of IDC's employees are expected to join Pico Digital. Under the terms of the Agreement, IDC will sell its assets to Pico Digital for total cash consideration of US\$ 4.1 million or approximately CAD \$5.0 million at current exchange rates, subject to certain adjustments and holdbacks of up to US\$1.35 million to satisfy certain performance conditions and any potential indemnity claims. The Purchase Price adjustments, if any, are linked to, among other things, net working capital at closing and company revenues and product sales during the

post-closing period.

If IDC receives a bona fide superior offer to acquire all or substantially all of its assets, or at least 90% of IDC's outstanding common shares, Pico Digital will have the right, for a period of seven business days, to match the Superior Proposal. If Pico Digital does not match the Superior Proposal, IDC may pay Pico Digital a termination fee of US\$200,000 to terminate the Agreement and accept the Superior Proposal.



The combined business will benefit from an expanded global footprint, including offices in the United States, Canada, Mexico, Argentina, Bolivia, Panama, Taiwan, Japan and the Netherlands as well as a worldwide base of more than 500 customers. Pico Digital and IDC have highly complementary product portfolios, and together will provide the industry's leading solutions for data broadcasting, audio distribution, and digital cinema, as well as enjoying significantly increased scope as a video solutions provider.

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The premier international conference for military communications, celebrating its 34th anniversary this year, will be themed **“Leveraging Technology – The Joint Imperative”** and will continue its grand tradition of presenting the widest spectrum of command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) technologies and capabilities that address 21st century communications challenges related to national defense, homeland security, disaster response and interoperability.

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- Largest gathering of the leading minds of government, military, industry and academia in an interactive forum to explore and define the benefits that joint-level collaboration brings to current and future communication challenges.
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- Nearly 30,000 square feet of industry exhibits.
- More than 300 unclassified and restricted technical presentations, tutorials and panel discussions led by experts in defense communications.
- Continuing education credits will be available to all attendees.



Louis Dubin Appointed SVP-Product Management of Comtech EF Data

Tempe, Ariz., May 13, 2015--Comtech EF Data has announced the promotion of **Louis Dubin** to Senior Vice President, Product Management. In this role, Dubin will lead the company's Product Management organization and direct CEFD's primary technology and marketing thrusts.



Louis Dubin

His responsibilities include development of business cases for new products and solutions and prioritization of product development across CEFD. Dubin will also be responsible for investigating emerging technologies and potential industry collaborations that may enhance the company's market position.

Dubin previously held the position of Vice President, Product Management for Comtech EF Data, where he was responsible for business development and product management for high-speed modems, TDMA modems, and broadcast products. He joined Comtech EF Data in 2008, through the acquisition of Radyne Corporation. During his tenure at Radyne Corporation, Dubin held the positions of President of Radyne's Phoenix, Arizona division and Vice President of Sales.

Dubin has over 25 years of experience in the telecommunications and transmission industry. He holds a degree in Electrical Engineering from the Florida Institute of Technology, and completed the Stanford Executive program in Technology Management.

Rockwell Collins Make Key Appointments

Cedar Rapids, Iowa, May 14, 2015--Rockwell Collins announced that **Steve Nieuwsma** has been named vice president, Corporate Strategy for the company effective immediately. In this newly created role, Nieuwsma is responsible for developing strategies to accelerate organic and inorganic growth at Rockwell Collins. He reports to Jeff MacLauchlan, senior vice president, Corporate Development.

Nieuwsma has held key leadership roles throughout his career and most recently served as vice president, Commercial Systems Engineering for Rockwell Collins.

"Steve's 35 years of experience and strong track record as a leader, combined with his extensive industry expertise, make him uniquely qualified to lead our new Corporate Strategy organization," said MacLauchlan. "He will work closely with business unit leadership across the company, as well as our Mergers and Acquisition team to find new paths for business expansion."

Replacing Nieuwsma is **Leigh Parker**, who previously served as senior director, Commercial Systems Engineering Avionics Programs for Rockwell Collins. Parker has more than 17 years' engineering management experience, and has held key leadership roles in several successful programs at Rockwell Collins, including the development of air transport flight displays, situational awareness applications and Pro Line Fusion avionics. She reports to Kent Statler, executive vice president and chief operating officer, Commercial Systems.

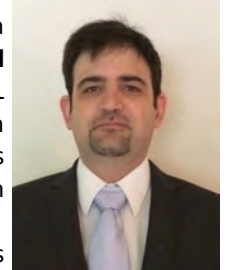
ETL Systems Appoints New Sales Manager for Latin America

Miami, Fla. May 7, 2015--ETL Systems, a designer and manufacturer of RF signal distribution equipment for satellite communications, is adding a key hire to its Global Sales team to expand its

presence in Latin America. **Rafael Zamora** joins ETL with a focus on expanding ETL's footprint in Latin America.

Zamora brings over 15 years of experience in telecommunications and wireless solutions markets. Prior to joining ETL, Zamora served in a Sales Management position at Cobham's Aeroflex's Wireless division where he was responsible for the sales of wireless solutions to all Latin American markets, as well as global customers and government institutions.

His other experience in Latin American markets includes time with JDS Uniphase and Nortel Networks as Senior Account Executive. Zamora will be based in ETL's new office in Miami, Florida.



Rafael Zamora

Dr. Arunas Sleky's Joins C-COM Board

Ottawa, Canada, May 4, 2015--C-COM Satellite Systems Inc. (TSXV: CMI), a leading global provider of mobile auto-deploying satellite antenna systems, announced today that **Dr. Arunas Sleky's** has joined its board of directors following his election by shareholders at the annual meeting held on April 30, 2015.

Dr. Sleky's is vice president of Corporate Marketing for Hughes, responsible for managing marketing, communications and advocacy initiatives worldwide. Previously, Sleky's was also General Manager of the company's broadband satellite business in Russia and the CIS countries, and served as vice president of the Wireless Networks Division, responsible for its family of digital cellular, wireless loop and wireless data (CDPD) systems, which were successfully marketed in the US, China, Czech Republic, Russia and the Asia/Pacific region.

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Dr. Sleky's holds a B.A.Sc. in electrical engineering from the University of Toronto, an M.Sc. from the University of Illinois, and a Ph.D. in computer and communications engineering from UCLA. He is co-author of a founding patent for cellular data (CDPD) systems and is a frequently published author on satellite and wireless communications. He is the elected Chairman of the Board of the Global VSAT Forum.



Dr. Arunas Sleky's

Dr. Sleky's joins Dr. Leslie Klein, Ronald Leslie and Eli Fathi on the C-COM board of directors.

Boeing Names John Shannon as Space Launch Systems VP

St. Louis, Mo., April 23, 2015—Boeing [NYSE: BA] has named **John Shannon** to be vice president and program manager for the Space Launch System (SLS), which will provide NASA with heavy-lift capability to send people and cargo into deep space.

Boeing is designing, developing, testing and manufacturing the core stages and avionics for SLS. Shannon succeeds Virginia "Ginger" Barnes, who is retiring. He currently serves as the company's International Space Station (ISS) program manager, leading the Boeing team's key integration role for NASA's

ISS Program.

Prior to joining Boeing, Shannon worked at NASA for 25 years, leaving the agency as deputy associate administrator for Exploration Planning in the Human Exploration and Operations Mission Directorate. He also served as program manager for the Space Shuttle, a role in which he managed the final fourteen shuttle missions and set the direction and policy for Space Shuttle development, including prelaunch and flight operations.



John Shannon



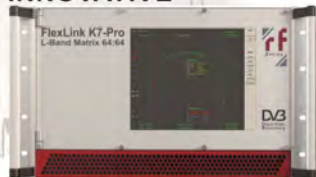
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VSAT Latin America 2015

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Back for a 3rd year, VSAT Latin America 2015 is set to be the most progressive yet with an agenda catalysing debate towards the growing problem of satellite interference and impact of HTS in Latin America. Two key words are being pushed to the fore 'Sustainability' and 'Ecosystem.' Do you have the business model for both? Expanding VSAT Connectivity into Growing Markets.

As the only dedicated VSAT event in Latin America, this forum will provide unrivalled insight into how the industry can grow their revenue streams, successfully integrate into other verticals and overcome specific issues associated with the most profitable markets.

VSAT Latin America will feature **30+** speakers from across the entire VSAT ecosystem. Discover innovation brought to life with keynotes from leading industry visionaries, including:

- Jorge Villarreal – CEO, Elara Communications Mexico
- Hugo Miguel – CTO, Tesacom, Argentina
- Mauricio Segovia – CEO, Axesat Columbia
- Keith Sonnet – CEO, Computer Aid International
- Marzio Laurenti – President, Telespazio Brazil

VSAT Latin America will give you the inspiration, tools, and know-how to find and maximize every opportunity within VSAT to increase your impact and your revenue. Free for End Users.

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Key industry trends and opportunities

Middle East Pay TV Market Fastest Growing Globally

IHS Inc. announced key findings from its annual Middle East & North Africa Pay TV Market Monitor report. The report found that 2014 was another year of substantial growth for the pay TV market in the Middle East and North Africa (MENA) region, with pay TV revenues jumping from €702 million in 2013 to €873 million in 2014.

While most households continue to rely predominantly on free satellite TV, the total primary pay TV households rose to 4.8 million from 4.3 million in 2013, a year-on-year increase of 12.4 percent.

"This is the largest increase in revenue globally," said report author Constantinos Papavassilopoulos, senior analyst at IHS Technology. "The MENA region represents huge opportunities for investors. If we look at the demo-

graphics alone, over 60 percent of the population is under 35, they are media-literate and have developed international tastes in TV content."

IHS forecasts that between 2015 and 2019, the MENA region will grow five times higher than the rate of the US, UK, Germany, France and Italy.

Major factors in growth for 2014 were: the successful anti-piracy measures, the high quality pay TV offerings, the investment in local (Arabic) content and the 2014 FIFA World Cup Finals.

"As we look forward, we see that the region has a strong anti-piracy stance and excellent communication infrastructure that will facilitate the expansion of pay TV networks and the offering of premium pay TV," Papavassilopoulos said.

The threat of piracy has been con-

siderably curbed recently in the region after the successful cooperation of major broadcasters, pay TV operators, satellite operators and online content providers with the authorities in the Gulf States and in countries like Egypt and Jordan. Additionally, the pay TV business in the region is experiencing a consolidation process (mergers & acquisitions, carriage deals) which is creating entities with stronger finances, more robust business plans and more efficient exploitation of local talent and resources.

IHS expects positive growth in the pay TV market to continue, with primary pay TV households reaching 6.6 million and revenues €1.7 billion in 2019.



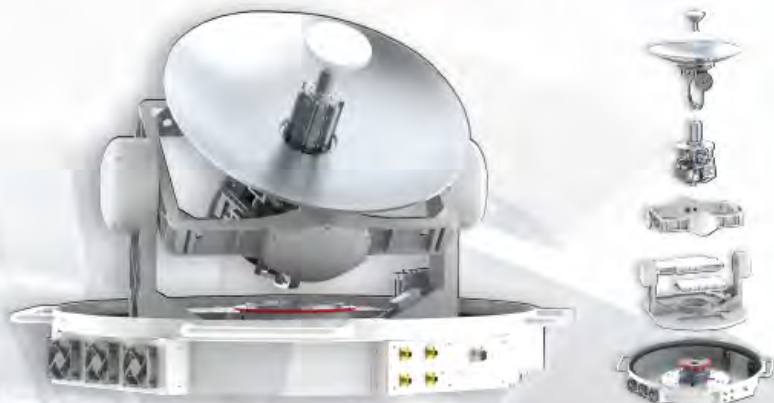
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HTS and the Mega-LEO Wildcard

by Martin Jarrold

Satellite communications continue to grab headlines. In Africa & the Middle East, Asia, the Americas, and Europe, high-throughput satellite (HTS) communications now deliver 30-100 Gbps connectivity to millions of users at subscription rates that transform the broadband value proposition... as well as the strategic connectivity plan.

Amidst this historic transition, major players have also thrown their hats into the ring – commercial heavy-weights such as Google, Qualcomm, and Virgin Galactic – announcing plans to launch constellations of hundreds, and in some cases thousands, of low-Earth orbit (LEO) satellites for global communications.

While these “mega-LEOs” prepare for launches on a scale never before seen, HTS companies are extending their services into nearly every operating environment. On planes, trains and ships, and in cities, villages and living rooms, the full spectrum of enterprises – and now consumers – are taking advantage of applications that require new definitions of “access”.

How will the HTS and Mega-LEO services compete... or will they be complementary? How will they be differentiated and priced? How will they be contracted and regulated? How are the new constellations going to be launched? And how will the systems satisfy end-user requirements?

Who will win? Not just among the satellite operators, but everyone in the value chain: Manufacturers, integrators, network licensees and, ultimately, the users – wireless operators, maritime & aeronautical interests, oil & gas companies, military, civil government agencies, and not least the individual consumer.

When will the Mega-LEOs break even (if ever)? When will the HTS operators turn a profit, or are they already in the black? When will revenues derived from each vertical market reach an inflection point?

Where are satellite services really going to be adopted – regardless of their proximity to major population centers and whether they reside in a Developed or Developing Country?

Answers are forthcoming. They draw upon the recent track record of a growing list of industry leaders, including

Eutelsat and Avanti in Europe, Yahsat and Arabsat in Africa and the Middle East, IPStar in Asia, and Hughes and Viasat in the Americas. Added to their experience are the innovation and short-term plans of competitors such as Inmarsat's Global Xpress service, Intelsat's EPIC offering, O3B's mid-earth orbit (MEO) solution, and more than a dozen other launches.

Indeed, most of the world's dozens of satellite operators have either ordered or plan to order high-capacity satellites and 14 million households and 50% of enterprise terminals are predicted to be using high-capacity platforms by 2020.

Building upon previous GVF-EMP Partnership “High-Throughput Satellite Roundtables” held in London and Washington, the **GVF High-Throughput Satellites & the Mega-LEO Wildcard Washington DC Roundtable 2015** – which will take place on June 17th & 18th at the offices of Jones Day, 51 Louisiana Avenue, N.W. – will serve as a forum where these trends and these companies will be examined, revealing insights into how this exciting new chapter in satellite communications continues to rewrite the way that applications are delivered in the world today.

The extensive line-up of speakers scheduled to contribute to the Roundtable dialog is as follows:

David Hartshorn, Secretary General, GVF; **Chris Baugh**, President, NSR; **Cristiana Spontoni**, Partner, Jones Day; **Dave Rehbehn**, Senior Director International Marketing, Hughes Network Systems; **Rick Vandermuellen**, Vice President Business Development, ViaSat; **Steve Good**, Vice President Marketing, Comtech EF Data; **Amir Yafe**, Executive Director Product Management, Gilat Satellite Networks; **Bob Beran**, COO, Kymeta; **Mark Steel**, Senior Director User Terminal Development, Inmarsat GX; **Michael Pollack**, CEO, Traville Group; **Greg Harms**, Principal, Space Architectures & Treasurer, WSB; **Jim Kramer**, Vice President Sales & Marketing, ILS Launch; **Richard DalBello**, Vice President Business Development Government Affairs, Virgin Galactic; **Susan Irwin**, Head - US Office, Euroconsult; **Bruce Olcott**, Partner, Jones Day; **Jose Albuquerque**, Chief - International Bureau, US Federal Communications Commission; **Joe Simmons**, Global Connectivity Programs, Nethope; **Veena Rawat**, Senior Spectrum Advisor, GSMA; **J Armand Musey**, Goldin Associates; **Kathryn Martin**, Partner, Access Partnership; **Kumar Singarajah**, Director Regulatory Affairs, Avanti Communications; **Yvon Henri**, Chief, Space Services Department, ITU; **Carlos Nalda**, Principal, LMI Advisors; **Mauricio**

Paetz, Head of Cyber Security & Privacy, Jones Day; **Rakesh Bharania**, Chairman, GVF Cyber-Security Task Force & Tactical Operations, Cisco; **Alex Benitez**, Senior Scientist, Com-Source; **Wilson Figueroa**, Systems & Security Engineer, ViaSat.

Latest information about the Roundtable program, including detailed session timings, may be viewed at www.uk-emp.co.uk/current-events/hts-dc-rt-2015/program/. At the time of preparing this column the sessions are as follows:

Day 1 | June 17th

Keynote: HTS and the Mega-LEO Wild-card

- Can HTS Really Co-exist with the Mega-LEOs? (And if so, how, when, and where?)
- Health Check: Are HTS Operators Feeling Feverish?
- Downward Price Pressure: How Low Can You Go?
- Video & Data: One for All or All for None?

Satellite Operator Roundtable: 1999 – The Sequel?

- Will the Party Be Over Next Year?
- LEO, MEO, GEO and the New Business Plan
- The Pockets: How deep is “deep”?
- Supply & Demand Trends: Too much, not enough, or just right?
- The Internet: Got Thing?
- Will GEOs Own Video and LEO / MEO Take Data?
- Balloons, Anyone?

Getting Down to Earth: The Terminal Perspective

- Cut the %#@! What's the Price?
- Are Economies of Scale Driving Industry to a \$0 Terminal?
- LEOs and MEOs = Moving Parts: Will they work?
- Has Anyone Really Addressed the Mobility / Interference Challenge?
- Innovation Alert: Is there a Market Disruptor in Our Midst?
- What is the Customer Saying They Want?

Who Is the “New” Customer...Or Is It Really the Same Old Client?

- HTS Scorecard: Show Me Your Numbers
- Market-Vertical Round-Robin: Who's Stepping Up for HTS?
- Will Mega-LEOs Take Enterprise Business from HTS?
- Consumers and the Truth About Disposable Income
- How's Your Churn Rate? (And What Are Subscriber Alternatives?)
- In Search of the “Killer App”

Brass Tacks: How to Build and Launch 5,000 Satellites

- Looks Good on Paper: Can it Be Done?
- If So, by Who, How Fast, and at What Cost?
- If Not... Then What?
- Are We All Eventually Going to Work for Elon Musk?

Day 2 | June 18th

Opening Address 'The Satellite-Spectrum Roadmap: The FCC Perspective'

- Does Wireless Need C-band?
- Does It Need Ka-band Too? (And L? And Q? And V?)
- The WRC Outlook
- Sharing: Does It Work?

What The Users Think About Satellite Spectrum

- Who's Using the Bands... and For What?
- How's Sharing Faring?
- The Cost of Migration (and Who Pays?)
- The WRC Outlook

The Gloves Are Off, Let's Step Outside

- Why Is IMT Using Less Than Half of Its Allocated Spectrum?
- Would IMT Also Use Less Than Half of C-band?
- Is There Really Insufficient Use of C-band?
- Defining Economic Impact: IMT vs. Satellite
- Sharing - How Much Interference is Acceptable?
- What the WRC-15 Final Acts Will Look Like

How I Stopped Worrying and Learned to Love Regulating More Than 5,000 Satellites

- The Mega-LEOs: They're Mostly 'Experimental', Right?
- Come Again... You Want How Many Orbital Slots?
- Take a Deep Breath and Adhere to Your PFD Limits
- Is There a Case Against Light-Touch Regulation?
- Planes, Trains, and Automobiles: Much Ado About ESOMPs
- Will Blanket Licensing Become the De-Facto Standard for HTS... and Mega-LEOs?
- Earth to Tom: What About My Landing Rights?

This is a Threat: Cyber-Attacks & the Security Imperative

- What's the Problem... and Who Owns It?
- The Cost of a Fix (vs. the Cost of Doing Nothing)
- PSB & Beyond: The Cyber-Security Task Force Delivers Security Baselines
- Sharks in the Food Chain

Readers can find out more by consulting the Roundtable webpage at www.uk-emp.co.uk/current-events/hts-dc-rt-2015/, or by contacting **David Hartshorn** at david.hartshorn@gvf.org, or **Angie Mar** at angie.mar@gvf.org. Registration information may be obtained by contacting **Paul Stahl** at EMP, paul.stahl@uk-emp.co.uk



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The Satellite Markets 25 Index™

Company Name	Symbol	Price (Jun 01)	% Change from Last Month	52-wk Range		% change from 52-wk High
Satellite Operators						
Asia Satellite Telecommunications	1135.HK	27.35	-0.18%	25.60	33.00	↓ 17.12%
Eutelsat Communications S.A.	ETL.PA	31.01	-0.23%	23.33	32.71	↓ 5.20%
APT Satellite Holdings Ltd.	1045.HK	9.80	-19.41%	8.40	13.50	↓ 27.41%
Inmarsat Plc	ISAT.L	993.00	-1.10%	653.00	1,041.24	↓ 4.63%
SES GLOBAL FDR	SES.F	32.69	5.54%	25.405	34.90	↓ 6.35%
Satellite and Component Manufacturers						
The Boeing Company	BA	140.52	-2.87%	116.32	158.83	↓ 11.53%
COM DEV International Ltd.	CDV.TO	4.85	-4.34%	3.45	5.20	↓ 6.73%
Lockheed Martin Corporation	LMT	188.20	-0.42%	156.23	207.06	↓ 9.11%
Loral Space & Communications, Inc.	LORL	66.79	-3.27%	64.23	81.53	↓ 18.08%
Orbital ATK, Inc.	OA	76.50	3.24%	60.23	140.61	↓ 45.59%
Ground Equipment Manufacturers						
C-Com Satellite Systems Inc.	CMLV	1.05	-6.25%	1.01	1.63	↓ 35.58%
Comtech Telecommunications Corp.	CMTL	30.04	2.00%	26.30	40.69	↓ 26.17%
Harris Corporation	HRS	79.22	-1.53%	60.78	82.79	↓ 4.31%
Honeywell International Inc.	HON	104.20	1.66%	82.89	107.10	↓ 2.71%
ViaSat Inc.	VSAT	62.99	4.48%	51.50	68.84	↓ 8.50%
Satellite Service Providers						
Gilat Satellite Networks Ltd.	GILT	5.69	-6.57%	4.42	7.07	↓ 19.52%
Globecom Systems Inc.	GCOM	14.10	0.00%	-	-	-
International Datacasting Corporation	IDC.TO	0.03	0.00%	0.03	0.14	↓ 78.57%
ORBCOMM, Inc.	ORBC	6.84	10.50%	5.40	7.10	↓ 3.66%
RRSat Global Communications Network Ltd	RRST	7.23	-0.04%	-	-	-
Consumer Satellite Services						
British Sky Broadcasting Group plc	BSYBY	52.88	-5.13%	-	-	-
DIRECTV	DTV	91.04	0.71%	82.04	92.45	↓ 1.53%
DISH Network Corp.	DISH	70.79	3.31%	56.17	80.75	↓ 12.33%
Globalstar Inc.	GSAT	2.65	4.74%	1.56	4.53	↓ 41.50%
Sirius XM Holdings Inc.	SIRI	3.86	-1.78%	3.14	4.04	↓ 4.46%

INDEX	Index Value (Jun 01)	% Change from Last Month	% Change Jan. 02, 2015
Satellite Markets 25 Index™	2,103.32	-0.60%	14.65%
S & P 500	2,107.39	-0.04%	2.29%

The Satellite Markets 25 Index™ is a composite of 25 publicly-traded satellite companies worldwide with five companies representing each major market segment of the industry: satellite operators; satellite and component manufacturers; ground equipment manufacturers; satellite service providers and consumer satellite services. The base data for the Satellite Markets Index™ is January 2, 2008--the first day of operation for Satellite Market and Research. The Index equals 1,000. The Satellite Markets Index™ provides a benchmark to gauge the overall health of the satellite industry.

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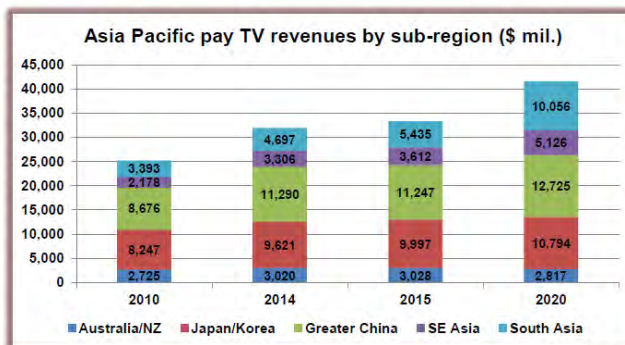
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Asia-Pacific Pay TV Revenues

Pay TV revenues in the Asia Pacific region (22 countries) will grow by US\$ 10 billion between 2014 and 2020, according to Digital TV Research. The *Digital TV Asia Pacific Forecasts* report estimates that pay TV revenues will reach US\$ 41.52 billion by 2020.

Pay TV penetration will rise from 59.0% of TV households in 2014 to 68.4% in 2020, adding 142 million subs to take the total to 642 million. Even more impressive is that digital pay TV penetration will climb from 20.9% in 2010 to 44.2% in 2014 on to 67.0% in 2020. Digital pay TV subscribers will quadruple from 163 million in 2010 to 628 million by 2020.



Source: Digital TV Research Ltd





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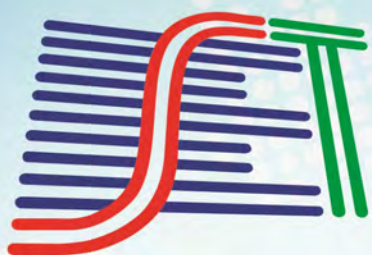
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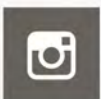
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