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SATELLITE Markets & Research

Industry Trends, News Analysis, Market Intelligence and Opportunities

Challenges in the European Satellite Market

by Elisabeth Tweedie

Europe, like the most of the rest of the world, is facing challenges to its traditional broadcasting industry. Whilst the living room and linear viewing are still important, so too is OTT and mobile viewing. 4K is advancing. According to Digital TV Research, satellite is also facing challenges, with more homes in Western Europe, paying for telco television than for satellite television. In the 18 countries surveyed for the report, there were 25.54 million homes with paid IPTV services, compared to 24.6M paying for satellite TV. Digital TV Research is forecasting that by 2021 there will be 32.53 million IPTV homes and the number of satellite homes will fall further to 24.31 million. This decline in satellite homes is attributed to some operators, particularly those in Spain and Italy converting satellite subscribers to bundled broadband services. However, it must be remembered that there are 25.85 million homes in Western Europe with free-to-air (FTA) satellite TV, so it's way too soon to write off satellite. And of course most of those IP services, like cable TV are fed by satellite. SES alone has 156 million satellite households in Europe, when those indirect users are taken into account. Furthermore, most sources agree that satellite is the best medium for delivering Ultra High Definition (UHD) or 4K services, which are just starting to appear as consumer offerings.

Satellite TV is also facing challenges in Western Europe with more homes paying for telco television than for satellite television.

Right now, the OTT services and Netflix and Amazon Prime in particular, seem to be in the lead when it comes to 4K content. Both started producing in 4K in 2014. At the end of last year Netflix had over 300 hours of 4K programming and was starting to produce in High Dynamic Range (HDR) as well. HDR is part of Phase Two for 4K and effectively means that the content is seen in much more brilliant colors. It also helps to overcome one of the main problems with 4k, namely that in order to really appreciate it compared to HD, the optimum viewing distance is only 1.5x the screen height. Most people simply do not sit that close to the TV.

OTT providers aside, content is a major issue for 4K. Apart from sports, content is sparse, as broadcasters, wait to see the likely demand and to make sure that there are enough 4K TV sets in the home, to justify the investment. The price of 4K sets is not

Continued on page 4

What's Inside

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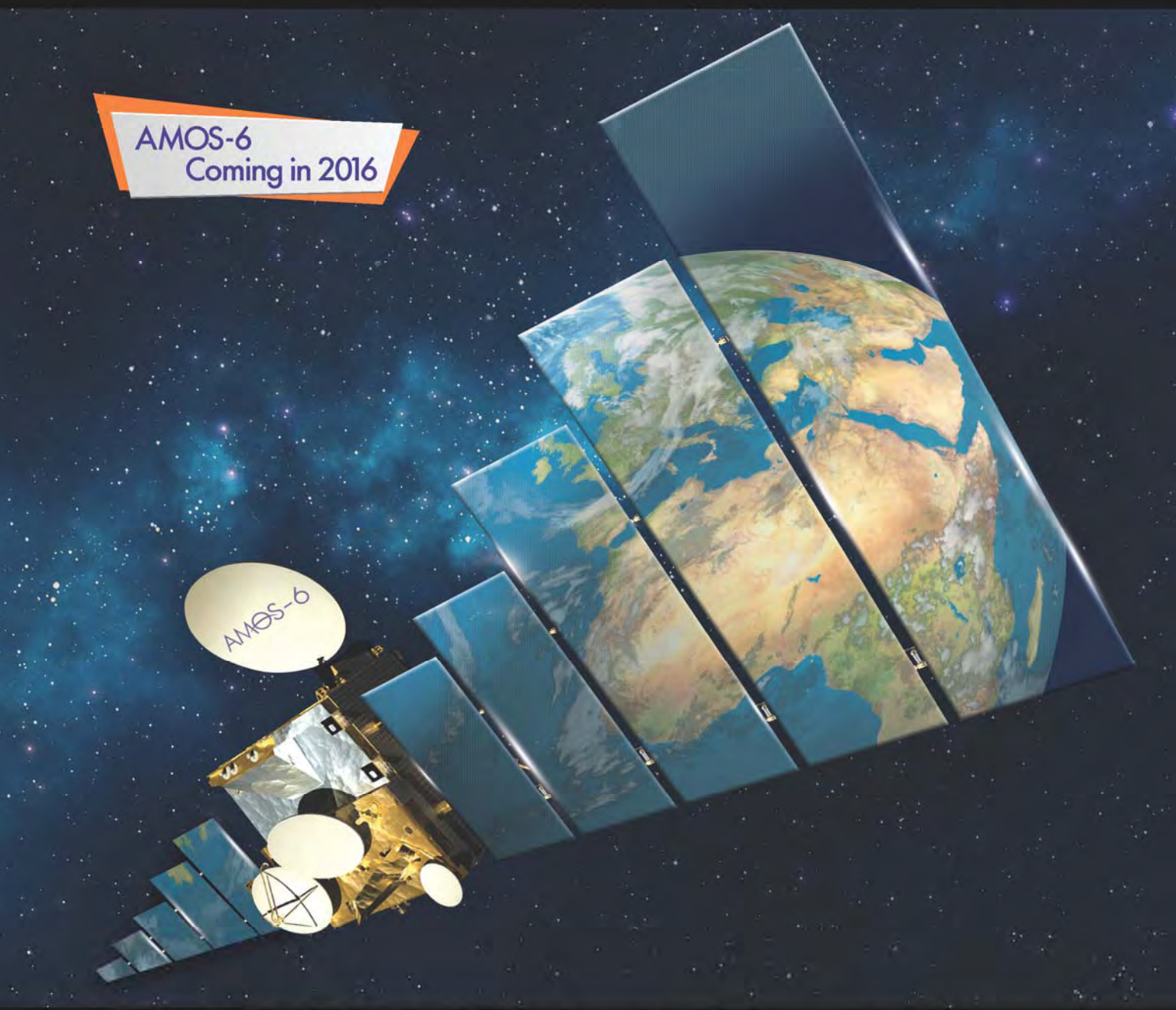

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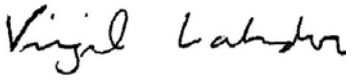
The European Market

The European satellite market is one of the most mature markets in the world. It is home to three of the so-called big four satellite operators, namely Intelsat, SES and Eutelsat. Growth has been relatively flat and there are many challenges for satellite operators and service providers in the region.

Our Associate Editor, who is originally from Europe and spends most of her time in the region, gives an update on the European market and the challenges it is facing from OTT providers and other pressures. Europe, like most of the rest of the world, is facing challenges to its traditional broadcasting industry. While the living room and linear viewing are still important, so too is OTT and mobile viewing. 4K is advancing. According to Digital TV Research, satellite is facing challenges, with more homes in Western Europe, paying for telco television than for satellite television. In the 18 countries surveyed for the report, there were 25.54 million homes with paid IPTV services, compared to 24.6 million paying for satellite TV.

Following our series of country profiles (last month we featured Japan) this month we feature the South Korean market—a booming market which is becoming a major player in the telecommunications, satellite and space industries not just in the region but potentially globally.

During the months of May and June, we at Satellite Markets attended major shows in Latin America and Asia such at LATSAT in Mexico City, APSAT in Indonesia and CommunicAsia in Singapore. Watch out for reporting on these important shows in the next issue.



Virgil Labrador, **Editor-in-Chief**

Satellite Executive BRIEFING
Industry Trends, News Analysis, Market Intelligence and Opportunities

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The European Satellite Market...From page 1

likely to be a problem, as they have now virtually reached price parity with HD sets. IHS forecast that by 2019, 25% of homes in Europe will have a 4K TV.

Before taking the leap into 4K content production, last year the BBC conducted what it says is the largest ever survey of UK viewing habits, focusing on screen sizes and viewing distance. Based on current screen sizes, it says only 10% of the UK population would benefit from UHD, but based on the size of screen that viewers say they want, that number rises to 22.9%. However only 18.9% of respondents had a TV that was more than five years old, and the normal replacement cycle for TVs is nine years, so it may be a while before that larger set gets purchased.

"...Most Internet connections in Germany are not suitable for live 4K streaming, and this is a major problem..."

***-Michael Sichler,* CEO of Pearl TV**

Delivery of a 4K signal to the home for an OTT provider requires a dedicated 25Mbps connection, although this may be reduced to 15Mbps when high efficiency video coding (HEVC) is used. By dedicated, I mean that no one else in the house is using the Internet for anything else that would encroach on that 25Mbps. Many homes, even in developed countries just don't have that connection. According to Michael Sichler, CEO of Pearl TV in Germany, "Most Internet connections in Germany are not suitable for live 4K streaming, and this is a major problem." This is also the reason that Pearl TV chose to launch Europe's first FTA 4K channel on satellite. For the OTT provider, it is not simply a matter of the bandwidth not being available; it is also a matter of cost. OTT providers pay around 3 cents to deliver one hour of SD video to a single user, but SD requires just 3Mbps. So to deliver in 4K their costs are likely to increase by a multiple of 5-8x. Enter satellite that can deliver to thousands of homes for the same cost as delivering to one home. NSR is predicting over 1,000 4K satellite channels by 2025. According to Ofcom, 30 of these will be serving the UK.

SES Platform Services, who distribute the Pearl TV 24 hour UHD fashion channel in Europe, announced in February of this year that it had purchased one of its competitors, RR Media. According to Wilfried Urner, Chairman of the new merged entities, "SPS and RR-Media were too small separately, but very good together." Although the culture of the two companies is very different, Urner commented that from the very first meeting things had gone well. RR Media were "very open and good listeners." The two companies are strong in different areas. SPS is strong in Europe and has started providing services in Africa and Asia, and RR Media has a global footprint, with over 1,000 customers. RR Media customers tend to be smaller, second tier organizations, whereas SPS works with top tier organizations who demand a very high level of service.

Satellite companies in Europe are betting on Ultra HD or 4K TV to remain competitive with OTT services.

Once the deal is concluded the merged company will have more than 1,500 customers and distribute more than 1,000 channels globally. Interestingly, the new company will be free to purchase bandwidth from any provider. The new organization structure will encompass three companies. The Media Group, which will be the merged RR Media and SPS; Avi Cohen, presently CEO of RR Media, will be CEO of that company, HD+ Group and an Innovation and New Platforms Group. Wifried Urner will be CEO of these two and Chairman of all three.

HD+ with 2M subscribers is the largest satellite platform in Germany and it is planned to "white label" the service so that it can be offered to other clients. As the name suggests the Innovation and New Platforms Group, will focus on new technology and products, and evolving video trends, to identify where SES can fit into the ecosystem. In June SPS will be launching a pan-European platform for the Asian community in Europe, providing two Chinese, one Indonesian and one Vietnamese channel via satellite and OTT.

SES, SPS' parent company has joined forces with Eutelsat to create

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the Future Video Initiative. This alliance is focused on developing next generation video technologies, standards and formats for the reception of satellite services on any device, using converged broadband-broadcast technologies. The initial scope of work will focus on promoting integrated hybrid broadcast-broadband solutions to increase the reach of HD and UHD services. Shortly after that was announced last year, Eutelsat announced that it was joining the SAT>IP alliance, of which SES along with Hispasat and many leading electronics companies, was already a member. This alliance aims to accelerate the adoption of the SAT>IP standard, which converts satellite signals to IP using a small server connected to the home router. This means that satellite programs can be received on any IP device in the home, including tablets and smart phones. SAT>IP is apparently difficult to install, but Urner commented that everyone who had SAT>IP loved it, and no one would get rid of it.

There are a lot of challenges ahead for broadcasting and for satellite. No one can be more acutely aware of that than Eutelsat, whose shares tumbled 30% in May when it gave a profits warning in its third quarter earnings conference call. SES was also impacted as its shares fell 8%. One can't help thinking that maybe just for now; SES would prefer not to be associated with Eutelsat.

Elisabeth Tweedie is the Associate Editor of the *Satellite Executive Briefing*. She has over 20 years experience at the cutting edge of new communication and entertainment technologies. She is the founder and President of Definitive Direction a consultancy that focuses on researching and evaluating the long term potential for new ventures, initiating their development and identifying and developing appropriate alliances. During her 10 years at Hughes Electronics she worked on every acquisition and new business that the company considered during her time there. www.definitivedirection.com She can be reached at: etweedie@definitivedirection.com

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The South Korean Satellite Market

by Virgil Labrador, Editor-in-Chief and Peter Galace, Associate Editor

Backed by strong support from the government, South Korea has one of the world's most advanced telecommunications and Information Technology infrastructure in the world today. With a population of 50.4 million, South Korea is a global leader in broadband penetration, at 97 percent, and a world leader in average peak connection speed, at 20.5 megabits per second, according to report published by Akamai Technologies in Q3 2015.

The Korean market also has one of the highest smartphone penetration worldwide, which is projected to reach 84.3 percent this year. Its booming mobile market is rapidly taking up LTE and innovatively exploring the options for value-added services. 4G LTE now represents the majority of mobile connections after it was introduced in 2011. South Korea continues to set the standard for LTE availability, providing 4G coverage 99% of the time, currently the best in the world, according to OpenSignal.com, the website that tracks LTE performance worldwide.

KT Skylife, is the sole digital satellite broadcaster in Korea. The company started 4K-UHD test with Electronics and Telecommunications Research Institute (ETRI) using Korea's COMS satellite in 2014 and developed an 'all-HD' system and provided 141 HD channels and HD receivers to all its 4.3 million subscribers for free.

Almost two years after South Korea unveiled "GiGAtopia" to make both its wired and wireless networks giga-class, through investment of KRW4.5 trillion (US$3.9 billion), South Korea has launched commercial Giga Internet supporting speeds of 1Gbps and 500Mbps. In June last year, Korea Telecom Corp. launched the world's fastest commercialized mobile data service, based on its GiGA LTE technology. By combining traditional LTE coverage with localized WiFi networks, the service is able to provide consumers with data speeds up to an incredible 1.17Gbps.

LTE, HD Fuel Satellite Growth

Thanks to the country's strong ICT infrastructure and ubiquitous LTE coverage, Korea's satellite industry is growing strong. KT Sat, a subsidiary of Korea Telecom Corp., one of South Korea's leading telecoms company, is one of the main players in the country's satellite communication industry. The formerly state-owned parent company, Korea Telecom Corp., dominates the local landline and broadband Internet markets, serving about 90 percent of the country's fixed-line subscribers and 45 percent of high-speed Internet users.

KT Sat currently operates three satellites — Koreasat 5 at 113° East, Koreasat 6 at 116° East, and Koreasat 8 at 75° East. Before the end of 2016, Space X is scheduled to launch KT Sat's Koreasat 5A designed and built by Thales Alenia Space (TAS) of France. In first quarter of 2017, KT Sat is scheduled to launch another TAS-designed Koreasat-7, which will be placed at 113° East. Both satellites will provide Internet access, multimedia, broadcasting and fixed communications services to South Korea, Philippines, Indonesia and India. Koreasat 7 will be carried into the orbit by Ariane 5, a heavy-lift rocket typically used for GTO missions.

With its three satellites, KT Sat offers a slew of satellite services such as transponder leasing, broadcasting, broadband, mobility and teleport services. With the upcoming launch of two satellites, KT Sat is set to introduce expanded satellite services such as global coverage and satellite broadcast and satellite mobile phones, nurturing its desire to eventually become a global satellite player.

During the past three years, KT Sat invested heavily in Ultra-HD, Maritime-VSAT (MVSAT) and hybrid satellite-cellular technology to generate new business. Its broadcasting business is soaring as it provides more than 200 digital channels aired to over 6 million households nationwide. This year, demand for 4K-ultra high definition (UHD) ser-

vices is expected to soar as Netflix enters the South Korean market.

In March this year, KT Sat signed a four transponder lease agreement for direct-to-home (DTH) services with Mongolian satellite TV operator DDISH TV. DDISH TV will start using KT Sat's Koreasat-5A satellites from 2017. Expectations are the company will offer more than 90 high-definition channels. DDISH TV is Mongolia's largest satellite broadcasting company, with some 320,000 subscribers since it started the business in 2008.

Last year, the company also clinched a three-year transponder contract with Pakistan-based satellite business Paksat. But KT Sat said the latest deal is meaningful, because the contract will not expire until the end of the satellites' 17-year lifespan.

Among the latest satellite innovation applications developed by KT Sat is its 'fisheries monitoring system' which tracks the location of deep-sea vessels in real-time through the satellite equipment connected to each ship and immediately sends an alarm when it detects ships fishing in illegal fishing areas.

KT Sat also recently launched 'satellite LTE' that enables the use of satellite network through regular cell phones on deep-sea vessels. Satellite LTE is used by converting signals sent from satellite antenna to LTE/3G and connecting them to micro base stations (Femtocell) without wireless network. Satellite LTE can be accessed from the existing cell phone and rate system without an additional device, and is thus actively used on fishery inspection boats and submarine cable maintenance ships.

Another KT Telecom subsidiary, KT Skylife, is the sole digital satellite broadcaster in Korea. The company started 4K-UHD test with Electronics and Telecommunications Research Institute (ETRI) using Korea's COMS satellite in 2014 and developed an 'all-HD' system and provided 141 HD channels and HD receivers to all its 4.3 million subscribers for free. Finally in June last year, it commenced commercial operations featuring 3 UHD channel using 18 transponders of Koreasat-6. The company expects UHDTV volume to grow rapidly to reach 26% of Korea's TV market in 2017.

KT Skylife and ETRI collaboration in R&D is moving to 8K UHD test environment via COMS. 8K test broadcast in 2018 is being planned in time for the PyeongChang, Korea XXIII Olympic Winter Games in 2018.

Leader in DMB Market

As the first country to commercially launch mobile TV in 2005, South Korea appears to be the most successful Digital Mobile Broadcasting (DMB) market in the world. More than 62 million DMB enabled devices have been sold, of which the most popular are mobile phones. The number is expected to rise even more with an increase in coverage as the service cover over 80% of the country. Hundreds of DMB devices are available as usage of mobile TV increases. Interactive services are also growing in popularity adding value to broadcasting services.

Satellite-DMB, a joint service of SK Telecom with Japan's MBCo, launched its HanByul satellite in 2004, and started its multi-channel pay broadcasting in May 2005. But despite its diverse content, TU Media, a subsidiary of another telco, SK Telecom, failed in attracting subscription goals. Ultimately, SK terminated its service in August 2012 with a huge financial loss.

Terrestrial-DMB service was also launched in December 2005 starting in Seoul and the metropolitan areas, which took off remarkably well because of its free services available via most mobile phones, though it also found floundered financially.

But the DMB service had since evolved in the smartphone era and today, tens of millions of smartphone users access to mobile television through DMB. The free mobile TV service has become a standard feature among newer cell phones on the Korean market. DMB is also jumping to HD by utilizing the nation's extensive high-speed LTE and WiFi networks.

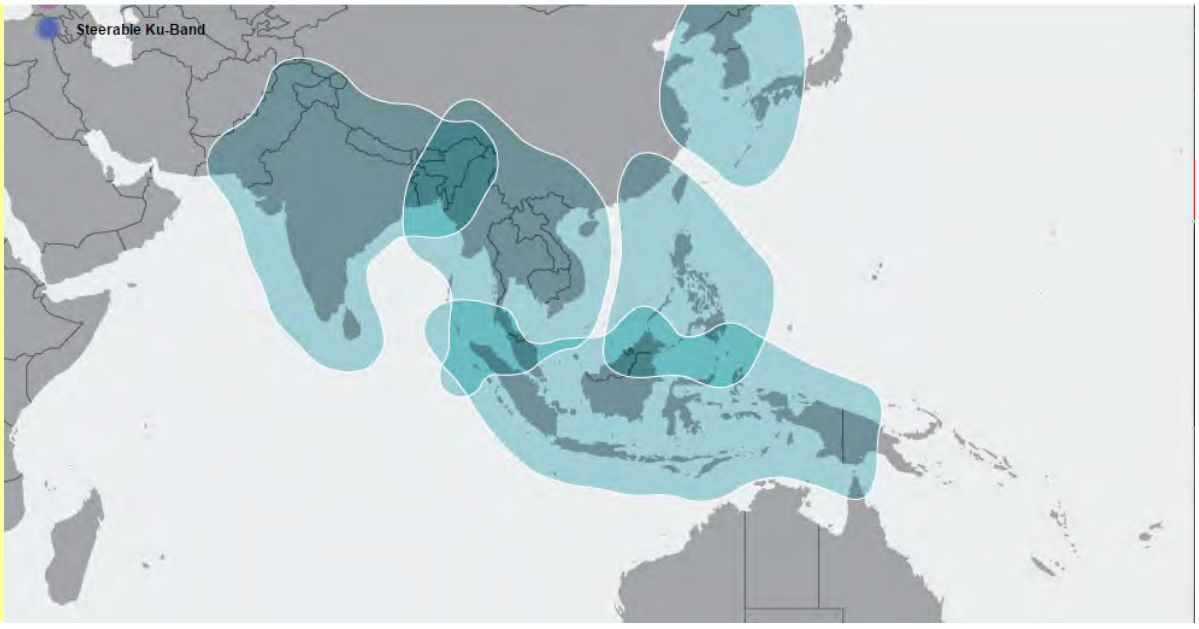
Tablet PC users can now watch the higher-resolution video, with so-called Smart DMB services offering video-on-demand programming from popular dramas to live sporting events.

An interactive mobile TV service, or Smart DMB, launched in May 2011 with six terrestrial-DMB operators (T-DMB). With Smart DMB, mobile TV viewers are able to search the internet, receive EPG information updates, and even enjoy 'TV Screen Capture and Share Service' through SNS while watching television. Moreover, hybrid DMB was launched in Aug 2013 for the high quality video service.

Another SK Telecom subsidiary, SK Telink, started a satellite communication service for ships and aircrafts called "SK Smart Sat." The service is a communications satellite service using satellites of providers such as Inmarsat and Intelsat to offer phone, fax and high-quality data networks to ships and aircrafts where satellite communication is needed.

Service users can check emails, read new articles, SNS, and also enjoy additional services such as anti-virus, marine meteorological information and real-time monitoring of fleet operation while afloat using the 4th generation Inmarsat, FleetBroadband.

This service also supports VSAT which allows unlimited access to high-speed high-quality data networks. Customers can choose from pre-set data limits to unlimited access at flat-rate. This Service can be connected to various additional services such as VoIP, teleconference, Vessel CCTV



Korean satellite company, KT sat will be launching two satellites in the next six months including Koreasat-7. Pictured here is Koreasat–7's footprint which will include Ku-band steerable beams.

Service to Land and remote education for sailors.

It also provides ECDIS (Electronic Chart Display and Information System). This can be tied in with the monthly communications satellite flat-rate plan, lightening the initial implementation cost for ship companies.

SK Telink continues to introduce highly specialized solutions in conjunction with communications satellites through services such as implementation of wireless internet network while afloat (data allocation and control function by sailors), Ship Performance Monitoring System based on hardware for improved fuel economy and on-ship ICT Vessel Information System.

SK Telecom said it had 18.98 million LTE subscribers, climbing 13.4% vs. the year-ago period as of the end of 2015. LTE subscribers accounted for 66.3% of the telco's overall mobile base at the end of the quarter, climbing 7.1 percentage points year-on-year.

SK Telecom, established in 1984, one of largest telecommunications company in Korea with more than 28 million mobile subscribers, accounting for over 50% of the market. SK Telecom is known as the world's first company to commercialize CDMA, CDMA 2000 1x, CDMA EV-DO and HSDPA networks, and launched the nation's first LTE service in July 2011. SK Telecom also became the world's first mobile carrier to commercialize 150Mbps LTE-Advanced in June 2013 and 225Mbps LTE-Advanced in June 2014 through Carrier Aggregation. Today, it is also moving towards the next-generation mobile network system, or 5G, after it launch commercial service of 300Mbps tri-band LTE-A CA.

TV/Broadcasting

South Korea has one of the highest TV penetration in Asia estimated at 96% with full digitization of TV services completed in 2013. In 2014, South Korea had about 14.8 million cable TV subscribers and about 4.2 million DTH subscribers.

But pay TV subscription, over the past two years, is observed to be suffering from an exodus as online streaming grows in popularity. With the growing popularity of DMB or mobile TV, pay TV subscription is waning.

While Digital TV research forecasts that Asia's top 68 pay -TV operators will see subscriptions increase to 535 million by 2020, an increase of 74% from 376 million in 2014, South Korea is bucking from the Asian trend. Digital TV Research has said South Korea's pay TV operators are expected to experience subscriber decreases between 2014 and 2020.

The decrease of pay TV subscribers may be explained by an increase in subscription-based Video-on-Demand (SVoD) services, where content providers offer unlimited access to their content libraries for a monthly subscription-fee or where movies and TV series can be streamed to various supported connected devices.

In South Korea revenue in the SVoD segment is projected to rise to US$ 212.6 million in 2016, which is expected to show an annual growth rate (CAGR 2016-2020) of 16.11% resulting in a market volume of US$386.3 in 2020. User penetration is at 7.30% in 2016 and is expected to hit 10.53% in 2020. Analysts say SVoD average revenue per user (ARPU) currently amounts to US$ 66.60.

Korea's high broadband penetration and "giga" speed internet is giving rise to Internet Protocol TV (IPTV) services, which was launched in 2008. IPTV services had 12.49 million subscribers as of November 2015, up 16.8% from 10.69 million a year before.

The Ministry of Science estimates that IPTV customers surpassed the 13 million level in March 2016, given the average growth of 150,000 per month.

KT Corp. remains the largest of the country's three IPTV providers followed by SK Broadband and LG Uplus.

Korea's Space Program

South Korea has an emergent space industry that could be competing with other advanced countries in the coming years. The country's space agency, the Korea Aerospace Research Institute (KARI), has so far developed the Korea Space Launch Vehicle-1 (KSLV-1), also called Naro, designed to launch Earth-orbiting satellites. Using Russian Angara boosters developed by GKPNTS Khrunichev, KARI had been able to develop a rocket technology in three phases and has brought South Korea into the exclusive club of space nations.

The KSLV-1 is 33 meters (108 feet) tall and 3.9 meters (12.8 feet) in diameter. It has two stages: a liquid-fueled first stage developed by Russia and a solid-fueled second stage developed by KARI. The KSLV-1 is designed to lift up to 100 kg (220 pounds) to low Earth orbit. After two launch failures, KSLV successfully launched the Science and Technology Satellite-2C on January 30, 2013. The satellite was placed in a roughly 300-by-1,500-km (200-by-900-mile) orbit.

KARI recently disclosed that it has successfully built the engine test systems, assembled the 7-ton class liquid engine, and completed the ignition/combustion testing, which are the main goals of Phase I of the KSLV-II Development Project. It said it is currently in the Phase II of the project.

The goals this year include securing its launch capability and autonomously implement space development. In the future, it aims to launch a lunar exploration program.

In addition to its launch vehicles, KARI has so far manufactured and operated a series of Remote Sensing and Earth Observation satellites known as KOMPSAT or Korea Multi-Purpose Satellite, in partnership with EADS Astrium. South Korea started the KOMPSAT program in 1995 to nurture its national Earth-imaging industry and supply services for remote-sensing applications. It has since launched KOMPSAT-1, KOMPSAT-2 (Arirang-2), KOMPSAT-3 (Arirang-3) and KOMPSAT-5 (Arirang-5).

KOMPSAT-5 was launched on August 22, 2013 to complete unique constellation of two VHR (Very High Resolution) EO satellites and a VHR SAR satellite. KOMPSAT-5, equipped with a synthetic aperture radar (SAR) payload, provides three operation modes: High Resolution Mode, Standard Mode and Wide Swath Mode.

KARI also operates COMS (Cheollian-1, GEO-KOMPSAT-1), a 2,460-kilogram satellite billed as the world's first geostationary ocean monitoring spacecraft designed to measure weather and environment changes. The satellite was launched in 2010 and was built by the ETRI and the Korea Ocean Research and Development Institute, with support from the French government. COMPS is a multifunctional satellite capable of carrying out communications, marine ocean monitoring and weather observation functions. It provides satellite communication services and observes the weather and marine ocean environments around the Korean Peninsula 24 hours a day.

With the launch of COMS, Korea became the seventh country after the US, Europe, Japan, China, India and Russia to develop its own weather satellite. Consequently, more accurate weather services can now be provided on its own without having to depend on other countries for weather data.

COMS is also the world's first ocean observing geostationary orbit satellite, which is presently monitoring the marine environment around the Korean Peninsula in real time. As the tenth country in the world to develop a Ka-band communications payload, Korea laid has acquired the foundation for a next-generation satellite information and communications system that can provide satellite communications, broadcasting, geographic information and traffic information services.

KARI is also developing the Compact Advanced Satellite planned to expand the domestic industrial base, foster the satellite industry and to promote the export of satellites. The goal is to develop 12 500-kg class low Earth orbit medium-sized satellites for use in precision earth observation, etc.

South Korea is indeed developing into a major player in the telecommunications, space and satellite industries. Watch this space for further developments!

Virgil Labrador is the Editor-in-Chief of ***Satellite Market and Research*** based in Los Angeles, California. He is the author of two books on the satellite industry and has been covering the industry for various publications since 1998. Before that he worked in various capacities in the industry, including a stint as marketing director for the Asia Broadcast Center, a full-service teleport based in Singapore. He can be reached at: virgil@satellitemarkets.com

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A Back and Forth with SSPI's New Chairman Bryan McGuirk

by Lou Zacharilla

As is our custom, we try to do a back and forth with each new chairman of the Society of Satellite Professionals International www.sspi.org. The role of chairman of SSPI is important for the entire industry since SSPI is the voice of the satellite community and hosts one of its premier events, the annual Hall of Fame Benefit Dinner (formerly "The Gala") in Washington, DC. (OK, sometimes the event is in Maryland too!)

Bryan McGuirk

Bryan McGuirk was elected by the SSPI board as its chairman in March, where he succeeds Chris Stott of ManSat. Bryan is the Chief Operating Officer for ViviSat, where he leads the commercialization of its satellite life extension services program. He is an industry veteran and has been part of senior management at marquee brand companies, including SES, where he was President of the Media and Enterprise division of SES Americom. Bryan also served as President of Programming and Advertising for the interactive TV companies Wink and Open TV. He also worked stints at NBC and Turner Broadcastingl.

He steps into the SSPI role during a time when the Society has expanded its effort to help industry CEOs and managers attract new talent to the industry. In 2015 it published the industry's first Workforce Study and continues to give scholarships to student groups to stimulate interest in the industry. In 2015 SSPI launched a popular and increasingly viral promotional campaign for the industry, called Better Satellite World. It recently expanded its franchise to include new chapters and events, including the Better Satellite World Awards dinner in London.

Excerpts of the back and forth follows:

Lou Zacharilla (LZ): *What are your primary goals for SSPI during your tenure as chairman?*

I want SSPI to continue to help our industry attract and retain the next generation of satellite industry leaders through scholarships, sponsorships to industry events and the public celebration of early-career achievements. We also need to continue to connect our industry through SSPI's vast chapter activities and to build membership through new chapters, like our new Silicon Valley and India chapters. We also need to add visibility to the celebration of the luminaries of our industry who changed the world through our Satellite Hall of Fame and HOF Benefit dinner.

LZ: *What is the most significant change that will occur over the next 2 years and how will it impact satellite industry professionals?*

It is a subtle but real demographic shift in the C-Suite. The coming of age of this generation of satellite CEOs will bring changes. Many of the largest SSPI member companies have recently replaced long-tenured CEOs. The new generation of leaders – some of whom are not from the traditional side of the business – are bringing a fresh approach to expanding our industry. And their focus is different, which will have an impact on performance. I am very optimistic that these new leaders will have a profound impact on us and it will be fun to watch from the Society's perspective.

LZ: *SSPI has been opening new chapters in Silicon Valley and India. What is the overall strategy for locating chap-*

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ters in 2017?

We had a fantastic response from the new Silicon Valley Chapter last year. The support from the fast growing New Space and space-related VC communities has been welcomed and it has moved with amazing speed. I have to thank the great organizational leadership from Hogan Lovells in helping us make that chapter a reality. Our India Chapter recently received government approval and while it will be a different proposition, we are excited to help bring together a fast-growing satellite community in New Delhi. Ultimately, our chapters will be doing exchanges and joint ventures as well, which is something we are very excited about.

LZ: *The industry's "Better Satellite World" www.bettersatelliteworld.com campaign was designed by SSPI and now has the support of the industry's media (like Satellite Executive Briefing) and other important trade groups, including ESA and GVF. As the campaign enters its second year, what is your view of its strategic importance to the industry?*

The Better Satellite World Campaign is our way of helping our industry connect and to tell our success through stories – dozens of them – and with a unified voice. It is a different narrative, one that, as you said, "offers the world a look at the poetry" of our business and what we do each day to help businesses flourish and to enable a more human society. We are so grateful for the support of leading companies and publications in our industry. We hope that more and more companies come forward both with their stories and their financial support.

LZ: *Last year the SSPI "Gala" was rebranded as the "Hall of Fame Benefit Dinner." What was the reason for that?*

"...I want SSPI to continue to help our industry attract and retain the next generation of satellite industry leaders through scholarships, sponsorships to industry events and the public celebration of early-career achievements..."

The SSPI has celebrated its history and recognized luminary leaders in our industry for over 20 years and inducted them into its Hall of Fame. We did this at the Gala event each year, but the two were never strategically connected, which tended to minimize the contributions of these giants. Opportunities for mentorship were also being missed. While our Gala had affectionately been referred to as the "satellite prom" – and once was black tie only – we noticed that this was not as relevant anymore. We felt that by making the careers and contributions of key people more central we could actually also raise more awareness and money. Equally important we wanted people to remember that SSPI is a non-profit and depends on corporate support to run its chapters, campaigns and to give out scholarships. So inserting the word "Benefit" sends a message that cannot be missed.

Lou Zacharilla is the Director of Development of the Society of Satellite Professionals International (SSPI). He can be reached at: LZacharilla@sspi.org

Wireless and Satellite Industries to Explore Backhaul Synergies

by Martin Jarold

In my previous column I referenced the expansion of the GVF-EMP events partnership's series of conferences – focused on the application of satellite communications technologies to a brave new world of ever expanding vertical market opportunities – to include a topical remit beyond oil and gas connectivity, maritime, HTS, and "Connectivity" to encompass **Cellular Backhaul: Smartphones & Tablets to the Satellite Network & the World** in June 2016, and **AeroConnect 2016: The In-Flight Online Revolution** in November 2016 – the latter of which I had explored in some detail last month.

In focusing on Cellular Backhaul the June event will highlight the application of satellite technology to the environment of carrier network enablement for smartphones and tablets. In co-ordination with the GSM Association (GSMA), the one-day, roundtable-style event on 21st June at London's Strand Palace Hotel will explore the current interaction between the satellite and wireless industries, the current and future growth of data traffic from mobile devices, and how that will impact both cellular and satellite networks. The conference is sponsored by Hughes, iDirect, and Intelsat, with panels featuring recognized operators and thought leaders in the wireless and satellite industry.

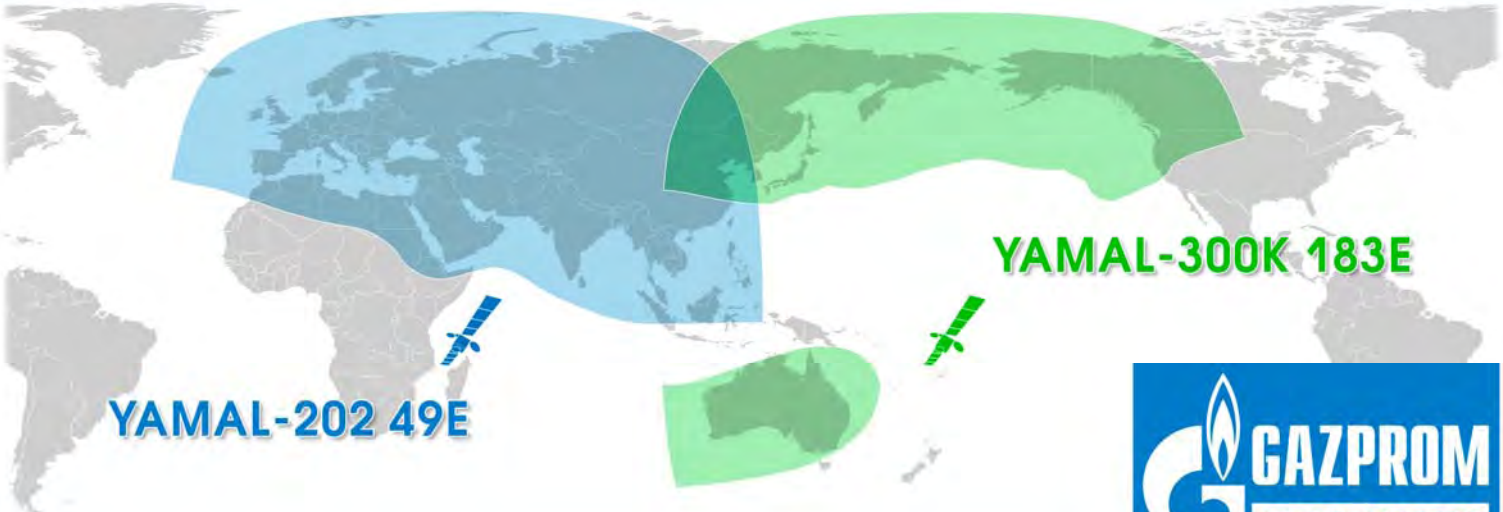
The satellite industry is at a crucial stage of evolution, with more data coverage "in build", and due to be launched, in the coming years than on all the satellite communication payloads ever launched combined. The wireless industry is seeing data usage by business and consumers doubling regularly, posing network stretch and technology challenges across the spectrum. With the growth of M2M, the exponential expansion in the internet-of-things, and 5G in coming years, these challenges may make 4G LTE seem like a simple dial up deployment of the past. Satellite has excellent synergies with terrestrial, technologies, including mobile wireless. Backhaul for mobile networks is critical to ensure speed and capacity as it relates to the transport of data (and, of course, voice) from distributed network sites to the network core.

One of the most significant challenges in the mobile services market is achieving scalable, flexible backhaul, particularly as markets move to 4G/LTE networks which are forecast to need to support 1,000 times more data traffic by 2020. The backhaul optimization technologies used to reduce bandwidth which have been introduced cannot solve all backhaul challenges, especially as the roll-out of LTE continues. As a result there is a need for cost-effective mobile backhaul over satellite for global 3G/4G expansion to relieve congestion.

Cellular Backhaul: Smartphones & Tablets – To the Satellite Network & the World will be chaired by David Howgill, GVF's Chairman of Cellular Backhaul Initiatives, and President of Huckworthy – a Washington DC-based provider of hybrid tactical satellite and wireless networks – and moderated by Lluc Palerm of Northern Sky Research (NSR).

Speaking to me about the program, David Howgill said, "The convergence of data networks to support critical business requirements, personal and consumer needs, fast-growing machine-to-machine and burgeoning IoT markets means that traditional telecommunications infrastructures can only provide a part of the solution to escalating demand. The conference panelists will dig into the detail of how the satellite industry can fill the gaps and provide scalable platforms tailored to the seemingly never ending growth of mobile data."

www.gazprom-spacesystems.ru



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Lluc Palerm added to this in commenting that, "Simply providing bandwidth and connectivity is no longer enough. One of the key value propositions for satellites is the ability to share capacity among multiple sites, which perfectly matches with the bursty traffic patterns of 3G and 4G. With the continued rise of media traffic, this pattern will only accelerate, which is leading driver for innovation in the mobile ecosystem."

The program panels will explore the problems, risks and opportunities that this continued growth offers to both the satellite industry, to the wireless carriers, and to the businesses that will rely on these future networks, ranging from the Fortune 500 to government and the military, and from planes, trains and automobiles to schools, restaurants and businesses all around the data-hungry world.

The latest NSR research points to high throughput satellites (HTS) capacity price points expanding the addressable 3G/4G LTE market for satellite backhaul, enabling a significant rise in capacity demand. The NSR report, 'Wireless Backhaul via Satellite', 10th Edition, shows that satellite capacity demand is forecast to grow at CAGR 38.5% over the next ten years, entering the terabit era by 2025. This sets the stage for an engaging and fruitful conference for both the wireless and satellite industries.

Other elements of the conference dialog will include:

Reducing Cost: Mobile operators must deliver their services at the lowest possible total cost of ownership. The cost of backhaul is one of the most important factors. Traditionally, satellite backhaul was an expensive option, but with HTS this is no longer the case – even in areas supported by terrestrial access. Within the next few years, it is predicted that the cost of Mbps over satellite will drop by a factor of six.

Mitigating Latency: Latency is challenging for mobile operators. With a GEO satellite link latency potentially resulting in a round-trip delay of 500 to 600 milliseconds. This affects the response time of 3G/4G/LTE data applications when sent over satellite, resulting in wasted satellite capacity, link under-utilization and poor performance. Latency is a matter of physical law, but the application side can help mitigate the effects of latency. Caching also helps as a way of reducing latency, as does TCP acceleration/ backhaul optimization, reducing satellite bandwidth needs, enhancing mobile users' experience and network performance, increasing network throughput and improving network response times and reliability.

Link Availability: Some HTS systems are susceptible to rain attenuation/fade during bad weather conditions, resulting in service disruption. The solution is a secondary communication path added at base stations so that voice and signaling can be routed over high availability terrestrial or C-/Ku-band routes, while the packet service runs over HTS, maintaining the use of the existing infrastructure and ensuring voice and signaling stays on low latency and highly available communication paths but provides an alternative backhaul approach for service providers, therefore, eliminating the need to upgrade expensive terrestrial communication paths.

Next Generation Satellite Backhaul for Emerging LTE and Small Cell Deployments: Mobile network operators (MNOs) want innovative backhaul architectures that are robust and flexible to accommodate shifting traffic loads on mobile network sites without massive bandwidth over-provisioning. Importantly, MNOs are looking at the segmenting of macro-cells into smaller (femto-, pico-) cells, a trend presenting new challenges for the satellite backhaul vendor

The Evolution of Communications using Smart Mobile Devices: The conference will explore how the two industries may better mutually benefit from collaboration and cooperation, both today and in the future. Whilst there is no one fixed technological winner known, or expected, in the years ahead, invited panelists, moderators and attendees will have the opportunity provided by this event to share in current leading thoughts, plans and technology developments for a world that will shape, and be shaped by, the evolution of communications using smart mobile devices.

Complimentary conference registration is open to GVF Members and qualified registrants from the telecommunications and government sectors. Space is limited and registration is open on a first-come first-served basis. Registration and full program details are available at www.uk-emp.co.uk/current-events/cellular-backhaul-2016/, or by contacting EMP (paul.stahl@uk-emp.co.uk) or me at GVF. For more information on all GVF-EMP events, please contact me at martin.jarrold@gvf.org. Alternatively, please consult www.uk-emp.co.uk/current-events/.

Martin Jarrold is Director of International Programs of the GVF. He can be reached at

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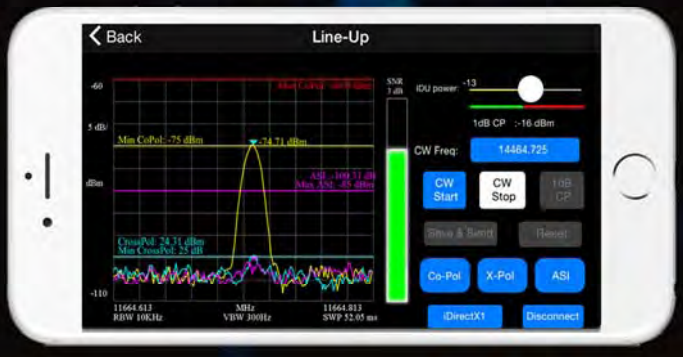

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Products and Services MarketPlace

A guide to key products and services showcased at CommunicAsia 2016 at the Marina Bay Sands Convention Center, Singapore from May 31-June 3, 2016.

ABS
Level 1 booth # 1R3-01
www.absatellite.com

ABS operates a global fleet of 6 satellites including ABS-3A at 3°West the latest addition to the satellite fleet. Its extensive teleport network provides comprehensive coverage to 80% of the world's population across 5 continents. ABS has strategic alliances and partnerships with state of the art communication hubs, to deliver the best possible satellite solutions.

ABS has enhanced its fleet by procuring two new satellites, ABS-2A with powerful coverage over the Middle-East, Africa, Asia and Russia scheduled to launch in 2016 and ABS -8 for future deployment.

Headquarters in Bermuda, ABS has offices in the United States, United Arab Emirates, South Africa, Germany, Philippines, Indonesia and Hong Kong. ABS is majority owned by the Permira funds which are advised by European Private Equity firm Permira.

Advantech Wireless
Level 1 booth # 1J2-01
www.advantechwireless.com

Advantech Wireless supports the critical need for High Throughput Satellite communications in a rapidly expanding digital environment. Our proven low-cost and highly reliable system solutions are meeting the ever-increasing need for high-bandwidth communications essential to military and government requirements, cellular network providers, broadcasters, robust corporate networks, and security. We integrate award-winning research and development engineering into our designs. The result: custom solutions with lowest overall capital and operating costs, together with an unparalleled commitment to lead the industry in materials, design and reliability.

The company products include award-winning Second Generation GaN based SSPAs/BUCs, Next Generation VSAT Hubs and Terminals with A-SAT-II Optimization, Microwave Radios, Fixed and Mobile Antennas, Antenna Controllers, Frequency Converters, Routers, Satellite Modems and Ruggedized Products.

AvL Technologies
Level 1 booth # 1N1-01
www.avltech.com

AvL Technologies' booth at CommunicAsia 2016 will feature new and cutting-edge antennas. On display in our booth will be an 85cm O3b MEO tracking Ka-Band antenna. This antenna offers the power of O3b's high throughput, low latency connectivity in a compact, easily transportable and rapidly deployable design. The tactical terminals operate in tandem pairs (same size) with make-before-break communications and can be set-up and on-the-air within two hours.

We will also display our new 85cm auto-deploy flyaway system. This highly-integrated satellite communication system features a mission-configurable weatherproof electronics enclosure and represents the latest power efficient technology in a lightweight, airline checkable, 2-case solution. The antenna operates with the AvL AAQ auto-acquisition antenna controller module.

Also in our booth will be a new 1.2m SNG **Dual-Band Ku + Surfbeam/Ka Vehicle-Mount antenna with a motorized selectable dual-feed system.**

In addition on display will be our lightweight, compact and robust Manual FlyAways – the 70cm axi-symmetrical ultra-compact, eight-segment carbon fiber reflector which assembles in five minutes and the 2.4m nine-segment carbon fiber reflector which assembles in fifteen minutes. These antennas operate in Ku-, Ka- or X-band.

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

C-COM Satellite Systems Inc.
Level 1 booth # 1Q4-12
www.c-comsat.com

C-COM Satellite Systems Inc. is a leader in the design, development and manufacture of commercial grade mobile SOTP antennas. iNetVu® systems are available in Vehicle Mount, Flyaway, Airline Checkable and Fixed Motorized platforms. More than 7000 C-COM antennas have been deployed in 103 countries around the world in a variety of vertical markets including Emergency Response, Oil & Gas, SNG/Broadcasting and

many more.

Under development now, is a new generation of Ka and Ku-band SOTM (Satcom-On-The-Move) antennas. Be sure to stop by C-COM's booth 1Q4-12 (USA Pavilion) at CommunicAsia and catch a glimpse of the NEW Ka-band inMotion terminal.

Also on display will be the 981 Drive-Away Antenna, a 98 cm Ku-band auto-acquire satellite antenna system which can be mounted on the roof of a vehicle for

Broadband Internet Access over any configured satellite. The system works seamlessly with the iNetVu® 7024C Controller providing fast satellite acquisition within minutes, anytime anywhere and is field upgradable to Ka-band.

COMTECH EF Data
Level 1 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, modulation, 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 throughout for the most demanding fixed and mobile networks.

COMTECH Xicom Technology
Level 1 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, Comtech Xicom Technology will be showcasing its SuperCool™ family of amplifiers which has many practical advantages over traditional air-cooled amplifiers including: ambient noise reduction, ease of service and maintenance, higher reliability, reduced heat load in hubs, flexible and compact installation and gain stability over ambient temperature.

The Comtech Xicom design incorporates integrated cooling channels in the amplifier baseplate, external to the high voltage and RF circuitry and drip-free connections. Liquid cooling is available across the high-power end of the product-line, including: the new SuperPower 2000W, and 1500W products; the 1250W, 750W, 500Ka and 250Ka family of amplifiers.

Comtech Xicom engineers are available to help customers understand and specify liquid cooling systems that are right for them.

Gazprom Space Systems
Level 1 booth # 1U2-01
www.gazprom-spacesystems.ru

Gazprom Space Systems (formerly Gascom) is a private commercial, non-governmental satellite operator based in Russia. GSS was established in 1992. Its shareholders are Gazprom - the world biggest gas company, Rocket-Space Corporation Energia - the leading Russian space enterprise, and Gaszprombank - the largest Russian non-state bank and Gazprom's authorized bank.

The company operates the Yamal Satellite Communication System, providing the users with:

- satellite capacity worldwide;
- satellite services in Russia ("point-to-point" links, TV distribution, VSAT networks, broadband, mobile backhaul, trunking etc.).

Today the Yamal Satellite Communications System consists of four Satellites (Yamal-202 at 49E, Yamal-300K at 183E, Yama-401 at 90E and Yamal-402 at 55E), state-of-the-art telecommunication center and VSAT networks in the regions of Russia. Total Yamal satellite constellation capacity amounts to 248 equivalent transponders of 36MHz and about a third of it is concentrated in beams pointed over territories outside Russia.

The geography of GSS clients encompasses around 30 countries and services based on Yamal capacity are used in more than one hundred countries. Although on the interna-

tional market GSS provides pure capacity, the company has a number of partner teleport companies in the Europe, Middle East, Far East, Asia, Africa and America which provide value added services.

The next step of the company constellation enhancement will be Yamal-601 satellite dedicated to replace Yamal -202 satellite operating at 49E. In total at least five new satellites are planned to be launched by 2025.

INTEGRASYS
Level 1 booth # 1Y1-09
www.integrasys-space.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 and introduces a new concept in signal monitoring communications

At CommunicAsia 2016, 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.

ND Satcom
Level 1 booth # 1U2-03
www.ndsatcom.com

At ComunicAsia **ND Satcom** will be showcasing its SKYWAN modem family— a reliable, flexible and versatile satellite communication platform for customer centric networks. It is a bi-directional MF-TDMA plus DVB system that supports voice, video and data applications in the most bandwidth efficient manner.

The new SKYWAN **5G** unlocks new business opportunities for service providers. Total cost of ownership is significantly reduced thanks to the fact that only one type of device is needed for all roles in the network. Each SKYWAN 5G has the full functionality on board and specific features are unlocked by a license key. One small hardware for all network roles simplifies logistics and unprecedented scalability enables the growth of your network in a very cost efficient manner. This saves costs in terms of logistics, certifications, network configuration and maintenance. Measuring in at only 1 RU the SKYWAN 5G is the smallest hub device on the market.

SKYWAN 5G enables star, mesh, multi-star or hybrid topologies with Communications-on-the-move (COTM) support. Each unit can act either as a hub or master station, therefore adding agility in terms of its network role. Geographical redundancy of the master station is already built-in. The device is so flexible that the customer can change the topology at a later point, use the unit for

Newtec
Level 1 booth # 1P2-01
www.newtec.eu

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

Newtec MDM5000 Satellite Modem

With forward symbol rates from 1 to 133 Mbaud and coding up to 256APSK, the MDM5000 will boost efficiency and performance on legacy satellites while fully unleashing the potential of next-generation High Throughput Satellites (HTS). As the latest addition to the Newtec Dialog® multi-service platform, the MDM5000 is designed to handle a wide range of IP services, including: Internet and Intranet access, Voice over IP (VoIP), mobile backhauling and trunking, along with video contribution and multicasting.

RF-Design
Level 1 booth # 1L2-10
www.rf-design-online.de

RF-Design is specialized in developing, manufacturing and marketing high quality RF distribution solutions for theinternational Satellite-, Broadcast- and Broadband communications market. Our product range includes **Switch/Routing Matrices, RF-over-Fiber solutions, Splitters/ Combiners, Switches/Redundancy Switches, Line Amplifiers, RF/DVB Signal Quality Analyzers** and **LNB-supply/control systems**...perfectly suited for applications in Teleports, Satellite Earth-Stations as well as Broadcast- and Broadband RF distribution infrastructures. We also have strong capabilities

to design and to manufacture custom-made RF distribution solutions for your individual needs. All our products are developed, manufactured, tested and approved in our own facilities in Lorsch/Germany and characterized by high quality, reliability and superior RF performance.

At CommunicAsia 2016 we will demonstrate our new unique, innovative and clever Switch Matrix systems **"FlexLink-K7-Pro"** and **"FlexLink S7"** as well as our new RF-over-Fiber system **"RedLink FLCRplus"** allowing N+1 and N+2 redundant optical transmission. We look forward to welcoming you at our stand and to talking about your individual RF distribution requirements.

RSCC
Level 1 booth # 1V1-07
www.rscc.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.

Terrasat Communications, Inc.
Level 1 booth # 1Q2-12
www.terrasatinc.com

Terrasat began in October, 1994, specializing in engineering design and manufacturing of advanced radiofrequency products for satellite and terrestrial microwave communications systems. Today, the company is focused on innovative RF solutions for satellite communications. The ground-breaking IBUC – Intelligent Block Up converter – brings full-featured, carrier-grade performance to commercial and military satellite communications terminals.

The company's new manufacturing facility on the southern edge of Silicon Valley has nearby access to an abundance of high technology supporting infrastructure and a highly skilled labor force.

UHP Networks
Level 1 booth # 1R1-01
www.uhp.net

UHP Networks, formerly known as Romantis Inc, is a leading manufacturer of high-performance VSAT network equipment. Our solutions are field proven with over 170 networks and 11,000 remote terminals installed, many operating in most demanding applications with Tier 1 enterprise, broadcast and government customers. The company has its headquarters in Montreal, Canada, with manufacturing operations in Germany and sales and support offices worldwide. Our technology is based on the Universal Hardware Platform (UHP). Owing to its unique real-time operating system, one UHP module can combine industry- highest processing power (450 Mbps of aggregate IP traffic, 250,000 packets per second, up to 5 demodulators) with super-compact size, less than 1 lbs weight, 9W power consumption. The UHP module can work as a remote terminal or as a building block of a hub with up 250 TDMA inroutes, supporting up to 500,000 remotes. With its very advanced TDMA protocol (96% efficiency), sophisticated QoS and 65 Msps, best in class modulation and coding, up to 32APSK with 5% roll off, the UHP technology is the optimum choice for next generation HTS satellite networks.

Work Microwave
Level 1 booth # 1V2-07
www.work-microwave.com

At CommunicAsia 2016, **WORK Microwave** will showcase the latest advancements to its analog and digital satcom solutions, including a new all-IP DVB-S2X product line. Using WORK Microwave's solutions, satellite operators can dramatically increase flexibility, bandwidth, and margins while reducing their operational costs.WORK Microwave devices have been deployed by operators worldwide to support a range of applications within the satellite broadcast and satellite communications markets, including SNG/contribution, direct-to-home, IP networking, teleport management, governmental and more. WORK Microwave's Satellite Technologies division develops and manufactures high-performance, advanced satellite communications equipment for telecommunications companies, broadcasters, integrators, and government organizations that are operating satellite earth stations, satellite newsgathering vehicles, fly-aways, and other mobile or portable satellite communication solutions.

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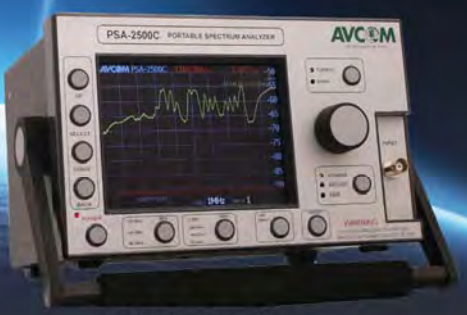

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Backed by the best customer support in the industry.

GEE to Acquire EMC

Los Angeles, Calif., May 9, 2016--Global Eagle Entertainment Inc. (GEE) (NASDAQ:ENT) today announced that it has signed a definitive agreement to acquire Emerging Markets Communications (EMC) a communications services provider to maritime and other mobility markets. The combined company will become a leading provider of global satellite-based communications and media content serving the rapidly growing aviation and maritime markets and select land-based markets.

Under the agreement, GEE will pay US$ 550 million for EMC. EMC shareholders will receive US$30 million in cash and 6.6 million shares of GEE stock at closing and another US$ 25 million in 2017, which may be paid in cash or stock at GEE's election. As a result of this transaction, ABRY Partners ("ABRY"), an experienced communications-focused private equity investment firm and the majority owner of EMC, will acquire an equity position in GEE as well as the right to nominate a member to GEE's Board of Directors. Dave Davis, Chief Executive Officer of GEE, will be CEO of the combined company and Abel Avellan, Founder and Chief Executive Officer of EMC, is expected to serve as GEE's President and Chief Strategy Officer.

"This is a transformative acquisition for GEE that significantly expands our addressable market and accelerates our growth opportunities," said Davis. "EMC's verticals collectively represent a multi-billion dollar market opportunity with most growing at an annual rate of approximately 15%. Moving into a highly complementary, adjacent market like maritime leverages our existing infrastructure and suppliers to achieve improved efficiencies and cost savings, and provides valuable cross-selling opportunities for our content, digital media and operations solutions products. We believe the synergies available through this combination position us well to grow market share, expand our margins, and improve our returns in the years ahead."

"We are excited to join forces with GEE to create a fast-growing and innovative provider of global mobility connectivity and content services," said Avellan. "When the transaction closes, GEE will have a broad, diversified revenue base consisting of more than 400 customers around the world. Our combined scale, product breadth, and superior technology will enable us to deliver solutions that are unparalleled in the market today. Whether by sea, air or land, the expectation for access to a superiorInternet connection and engaging on-board content is constantly increasing and will continue to drive strong demand for our expanded portfolio of products and services."

SES Takes Controlling Stake in O3B

Betzdorf, Luxembourg, May 2, 2016 --SES S.A. (NYSE Euronext Paris and Luxembourg Stock Exchange: SESG) has agreed to increase its interest in O3b Networks (O3b) to 50.5% and, in doing so, will take a controlling share in the company. The transaction is subject to regulatory approvals which are expected to be completed during H2 2016.

SES will pay US$ 20 million to increase its fully diluted ownership of O3b from 49.1% to 50.5%, bringing its aggregate equity investment in O3b to date to US$ 323 million (EUR 257 million). On completion, SES will consolidate O3b's net debt, which is currently US$ 1.2 billion. The transaction is expected to generate returns exceeding SES's hurdle rates for infrastructure investments.

Karim Michel Sabbagh, President and CEO, commented: "The move to take control of O3b is a game-changing acquisition and a major step in the execution of SES's differentiated strategy and complements SES's growth strategy.

O3b delivers a unique capability and solution, which is already in operation, for Enterprise, Mobility and Government clients, particularly for applications where low latency is an increasingly essential feature. The combined GEO/MEO satellite network and capabilities give SES a truly compelling and differentiated service offering within the industry, strengthening SES's unique positioning across the data-centric markets.

The consolidation of O3b – the fastest growing satellite network – significantly enhances SES's long-term growth profile with the constellation expected to generate annualised revenues of between USD 32 million and USD 36 million per satellite at steady-state. Looking forward, both SES and O3b will benefit from the strong synergies and strategic fit across both businesses," added Sabbagh.

Milbank, Tweed, Hadley & McCloy LLP provided advisory services to SES in this transaction.

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Inmarsat Appoints New Non-executive Director

London, UK, May 19, 2016--Inmarsat (LSE:ISAT.L), a provider of global mobile satellite communications services, today announced that **Pip McCrostie**, Global Vice Chair of Transaction Advisory Services (TAS), one of EY's four global businesses, will join the Board of Inmarsat on September 1, 2016 as a non-executive director and a member of the company's audit committee. Pip retires from EY on 30 June 2016.

Pip McCrostie

A member of the EY Global Executive, the organisation's highest management body, Pip brings many years of experience in corporate finance and tax. In her eight year leadership of TAS, the business has been transformed and moved from third position in the global market to number one.

Pip McCrostie is a member of the Peterson Institute for International Economics board of directors and chair of its audit committee. She is a regular contributor on business issues to CNBC, Forbes.com, WSJ, Bloomberg and Reuters.

O3b Networks Appoint Jack Deasy as VP, Government Solutions

St Helier, Jersey,. May 19 2016-- O3b Networks announces the appointment of **Jack Deasy** to lead O3b's US and International Government sales and business development efforts.

Deasy joined O3b Networks in 2013 to develop partnerships and solutions to meet the satellite broadband requirements of governments, intergovernmental and nongovernmental organizations. He led some of the first successful government sales engagements for O3b in these key markets. Previously, Deasy led business development activities for public safety/ disaster response and aeronautical and UAV programs at Inmarsat, and worked at the FCC as both an International Bureau Manager and Latin American Telecommunications Specialist.

O3b provides unique satellite enabled services that bring fiber performance and satellite reach to connect high speed broadband to remote and inaccessible areas of the planet. The innovative satellite and network operator was named 2016 Satellite Operator of the Year by Via Satellite and recently began installing some of the first services for international aid agencies and US Government clients across Africa and the Middle East.

Philippe Lin Appointed CEO of Eutelsat China Office

Singapore, May 30, 2016 - **Eutelsat Communications** (NYSE Euronext Paris: ETL) announces that **Philippe Lin** has been appointed CEO of the Group's China office.

Philippe Lin

Lin will leverage his extensive commercial and institutional experience to steer the development of Eutelsat's activities in China. He joins Eutelsat from Airbus China after 15 years as Vice-President and Chief Representative. Prior to Airbus he held executive appointments at Total, both in Beijing and in Paris. He began his career in China working amongst others for China's Council for Promotion of International Trade.

Lin is a French national, a graduate of the University of International Business and Economics in Beijing, France's Ecole Nationale d'Administration (ENA) and Canada's Ecole Nationale d'Administration Publique.

Steven E. Pickett Named CEO at RigNet

Houston, Tex., June 1, 2016--RigNet, Inc. (NASDAQ:RNET), a leading global provider of digital technology solutions, announced today that Steven E. Pickett has been named chief executive officer and president. He will be based in Houston and succeeds Marty Jimmerson, who has served as interim chief executive officer and president.

Steven E. Pickett

Pickett most recently served as chief executive officer and president of 21st Century Towers, and previously, he served as chief executive officer of WesTower Communications from 2013 to 2015. Prior to WesTower, Pickett served as chief executive officer and president of Telmar Network Technology from 2008 to 2013. Pickett has served on the board of QuEST Forum since 2010, where he currently serves as chair emeritus. With strong industry background and demonstrated experience in leading significant international companies, Pickett brings a wealth of experience to RigNet. Pickett said, "I am very excited to join the RigNet team. RigNet has established itself as a best in class managed-services provider and I see many opportunities for us to build on that success going forward."

"We are excited to have Steve join the RigNet team and have confidence in his ability to propel RigNet forward as we expand service offerings and step into new markets," said Chairman James Browning. "Steve's prior experience and leadership skills position him very well to lead the company with fresh perspective. We look forward to introducing him to our employees, customers, suppliers and investors in the near future."

SpencerStuart assisted RigNet with the CEO search.

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Broadband Maritime Markets Driving 8% Revenue Growth

Cambridge, Mass., June 8, 2016–NSR's *Maritime Satcom Markets, 4th Edition*, finds that maritime markets continue to demand more from their connectivity – with a steady move towards a 'connected vessel' across all major segments. Although some contraction has occurred in key markets, lower satellite capacity pricing is opening the tap for broadband VSAT adoption. With retail revenue growth annually exceeding 8% from 2015 – 2025 and HTS-options nearing 30%, the trend is clear – we are well into a trend of increasingly higher connectivity for maritime customers.

"The demand for data continues to grow, as more capacity is launched by satellite operators to cover maritime markets," states Brad Grady, Senior Analyst with NSR. "With more supply pushing bandwidth costs lower, end-users are responding by ramping up their demand for VSAT connectivity across all segments – merchant, passenger, offshore (oil & gas), and fishing. As Mbps prices lower, vessel connectivity revenue is on the rise, providing growth opportunities for service providers."

Dallas Kasaboski, Analyst at NSR and report co-author adds, "New and emerging application ecosystems provide a mixed opportunity for Service Providers, but can they capture revenue from the 'app as a service', or from the sole provision of capacity? Still largely unanswered, one aspect is known – the demand for broadband connectivity is only increasing."

Today, maritime satellite connectivity is quickly moving from a 'nice to have' to the 'must-have' item in nearly all major maritime verticals – everything from merchant maritime to fishing vessels are demanding more data across all of their operations. With over 240 transponders of FSS capacity and 46 Gbps of HTS demand by 2025, lower capacity pricing is definitely a boost to end-user appetite for connectivity.

There is not a 'one-size-fits-all' solution for maritime connectivity, and as satellite operators continue to look for ways to improve margins, service providers consolidate and increase their purchasing power, end-users will continue to benefit from this increasingly competitive marketplace.

4K Set-Top Box Market to Quadruple

Oyster Bay, NY, May 18, 2016--ABI Research forecasts the 4K set-top box market will quadruple from less than two million units in 2015 to more than 7 million in 2016, and then grow by 46% annually through 2021. However, the overall set-top box market is on the decline, expected to drop by about nine percent in 2016 to less than $16 billion in revenue, with both Pay TV and free-to-air boxes losing value.

"Digital transitions are taking longer than initially planned and the market is experiencing significant downward pressure on set-top box pricing," says Sam Rosen, Managing Director and Vice President at ABI Research. "Hardware revenues will fall, but value through software and services remains an opportunity. Providers should be looking to take on logistics and lifecycle challenges, in addition to testing and integration, to help the overall market flourish as well as focusing on 4K and HDR color set-top boxes will in the years ahead."

Set-top box providers are increasing in scale due to recent mergers and acquisitions, including market leader Arris taking over Pace and Technicolor acquiring Cisco's set-top box unit. Additionally, Huawei, at just more than $1 billion in revenues, leaped ahead of a number of vendors that faced a difficult year with drops of 25 to 40% in revenues, including EchoStar and Humax.

Regionally, China, which overtook the U.S. as the largest set-top box market by units in 2010, remains in the lead. India beat out the U.S. just last year as a failed digital cable transition spurred a large amount of satellite set-top box shipments. Given market circumstances, ABI Research predicts India will continue to grow its set-top box shipments and likely surpass China as shipment leader in 2018 or 2019.

"Significant market consolidation already occurred," concludes Rosen. "Operators worldwide are now carefully considering new opportunities to deliver video services, specifically through the use of streaming media adapters and adaptive bitrate, better known as ABR, IP-based protocols. It is important to note that satellite broadcast remains a significant factor in Pay TV distribution while terrestrial platforms, augmented by set-top boxes with some storage and advanced IP services, are becoming important for select telco operators who are backing away from licensing content."

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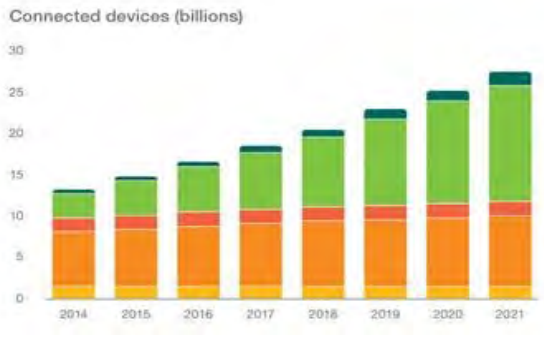
Internet of Things to Overtake Mobile Phones by 2018

Stockholm, Sweden, June 1, 2016--The latest edition of the Ericsson (NASDAQ: ERIC) Mobility Report, published today, reveals that the Internet of Things (IoT) is set to overtake mobile phones as the largest category of connected device by 2018. Between 2015 and 2021, the number of IoT connected devices is expected to grow 23 percent annually, of which cellular IoT is forecast to have the highest growth rate. Of the 28 billion total devices that will be connected by 2021, close to 16 billion will be IoT devices.

Western Europe will lead the way in adding IoT connections - the number of IoT devices in this market is projected to grow 400 percent by 2021. This will principally be driven by regulatory requirements, for example for intelligent utility meters, and a growing demand for connected cars including the EU e-call directive to be implemented in 2018.



	15 billion	28 billion	CAGR 2015–2021
Cellular IoT	0.4	1.5	27%
Non-cellular IoT	4.2	14.2	22%
PC/laptop/tablet	1.7	1.8	1%
Mobile phones	7.1	8.6	3%
[illegible]	1.3	1.4	0%
	2015	2021	

Rima Qureshi, Senior Vice President & Chief Strategy Officer, Ericsson, says: "IoT is now accelerating as device costs fall and innovative applications emerge. From 2020, commercial deployment of 5G networks will provide additional capabilities that are critical for IoT, such as network slicing and the capacity to connect exponentially more devices than is possible today."

Smartphone subscriptions continue to increase and are forecast to surpass those for basic phones in Q3 this year. By 2021, smartphone subscriptions will almost double from 3.4 billion to 6.3 billion. Also revealed in the report, there are now 5 billion mobile subscribers - unique users - in the world today, which is testament to the phenomenal growth of mobile technology in a relatively short period of time.

Detailed in the report is a dramatic shift in teen viewing habits: use of cellular data for smartphone video grew 127 percent in just 15 months (2014-15). Over a period of four years (2011-15) there has been a 50 percent drop in the time teens spend watching TV/video on a TV screen, and in contrast an 85 percent increase in those viewing TV/video on a smartphone. This, and the fact that the upcoming generation of mobile users are the heaviest consumers of data for smartphone video streaming (Wi-Fi and cellular combined), makes them the most important group for cellular operators to monitor.

In 2016, a long anticipated milestone is being passed with commercial LTE networks supporting downlink peak data speeds of 1 Gbps. Devices that support 1 Gbps are expected in the second half of 2016, initially in markets such as Japan, US, South Korea and China, but rapidly spreading to other regions. Mobile users will enjoy extremely fast time to content thanks to this enhanced technology, which will enable up to two thirds faster download speeds compared with the fastest technology available today.

Further highlights from the Ericsson Mobility Report include:

A global growth story: mobile broadband subscriptions will grow fourfold in the Middle East and Africa between 2015 and 2021; mobile data traffic in India will grow fifteen times by 2021; and despite being the most mature market, US mobile traffic will grow 50 percent in 2016 alone.

Data traffic continues unabated growth: global mobile data traffic grew 60 percent between Q1 2015 and Q1 2016, due to rising numbers of smartphone subscriptions and increasing data consumption per subscriber. By the end of 2021, around 90 percent of mobile data traffic will be from smartphones.

LTE subscriptions grew at a high rate during Q1 2016: there were 150 million new subscriptions during the quarter - driven by demand for improved user experience and faster networks - reaching a total of 1.2 billion worldwide. LTE peak data speeds of 1 Gbps are anticipated to be commercially available in 2016.

Additional spectrum harmonization needed between countries planning early 5G deployment: 5G is expected to start more quickly than anticipated, and spectrum harmonization is needed between countries planning early roll-outs. This is in addition to the current process for WRC-19, which focuses on spectrum for commercial 5G deployments beyond 2020.

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Satellite Made Easy with Smarter Tools

by Alvaro Sanchez

High Throughput Satellites (HTS) iare changing the satellite business model by multiplying the capacity up to 100 times the FSS capacity; therefore broadband satellite terminals would be growing at least in similar order of magnitude to cover the connectivity demand worldwide for 2020.

Very Small Aperture Terminal (VSAT) manufacturers are making those terminals all the more efficient for being able benefit from this extra capacity that HTS generates and maximize the service performance. Moreover, satellite broadband is starting to be a key alternative to fiber and other type of terrestrial connectivity by simplifying the access and providing a greater value proposition thanks to smarter tools which allow installing and maintaining VSAT network much easier than ever before, even simpler than terrestrial infrastructure

Complex Networks

VSAT systems by its nature are often in remote environments, where is very hard to get on site to start the service, this bring a key difficulty because sometimes an installer is required to travel to the site during three days, install the dish and commission it; in order to do so they are required to call to the Network Operation Centre (NOC) or Hub support, however without any cellular connectivity is almost impossible the commissioning task.

Regularly there are terminals which are not installed correctly, providing a poor performance to the end customer, but more importantly degrading the overall service by creating interference. This effect is maximized in HTS scenario where margins are smaller and the VSATs are forced to work to the maximum performance, therefore the entire beam performance or even the entire network can get degraded by the effect of a single remote. In this new High Throughput Satellite era, VSAT networks will be huge, if one single VSAT is mispointed or saturated; it can have an impact on the entire service performance, especially on adaptive power adjustment terminals.

Once the VSAT is installed, it is left unmanned to operate for years, and even when they are not operating correctly, often those people on site won't be trained in operating satellite equipment. Therefore an installer has to come back on site to revisit the installation; in some cases even a helicopter is required.

In case the VSAT was not installed correctly, a long process should be done by the satellite operator notifying the service provider that there are some VSATs in its network which are interfering other services or even other satellites, and the satellite operator will need to geolocate the interference with an expensive geolocation system during days and only possible if there is a "friendly" adjacent satellite which would like to share the satellite ephemerides information. This geolocation will provide a result in a rough area of 1 or 2 square miles; then it should be looked for the candidate in helicopter. Once this is done a technician should revisit the installation. This long process causes significant expenses to the satellite operator in interference revenue loose, geolocation system CAPEX and service provider in travel and installation expenses and service revenue loses.

Of course, the complexity of VSAT networks is not limited to installation. It is easy for errors to occur during operation, either due to human error from onsite personnel, or other factors outside of the operator's control, such as atmospheric conditions.

An added complication is that many VSAT networks are also mobile where the unit is constantly on the move. In those cases, it can have been perfectly well installed and pointed, but then every time it moves, you risk all those same misalign problems again. Often the personnel accompanying the unit won't be highly trained in satellite communications, but even when they are, it means a constant job of realigning to ensure the equipment is always working at its optimum.

Smarter Tools

Today when those networks are deployed, service providers can ensure these effects will not be experience by counting with smarter tools which allow them to prevent and mitigate these service degradations and interference.

"*At Integrasys, we believe that Preventing is the Key*": if a VSAT is installed accurately, by analysing its transmis-

sion, we ensure that for a long period of time this site will be performing optimally. By performing the Peak & Pol in transmission the installer is capable of minimizing the squint error and maximizes the availability; even for higher frequencies such as Ka, and heavy rainy days.

Moreover, a VSAT needs to be operating within its ideal power thresholds, one of the key VSAT issue happens when the remote is in a wrong power level. The installer should be capable of determining the BUC saturation point and optimal power in clean skies. This automated process is done by using an extremely user friendly interface designed for installers, crew members or even end customers, for being fully controlled.

Automated tools such as Satmotion Pocket which help them with coarse pointing, fine pointing, Cross Pol or ASI nulling, compression point and commissioning are ideal for installing quicker and accurate almost forever.

The VSAT industry now needs to get smarter after installation to ensure the network continues to operate accurately and without degrading performance or creating interference. Most Network Management Systems (NMS) assume that satellite terminals are reachable and therefore aim to optimise network performance or detect terminal malfunctions based on satellite IP feedback. However, errors at the premises, such as antenna de-pointing or signal level variations, usually result in the VSAT connectivity break.

Today it is much efficient with smarter tools such as Alusat by allowing to calibrate the network and maintain in optimal performance fully automated. Service providers can check within seconds each remote reception and transmission RF quality, without the need to send an installer to perform lineup checks. Therefore Alusat provides the network overall view of every key RF parameter to ensure the maximum accuracy and optimal performance, taking in to account the satellite beam footprints. It can even recover VSAT out of service.

The result of Alusat, is overall network performance enhancement and reduction of maintenance time, effort, and interference by automating the checks and corrections from the NOC. Alusat is deployed at the Hub site and automatically checks the uplink and downlink health of the VSAT population at radio level. It also collects relevant configuration and performance information.

Alusat is an evolution of our existing Satmotion Pocket and coexists sharing the same hardware, allowing the hub operator to evaluate the overall network performances with a single click, just in case anything has happened to change the status following accurate installation using Satmotion Pocket remote commissioning.

Satellite Made Easy

In a world where VSAT networks are getting all the more prevalent and all the more complex, it is more important than ever to make it easier for the end customer and all industry in general with innovative tools.

The more automated the processes and error detection, the more efficient and easier for the end customer can be, making life better for the entire industry and more profitable for those service providers who benefit from these automations.

At Integrasys we have released "Satellite made Easy" video available in Youtube which explains that today with smarter tools satellite could be a much easier solution.

Smart Providers

There are many service providers which have been benefiting from this smart tools already with great success in their projects such as ViaDireta with a iDirect Evolution network with 1200 VSAT deployment in Amazonia, Brazil, on a very extreme conditions, installers must travel in canoes in the river and install the VSAT over the river at the same time that they manage to not fall from the canoe; without knowing which type of animals are under the Amazonas river brown waters. Another example is Telefonica Peru, being the first service provider within Telefonica group acquiring Satmotion Pocket: "By using Satmotion Pocket and iDirect hubs we have ensured the maximum deployment quality in our VSAT projects for commercial and governmental applications"; said Martin Cabellos Gomez, Senior Product Manager, Satellite Service, Telefonica Peru.

Pegaso Banda Ancha, Toluca, Mexico

Also another great example is Pegaso Banda Ancha with 5062 VSAT deployment for bridging the Digital Divide in rural areas in Mexico, which is part of the Mexico Conectado initiative with the Hughes JUPITER™ System high throughput platform."

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. 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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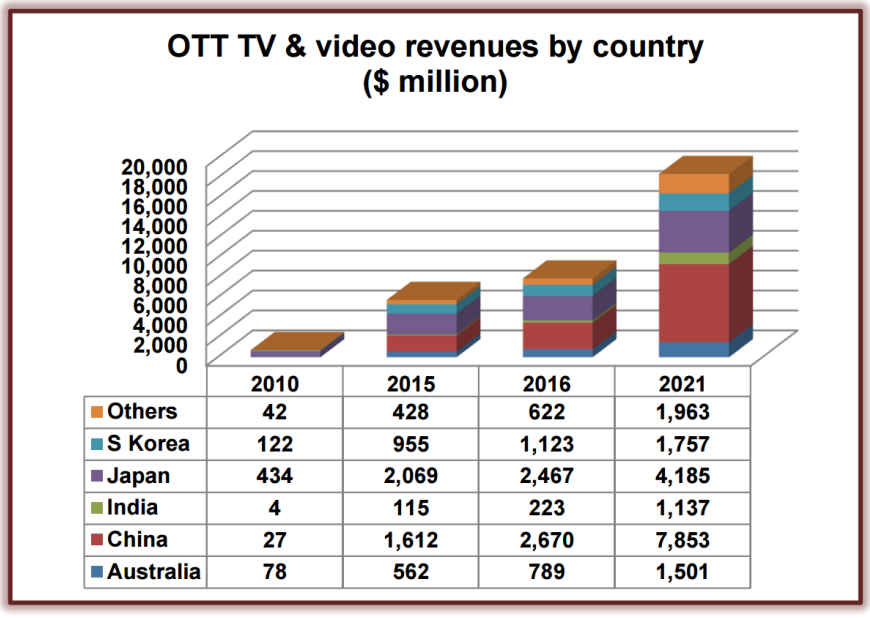
Vital Statistics

Asia-Pacific OTT TV and Video Revenues



	2010	2015	2016	2021
Others	42	428	622	1,963
S Korea	122	955	1,123	1,757
Japan	434	2,069	2,467	4,185
India	4	115	223	1,137
China	27	1,612	2,670	7,853
Australia	78	562	789	1,501

Source: Digital TV Research

OTT TV and video revenues for 17 countries in the Asia Pacific region will reach US$ 18,396 million in 2021; up from US$ 707 million in 2010 and US$ 5,741 million in 2015. The Asia Pacific OTT TV & Video Forecasts report estimates that China will overtake Japan in 2016 to become market leader.

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