

Trends to Watch 2016

by Elisabeth Tweedie, Associate Editor

No matter where in the world you are geographically, four topics have dominated the satellite industry in the past year: the new Low Earth Orbit (LEO) constellations, High Throughput Satellites, The World Radiocommunications Conference (WRC-15) and the suspension of funding for the US ExIm Bank. The LEO constellations were the subject of my article last month, and High Throughput satellites in September, so I'm not going to cover either of them here. The other story, which has the potential to have a significant impact on the industry is the development of the Quantum satellite, although this has not received as much coverage as the others.

Battle for C-Band

At the time of writing WRC-15 is not quite over, so we're still waiting to hear if the satellite industry has won the fight to retain exclusive use of all of the C-Band spectrum. But it is worthwhile reminding ourselves of the issues and the tremendous effort that has been put into defending the spectrum by multiple companies, groups and or-

ganizations in our industry.

The fight for the C-Band spectrum, has been led by the Satellite Spectrum Initiative (SSI). This is coalition of the major satellite operators and industry associations including: The Global VSAT Forum (GVF), the Satellite Industry Association (SIA), the World Teleport Association, (WTA), the European Satellite Operators Association (ESOA) and the Asia Pacific Satellite Communications Council (ASPPC).

WRC takes place once every four years. The major issue this year is whether the satellite industry will retain the exclusive rights to use the C-Band frequencies or whether in future, part of these will have to be shared with the International Mobile Telecommunications (IMT) industry. For the purposes of the ITU (of which WRC is a part), the world is divided into three regions: Europe, the Middle East and Africa being Region 1, The Americas, Region 2 and Asia-Pacific, Region 3. The final decision from the WRC, may not be the same for all regions, and even within regions, individual countries may



One of the top stories of 2015 was the announcement of several LEO satellite constellations.

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A Challenging Year Ahead

The new year began with major turmoil in the stock markets worldwide. Clearly changes are in the offing for the satellite industry in 2016. In times like this getting actionable intelligence is vital to making the right moves and adopting to changing conditions.

To help steer you in the right direction we have streamlined our magazine production schedule to focus on the major industry shows where we have a presence. We will now have three double issues in the year including this January-February edition, the summer July-August edition and the year-end November-December issue. These issues will have more in-depth coverage to forecast the trends and look back at the year that was, while our regular monthly issues will focus in the issues highlighted by the major trade show that month. If you notice in this issue, we also cover other shows not usually reached by other trade publications such as the ITU World Telecom in Budapest, Hungary (p. 14) and the InterBee in Tokyo, Japan (p. 18).

We are also expanding our coverage in the web portal www.satellitemarkets.com to provide more up-to-date industry news and information.

Despite the challenges, we are very excited about this new year and we thank you all for your continued patronage.



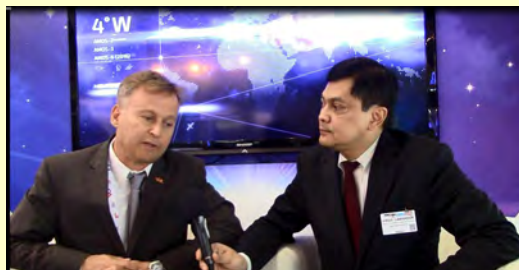
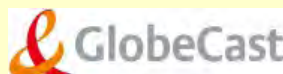
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Virgil Labrador, Editor-in-Chief

WEB EXCLUSIVES: Access video interviews from various trade shows in 2015 and 2016

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Trends to Watch...From page 1

have “footnotes” that allow different uses of the spectrum. At present, it’s only in Region 2, that part of the C-Band also has an allocation for Mobile Service. C-Band was the first frequency used by commercial satcoms and in spite of the increasing use of Ku and now Ka-Band, is still used in all regions of the world. It is particularly important in regions of heavy rainfall, as it is less susceptible to rain fade than the higher frequencies. Satellite signals are relatively weak compared to those from terrestrial mobile services. The fear voiced by the industry is that if the frequencies have to be shared, the satellite signal will effectively be drowned out by the terrestrial signal.

It would appear that the voice of the satellite industry is itself, being drowned out by the terrestrial opposition and even by governments. In a surprising move last month, the US government delegation announced that it would be in favor of sharing the lower portion (3.4-3.6MHz) of the C-Band. This position is vehemently opposed by most in the industry. The major argument against sharing, but one that seems to be being ignored by the IMT industry, is that in many parts of the world, C-Band is used for cellular backhaul. So, if, as the satellite industry contends, the satellite signals get drowned out by the terrestrial signal, the cellular industry, will in fact, be shooting itself in the foot. However that is not the only issue; as mentioned above, C-Band is the dominant frequency in use, in regions of heavy rainfall. This would include large parts of sub-Saharan Africa, and large parts of South America and Asia. It’s used not just for broadcast and entertainment, but also for emergency services and disaster recovery and maritime services. There is also a strong belief that the mobile operators are significantly over stating their need for spectrum. To say the least it will be interesting to see the outcome. However, C-Band is not the only spectrum at stake. There is also the issue of sharing part of the Ku and /or Ka-Band with the UAV in-

dustry for command and control. And if that wasn’t enough, another issue, is the potential decision to allow studies to commence into the sharing of the Ka-Band with terrestrial communications services. Whatever the outcome of WRC-15, it will not be the end of the fight for our industry. It’s just the beginning.

At the end of June, the ExIm Bank of the United States, ceased processing new applications. Unless its authority is reauthorized – which as yet it hasn’t been – that state will continue. In the past ExIm has provided funding for satellites being built in the US – or that have a substantial US component, when alternative sources of funding have not been available. The immediate impact of this is being felt by US manufacturers, with Boeing citing the lack of ExIm funding, as one of several reasons for potential reduction in its satellite workforce. Given that ABS cancelled a satellite order with Boeing due to the lack of ExIm funding, and Kacific said it wouldn’t consider Boeing because of it, it is justified in doing so. Export credit financing is not confined to the US, so this lack of support for US industry could translate into good news for other countries.

In Europe, as well as Coface funding for satellite projects, the European Space Agency will also get involved, as was demonstrated recently with its joint funding of Quantum. Quantum is a public-private partnership (PPP) between ESA, Eutelsat and Airbus. Airbus is the prime contractor and Surrey Sat-



Quantum satellite, a public-private partnership between ESA, Airbus Defence & Space and Eutelsat, dubbed the “chameleon of the skies” by Europeans. It is the first fully flexible geostationary satellite that will be able to change coverage, frequency band, power and location once in orbit. If successful this project has the potential to significantly change satellite manufacturing. Image courtesy of Airbus.

ellite Technology (like Airbus, also an EADS Astrium company) will supply the platform.

Quantum is being dubbed the “chameleon of the skies” by the Europeans. It is the first fully flexible geostationary satellite that will be able to change coverage, frequency band, power and location once in orbit. If successful this project has the potential to significantly change satellite manufacturing. The payload architecture will use generic subsystems and equipment, thereby enabling large-scale production and economies of scale not generally found in GEO manufacturing. The initial platform will be for satellites up to 7kW of payload power, and up to 450kg of payload mass. ESA is estimating that the market demand for GEOs in this size category is up to eight per year. ESA’s involvement extends to the in-orbit validation of the payload and platform of the first Quantum satellite.

Eutelsat is targeted to take delivery of the first satellite in 2018 and will use it for government, mobility and data markets.

Interestingly the UK by contributing £56.9M is providing 90% of ESA’s share of the funding for the satellite. Undoubtedly this is at least in part, due to the involvement of Surrey Satellite



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Technology and Airbus Space and Defence (UK), but it is also in line with Britain's stated objective to develop a £30B space industry by 2030. Other projects that have recently received funding from the UK Space Agency include: £47.7M for the European Mars Mission, £49.2M for the International Space Station, £29.4M for high throughput satellites services and applications and £28.4M for the Integrated Application Promotion Programme (this is to promote the growth of businesses based on space data). The UK is also planning to establish a spaceport by 2030 and a preliminary short list of possible sites has now been drawn up.

Meanwhile also in Europe, after a shaky start, Galileo continues to develop with 10 of the 30 satellites now in orbit.

Galileo, is a joint development between ESA and the European Commission and is a civil global positioning system designed to be interoperable with the US Global Positioning Satellite (GPS) System.

2015 has raised some yet to be answered questions for the industry. The potential new LEO constellations have given us all something to talk about, will they succeed or are these going to be a repeat of the spectacular

failures of the 90s? Will we lose some C-Band spectrum, and is this just the beginning of the fight? Will there be excess HTS capacity and are we cannibalizing our own industry by lowering the price point? And, is Quantum the tip of the iceberg, heralding mass production of off-the-shelf GEOs? The next few years are going to be very interesting.



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. During her 10 years at Hughes Electronics she worked on every acquisition and new business that the company considered during her time there. She can be reached at:

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Calendar of Events

February 16, 2016, Strand Palace Hotel, London, UK, **GVF Connectivity 2016 - Air, Sea, Surface, and Rail: Evolving the "New" New Verticals** Contacts: Martin Jarrold (martin.jarrold@gvf.org), Paul Stahl (paul.stahl@uk-emp.co.uk) Web link: www.uk-emp.co.uk/current-events/connectivity-2016/

March 8-10, 2016, Dubai, UAE, **CABSAT 2016** Harness the meteoric growth driving the MEASA media market. With 22 years of expertise, and access to all the major players in the region's \$24 Billion media market - CABSAT is the number one event for the satellite, broadcast, digital media and content industries. Join all the major industry stakeholders, the region's key influencers, buyers and innovators. For more information go to: www.cabsat.com/satcab

Conferences: April 16 – 21, 2016, Exhibits: April 18 – 21, Las Vegas Convention Center, Las Vegas, Nevada, USA, **2016 NAB Show®** The media and entertainment industry has become unleashed. Dynamic innovations and cutting-edge technologies are shattering the boundaries of content and opening up limitless opportunities. With 103,000+ Attendees from 160+ countries and 1,700+ Exhibitors, NAB Show® is the ultimate marketplace to the solutions that transcend traditional broadcasting and embrace content delivery to new devices in new ways. For more information go to: www.nabshow.org

May 18-19, 2016, The Sheraton - Mexico City, Mexico, **Latin American Satellite Communications & Broadcasting Summit organized by Euroconsult** This unique event brings together representatives from all levels of the Latin American satellite communications and broadcasting value chain, including TV broadcasters, telecom operators, service providers, satellite operators, government agencies, space agencies and manufacturers. For more information go to: <http://www.latsat-congreso.com/en>

May 31-June 3, 2016, Marina Bay Sands Singapore, **BroadcastAsia2016** The broadcast landscape has changed, audience consumption habits are driving changes in every aspect of the industry. Get ahead at BroadcastAsia – the region's most acclaimed exhibition and knowledge platform for the international broadcasting, film and digital multimedia industry when it returns to Marina Bay Sands Singapore from 31 May to 3 June 2016. For more information go to: www.broadcast-asia.com

May 31-June 3, 2016, Marina Bay Sands Singapore, **CommunicAsia2016** CommunicAsia and EnterpriseIT will showcase the entire ecosystem of solutions and smart technologies to empower smart cities, smart businesses, smart governments and smart lifestyles. For more information go to: www.communicasia.com



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The Aeronautical Market

by **Bernardo Schneiderman**

A new survey of more than 6,000 airline passengers reveals the very strong demand for in-flight broadband services that exists among Europe's aviation passengers. This demand is seen across all age groups and those travelling for either business or leisure. The 2015 In-Flight Connectivity Survey was conducted by Inmarsat (LSE: ISAT.L), one of the leading provider of global mobile satellite communications services, and market research company GfK. The survey also found that in-flight connectivity is likely to be a strong source of revenue for airlines, as well as a differentiator for carriers looking to stand out from the competition.

To shed light on the prospects and opportunities in this growing market, we started an executive roundtable series on the Inflight Broadband Satellite market starting with the main system integrators in June 2015 edition (Gogo, GEE (Global Eagle Entertainment), Panasonic, Thales and Viasat executives participated in that article). The second roundtable in the series, we covered the satellite operators in our July/August 2015 edition (Inmarsat, Intelsat and SES executives participated in that article). The third part of the series in this edition we are covering the antenna manufacturers which form a critical component of the Inflight Broadband System.

We invited key executives of companies providing satellite antennas for the inflight broadband market to participate in an executive roundtable discussion. Participating in the roundtable are Kim Gram, VP of [Cobham Satcom's](#) aeronautical business unit; Steve Sybeldon Senior Director of Business Development, [Kymeta](#); David Bruner, Vice President of Global Communications Services, [Panasonic Avionics](#); Dave Helfgott, CEO, [Phazor](#); and Greg Otto, Director of Business Development of [Thinkom](#),

Excerpts of the roundtable discussion follows:

What major trends do you see in the next few years for the aeronautical satellite antenna market?

Kim Gram, Cobham: I see a major drive for data communication for both professional (flight safety/operation/maintenance) and passenger services (IFE). A large population of aircraft still fly around without an IP data pipe and many aircrafts still leave the factories also without an IP data pipe. That situation is inherently unstable in a modern word, and will change with the arrival of more suitable technologies built for the weight and space constraints of the modern aircraft. Other manufacturers are adopting similar visions. "A prime example is our game-changing two-box solution AVIATOR 200S, with the ultra-compact Cobham SATCOM HELGA (combined HLD and Enhanced LGA) antenna which incorporates the RF power amplifier and diplexer and the enhanced low-gain antenna into one single compact unit. Previously the amplifier had to be installed some-

where on the aircraft, but because it generated heat, it needed the necessary ventilation limiting installation options. The space and weight savings enabled by AVIATOR 200S represents a step change for the industry as this new solution is suitable for all aircrafts. AVIATOR S Series is not only about making satellite communications equipment smaller and more powerful, but also more cost-effective. AVIATOR S Series is smaller, lighter, more cost effective and delivers ACARS services over a robust IP data link as well as multiple voice channels, bringing next generation connectivity to commercial aviation."

Steve Sybeldon, Kymeta: Responding to an ever increasing demand for passenger connectivity, airlines are attempting to find a balance point between speed to market, equipment, and service. Initially, passengers were satisfied with simple email exchange and slow internet browsing while inflight as it was a new and unexpected ser-

vice. Very quickly, passenger expectation has amplified to a level of service experienced on the ground. While Satellite Network Operators and Service Providers improve capacity and throughput, antenna manufacturers are rushing to build equipment that exploits satellite throughput while focusing on advantages that smaller, lighter, low profile terminals offer. Expect announcements regarding Aeronautical antenna sales to focus on efficiency in two areas, the first are fuel savings through decreases in weight and drag, the second is throughput capacity. Flat panel technology via technologies like Kymeta's thin film transistor (TFT), meta-material design-based antennas will compete to become the eventual winner of the Aero Satellite market.

Dave Bruner, Panasonic: We see major investment in new antenna technology focused on better RF performance in models designed for trans-oceanic service, low profile, and lightweight –

less than 3 inches or 7 cm and 50 lbs/25Kg for models targeted at narrow body or regional operations

David Helfgott, Phazor: We see the increase of mobility-centric broadband capacity from traditional FSS satellite operators, new HTS programs and new LEO constellations creating the right conditions for widely accepted and used mobile broadband services, while in flight. These services will initially be focused on the rising requirement for passenger connectivity, (the IFC/IFE market), but will also allow more robust & economic telematics services to expand, (M2M communications). Both of these use-cases for aggregated broadband in-flight will only be optimized by the right access-technology - electronically steerable antennas (ESAs) - which will provide the benefits of very-low-profile/aerodynamics, light-weight, very high-gain, and solid-state reliability

(no mechanical moving parts).

Greg Otto, ThinKom: There is an industry movement toward launching

non-geosynchronous orbit satellites (NGSO) over the next few years. ThinKom's conformal antenna technology fielded today for geosynchronous (GSO) systems is extremely broadband and polarization diverse for which ThinKom's antenna technology is very well suited.

What specific regions do you see a potential growth in any specific market segment?

Cobham: Based on the above observation of an untapped market, I do not see this as a regional thing. All markets will see efficiencies potentially being gained from data for different purposes such as 4D trajectory navigation, the FDR in the cloud. It is going to be global and the most visionary airlines, where

ever they are, will move first. Being visionary is not a geographical thing it is a global phenomenon

Kymeta: Continental, regional routes in North America and Europe have several choices for terrestrial and satellite based solutions. The current demand, and potential growth areas are many, including longer flights (those over two hours), flights that cross national borders and trans-oceanic routes that can only be served by satellite service. Services being configured to serve these routes will, with meta-materials



Cobham Satcom's Aviator S 200

market is showing the most growth. The more attractive regions right now appear to be the Americas, EMEA and Asia-Pacific. There is a strong sense that the "game is afoot" and many IFEC decisions will be made over the next few years.

Do you have a specific set of antennas solution that address the requirements of a specific market segment i.e. Commercial, Executive and Defense

“...We see extremely large growth in all markets and in all geographies. We now have greater than 1000 aircraft installed, over 1800 orders in backlog from over 70 customers. We see this pace of growth continuing and increasing over the next 10 years...”

—David Bruner, Panasonic Avionics

technology, displace terrestrial based products. Additionally, our technology will enable affordable solutions for smaller aircrafts--thereby significantly growing the addressable markets.

Panasonic: We see extremely large growth in all markets and in all geographies. We now have greater than 1000 aircraft installed, over 1800 orders in backlog from over 70 customers. We see this pace of growth continuing and increasing over the next 10 years.

Phazor: We see the IFC/IFE markets and then the telematics markets both continuing to grow across regions, market-segments and airframe types

Thinkom: The commercial air transport

aviation?

Cobham: “We are cautious about allocating specific inventions to specific markets. We have often been surprised by technologies that were originally meant for one segment succeeding in another. An example is our AVIATOR 700D originally intended for the business aviation market, which is now gaining significant traction in the government market, illustrated by our position on the C130 J Hercules. In conversations with operators of the aircraft, we are left with the impression of a completely new operational situation. Imagine the move from not being connected to being connected in a modern working environment. If you have good technologies everybody wants them!”



Thinkom Ku-band antenna

Kymeta: Kymeta's flat panel antenna provides benefits that are recognized across the aviation submarkets. Lightweight, low profile (low drag), and infrequent maintenance requirements are valuable to any airborne craft. Since Commercial aircraft are the most highly utilized, they might gain the highest return from the aggregated advantage of a flat panel solution.

Panasonic: We look at the type of aircraft and its mission and optimize the antenna accordingly. As mentioned earlier, we have our next gen trans-oceanic antenna deploying now and we are in development of our low profile antenna. We just announced our tail mount business jet antenna relationship with Astronics AeroSat.

Phazor: Phazor's goal is to create the best-in-class, enterprise-grade commercial Electronically-Steerable-Antenna (ESA). The basic functioning unit of a Phazor ESA is called a core module. This common technology core can be adapted and applied to Business/General aviation, Commercial aviation and Defense & Security aviation programs alike. Phazor's technology is modular, allowing for nearly limitless expandability, and an Aeronautical Earth Station (Terminal) can be designed to be either flat or conformal to the outside surface. In either case the ESA is very low profile, (only a few inches high, including protective cover/radome).

Thinkom: ThinKom is partnered to deliver the Ku-band antenna technology (ThinAir® Falcon-Ku3030) for Gogo's "2Ku" service globally for the Commercial Air Transport Market. This product can also be readily adapted to military platforms. ThinKom is also under contract to deliver the ThinAir® Falcon-Ka2517 antenna/radome subsystem for

the United States Air Force (USAF) Senior Leadership E-4B Platform.

What impact would the developments of new High Throughput Satellites in Ku-Band and the new generation of Ka-band in your product portfolio?

Cobham: We have not announced any decisions yet in this field.

Kymeta: Any increase in the performance of satellite system networks will benefit from the widespread use of flat panel antennas. Our antennas are optimized for the new generation satellites, and are also a good fit for non-geostationary (MEO/LEO) satellites.

Panasonic: With over 1000 Ku antennas fielded to date and orders for almost 2000 more we don't have any current plans to operate Ka bandwidth. All of the performance improvements offered from HTS satellites are available in Ku and better suited for global service. Ka HTS will continue to be focused on land areas where Broadband to Home satellite systems are perceived to be of commercial interest. Our investments in HTS are extremely large and they will provide Panasonic customers with the optimal global bandwidth and price arrangements for the foreseeable future. In the next weeks and months you will continue to hear announcements of additional investments being made for even larger capacity to serve extremely high demand geography areas.

Phazor: As described previously, we welcome the introduction of HTS satellites, which will bring faster adoption of IFC services. Programs like Intelsat's EPIC will bring enormous amount of capacity to the broadband mobility market, and compelling cost/bit economics. Phazor will introduce products to the aeronautical broadband market in Ku initially, and then in other frequencies, like Ka, shortly thereafter.

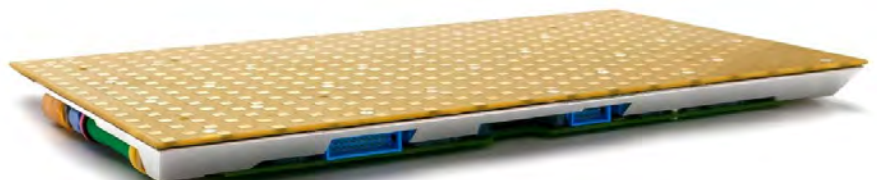
Thinkom: GSO system trends are to work over wider tunable and instantaneous bandwidths to gain full "universal" global capability with every type of satellite both HTS and FSS. The antennas will also need to further push the limits on reduced Adjacent Satellite interference (ASI) and overall system linearity as higher-order (more operationally efficient) Modulation Codes (MODCOD's) become the norm.

Do you have any new solution that you launched the last 12 months or you are planning to launch during the next 12 months focus in any specific segment of the aeronautical market?

Cobham: Yes indeed, watch this space, as something very unique is coming up which is at the same level of innovation as our AVIATOR 200S

Kymeta: kymeta aerospace antennas prototypes are under development for commercial and business jet airframes. To-market timing of terminal solutions will be announced by terminal integrator partners.

Panasonic: We believe our massive installation activity in commercial aviation is changing the aeronautical communication market for passengers and



Phazor Core module

for airline efficiency. Our launch into the business jet market will have similar impact as current services have not met the bandwidth requirements of these demanding customers. The Panasonic global communications network and the AeroSat antenna will have a great impact on this market segment.

Panasonic: Panasonic will also be announcing a new maritime antenna in the next few weeks that will revolutionize service in that market. It is a flat panel which is extremely light which can be installed in many flexible configurations to improve performance and negate blockage. It will provide excellent performance from the smallest leisure vessel, to river cruise ships, to commercial shipping and to the largest mega yachts.

Phazor: Phazor will introduce its products commercially in 2017 for non-Aeronautical markets (maritime & land-mobile), followed quickly by Aeronautical markets

Thinkom: ThinKom's ThinAir® Falcon-Ku3030 product (Gogo's "2Ku" service) will soon be flying commercially on Aero Mexico and Virgin Atlantic and will be rolled out to many airlines in 2016. ThinKom continues to review opportunities in the regional jet markets and in other frequencies.

Anything else you would like to add?

Kymeta: Flat panel antennas offer almost every advantage valuable to the aeronautical market. For example, weight and drag is significantly reduced meaning fuel savings on each route flown. The lack of moving parts equals reduced maintenance time and cost, and low power consumption offers reduced risk and greater efficiency. Moreover, with the TFT and metamaterials-based design, the Kymeta antennas are more scalable than legacy phased array technologies. It offers a

"...While there is great focus on antenna improvements, and rightly so, there has also been great improvement in video codecs for broadcast of live television for our aeronautical service, new satellite modem developments, new cabin Wireless Area Networks, new 3G mobile phone service base stations, and new content server capability for wireless media streaming..."


path to lower cost terminals, and is the only antenna that offers every one of these advantages.

Panasonic: While there is great focus on antenna improvements, and rightly so, there has also been great improvement in video codecs for broadcast of live television for our aeronautical service, new satellite modem developments, new cabin Wireless Area Networks, new 3G mobile phone service base stations, and new content server capability for wireless media streaming. Every single component of our onboard equipment is being upgraded with significantly more capable equipment in late 2015 and 2016. All of these developments will deliver an even better passenger experience, crew productivity, and aircraft efficiency. All of these improvements drive bottom line improvement for our customers.

Thinkom: ThinkKom's low profile, high throughput and wide bandwidth antenna designs and products enable Thinkom to provide significant value and differentiators to our customers, while at the same time expanding their addressable markets.

As we can see by the comments of

each executive the market for Inflight Broadband is in high demand and the Antenna is one of the main factor that will move the market.

During the month of December 2015 during a small conference some of the key players integrators (Gogo , GEE- Global Eagle Entertainment and Viasat) the main issue was how big is the market and the number that was reviewed was ranging from \$1 to 30 Billion. This means that the market is moving and the number to be estimated at this time is very difficult because of the number of variable still very open like the number of aircrafts, price of the system who is the best integrator and how is the satellite carrier is going to provide the capacity for this market is the main issue to be developed during the next 5 years where Inmarsat, Intelsat, SES and Eutelsat are the main suppliers of capacity. 



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Innovation and Entrepreneurship Highlighted at ITU Telecom World

by Roxana Dunnette, Contributing Editor

ITU World Telecom closed its doors on October 15, 2015 and gathered more than 4000 participants from 129 countries, included an exhibition from 50 countries with 23 Country Pavilions, 238 exhibitors and a new section dedicated to SMSs, a Forum with 44 panel sessions, a Leadership Summit and a large variety of workshops.

Top level government representatives, industry leaders, SMEs and young start-ups from developed and emerging markets had the chance to network, exchange information and do business.

The focus was on accelerating global ICT innovation for social impact and the role of SMEs in the process.

The spectacular Opening Day Event took place in the presence of H.E. Janos Ader, President of Hungary, H.E. Viktor Orban, Hungary's Prime minister and the ITU Secretary General Houlin Zhao.

The Hungarian Postal Service, Magyar Posta issued a commemorative stamp on the occasion of 150th anniversary of the ITU, Hungary being one of the 20 founding members.

This edition of ITU World Telecom marked a new strategy – to provide an international platform for SMEs, encourage regional projects and contacts with governments and major companies as SMEs are seen as a motor for ICT innovation, job creation and local growth.

We were able to see at the exhibition interesting items like spectrum measurement devices, 3D new type of print-

ers, applications for kids and schoolgirls (see photo of Vanessa Mutesi the youngest Ms. Geek Rwanda 2015 16 years old who developed Rwanda Online Open school platform), GPS beach coolers, wearables and battery regeneration.

A Young Innovators competition took place and ITU proposed the Entrepreneurship Award to five SMEs exhibiting at the event. Also in order to encourage the participation of young innovators last day was 'Next Generation Day', an open day when 1000 students and young visitors enjoyed guided tours of the exhibition, a 'World Café' just for them, workshops and animated discussions on the role of ICTs to help improve lives.

To respond to challenges facing today the young generation, high rate of unemployment and lack of opportunities, INTEL presented its educational programs 'INTEL @ Learn' and 'Intel Entrepreneurship Program', both focused on technologies, critical thinking, problem solving and how technology can boost business ideas. Intel started this initiative in several countries in collaboration with governments.

During the FORUM we were able to listen to interesting presentations on a large variety of subjects such as: the Future of IoT, Smart Cities, 5G applications, TD-LTE technologies,

Spectrum issues, ICT Entrepreneurship for Social Impact, SMEs and accelerating the Digital Innovation, National ICT strategies for developing a digital nation and much more ...

At the Ministerial Roundtable high level government representatives discussed regional and international objectives, policies and experiences in the fast growing environment and the role of SMEs in ICT innovation.

The session concluded with the 'BUDAPEST CALL FOR ACTION,' a document inviting all stakeholders to foster in-



The youth is the future of technology. Vanessa Mutesi the youngest Ms. Geek Rwanda 2015 at 16 years old who developed Rwanda Online Open school platform at the ITU Telecom.

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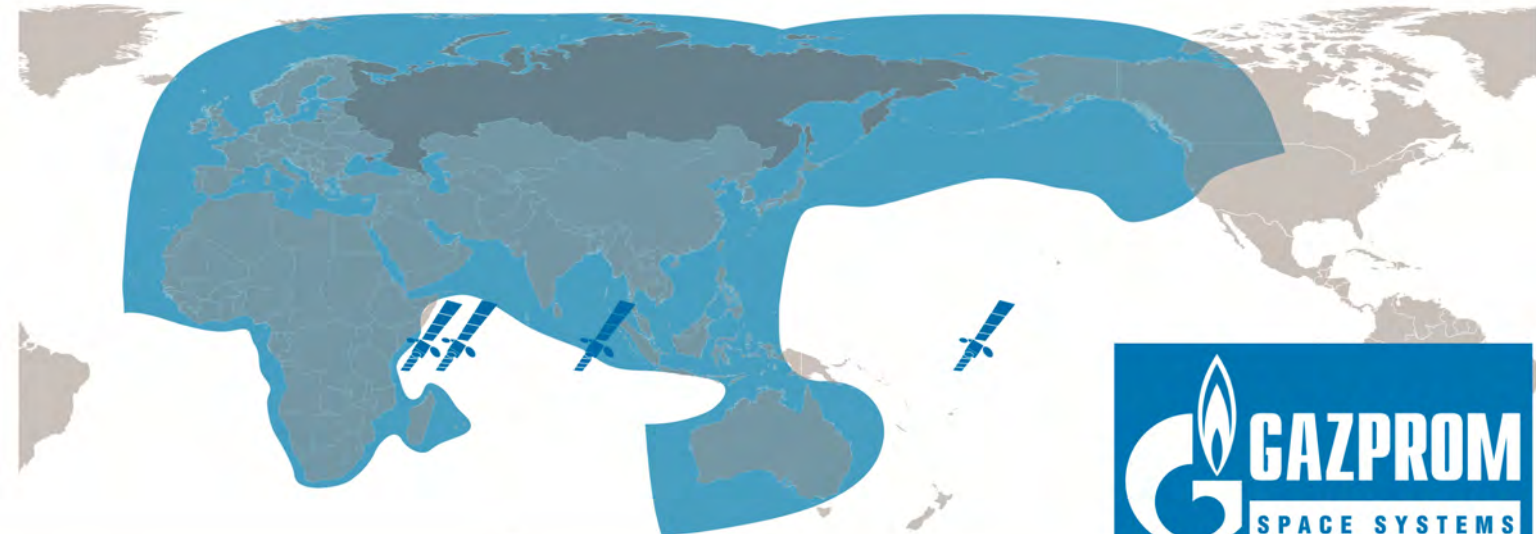
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novation and entrepreneurship and to implement solutions that will speed the social and economic development of the country and will bridge the digital divide.

The Leadership Summit made a reality check on how to meet the Sustainable Development Goals by 2020 and staged the scene for integrating digital markets both at regional and international level.

'SMART AFRICA'- had its traditional lunch panel sponsored this time by Uganda. Since 2013 when the 'Smart Africa Manifesto' was signed by seven African Head of States in which they committed to provide leadership in accelerating socio-economic development through the ICT s , a lot of progress has been made and a lot of flagship projects have been implemented.

To name just some of them:

In KENYA- (which has already 7 million mobile phones) – Project UDUMA enables people in rural areas to have services, get an ID, a passport, a driver's license, register and start a company etc. by using the mobile phones. PESA –the mobile money application already brought social and economic changes .

The investments continue with 'online training,' a new talent search and the ambition to have laptops and Internet in all schools.

In RWANDA-the implementation of Smart Cities has started, they implement broadband which is seen as " utility " like electricity, roads.

SENEGAL- has a national 'green economy policy,' concerned about the environmental impact of fiber optic deployment and in choosing new technologies is looking for the ones with low carbon emission. In rural areas solar rechargers became a norm

DJUBOUTI's- 'IROLEY Smart City' is the flagship project to position the country as a leading ICT destination becoming the major meeting point for undersea fiber optic cable system connecting Europe, Africa, Middle East and Asia, and the main Internet exchange. Iroley is envisioned to be by 2035 a strong and sustainable metropolis with world class infrastructure and technology, smart living and people, with research and top education and business institutions.

GABON extended its satellite monitoring project AGEOS from forestry to agriculture. Data received via satellite on cultivated land, water resources, irrigation, migration being sent directly to interested parties mobile phones.

The progress in Africa is continuing with all five Manifesto's pillars (policy, access, e- government, private sector entrepreneurship, sustainable development) being implemented now.

At the TRANSFORM AFRICA Summit in Kigali 19-22-October, former Secretary General of the ITU Hamadoun Toure has been nominated Executive Director of SMART AFRICA.

Discussions on satellite's role in overall ICT development were also present.

The main event was the announcement of Argentina's

"...This edition of ITU World Telecom marked a new strategy—to provide an international platform for SMEs, encourage regional projects and contacts with governments and major companies as SMEs are seen as a motor for ICT innovation, job creation and local growth..."

ARSAT and AFTIC space program as its 2nd satellite ARSAT –2 at 81°W , in Ku and C bands covering Latin America and the South of the US came into orbit during the ITU Telecom event.

This is the second satellite, the first one ArSat -1 being fully booked and it is part of the program that started in 2006 by the former President Nestor Kirchner to preserve Argentina's orbital positions with satellites manufactured in the country.

The system transmits free to air television signal with the highest image and sound quality, 70% of the content being produced in Argentina, Internet and broadband voice and data services.

Eight more satellites will be manufactured and launched by Argentina in the next 20 years , with " the social impact in mind to provide all rural areas with digital TV and Internet" said Ing.Hernan Winnik of Arsat.

ITU-D started Smart Sustainable Development Model Initiative (SSDM), that seeks to link ICT for development and ICT for disaster management so countries may be able to respond and recover more easily when disaster strikes.

Again Satellite technology is the center stage, satellite operators having an important role in prevention, monitoring, imagery, early warning and communication, broadcast alert to inform populations at risk and fast set-up of recovery plans. Satellite communications may be rapidly reconfigured to support emergency uses.

Eutelsat's, Innmarsat's, ITSO's representatives and other members of the SSDM advisory boards stressed the importance of satellite technology on such occasions.

However, more needs to be done, they need to prepare for disasters, to provide network capacity quickly, to work together with governments and operators in specific countries and seek regulatory new rules to operate in case of a disaster, obtain green light and temporary license similar with Tampere Convention's agreements .

Cosma Zavazava Head of the program ITU-D , reminded the audience that ITU is deploying satellites terminals in affected areas for free, facilitating the deployment on equipment and assures training for local entities. The program worked in the Pacific were 11 Pacific Islands are now connected via satellites and a new agreement with satellite operators is coming up for the Caribbean islands .

We are in 2016 and almost half of the humanity (57%) still do not have access to Internet. Broadband connectivity



remains a challenge-providing access to remote, rural or economically deficient areas where demography or geography makes impossible the deployment of traditional technologies, innovation solutions such as balloons, drones, white space WI -FI might be considered.

The SPACE competition to connect the unconnected has started as in most cases Internet is coming from the SKY !

SPACEX project plans 4000 satellites to be launched until 2020 (they own the launcher Falcon 9), GOOGLE with its LOON project will have balloons at 20 km altitude, providing 3G and 4G service within 40km radius, after successful tests in New Zealand plans are the first deployment over Sri Lanka in 2016, or ONE WEB project with a constellation of LEOs at 1200km altitude, 10Gbit/s capacity at the cost of only US\$ 400,000 for each, designed and built by Airbus.

Facebook planes got a lot of attention as Chris Weasllar, Director of Global connectivity, explained Facebook strategy to give people everywhere the power to share by reaching the last mile.

Facebook which is now part of the Dynamic Spectrum Alliance, is investing in satellite capacity with EUTELSAT for coverage of 14 countries in Africa and in Solar Planes flying at 20-25 km altitude that will beam Internet.

Recently it acquired Aquilla, a UK aircraft company that builds lightweight planes, 400kg with 40m wings, powered by solar energy during the day and a new type of lithium batteries at night.

Today it is possible to stay in the stratosphere 3 months to one year and will move in circular pattern beaming 10Gbit/s , a backhaul service at a very low cost.

Facebook is engage in discussions with global aviation and at WRC -15 for securing additional spectrum in HAPS range.

So, wait and see for the new projects to become reality!

.... AND what about the solution Professor Nicholas Negroponte, Chairman Emeritus, MIT Media Lab, USA proposed for accelerating the digital innovation for social impact and connect all people by 2020 based on the UN Sustainable Development Goals. Create a Transnational concept of networks that transcend state models and consider 'connectivity a human right.'

Access should be free like street lights , roads and Telecom becomes part of the civic society connecting people instead of connecting accounts.

Negroponte proposed the creation of a WORLD CONNECTIVITY ORGANISATION , a stand alone or an UN organization like FAO...

How ? A Satellite constellation (approx US \$ 5 billion with funds from defense, churches , institutions) will cover the globe. At the ground segment a group of 'Engineers without Frontiers' (like doctors) will provide assistance and a 'Connectivity Corp' formed by young people will move around helping people connect.

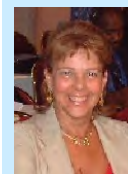
Access will parachuting on tablets which will be dropped from airplanes. The tablet will be less then 50 dollars, will have solar power, WI-FI and a small satellite antenna.

This solution will eliminate isolation and will encourage innovation.

An experiment has been done in Ethiopia where in a village with no schools kids got each a tablet and in one day they figured out how it works, in five days got 50 apps and in six months they hacked Android

Telecom as a civic responsibility , free access? Why not!

ITU WORLD TELECOM concluded on a very optimistic note with a award ceremony for young entrepreneurs, for best pavilions and best SMEs that exposed during the event.



Roxana Dunnette is a correspondent of Satellite Executive Briefing based in Geneva, Switzerland. She is Executive Director, R&D MEDIA, Switzerland, has had an extensive career in Broadcasting and media including senior management positions at Worldspace corp., Washington , CBS and PBS in New York and international telecommunications regulatory work at the UN in New York and ITU in Geneva as US government representative. She accomplished many development projects in Africa based on satellite technologies, broadcasting , Internet and accessibility. She can be reached at: roxanadunnette@gmail.com

Interview with ITU Secretary General Zhao Houlin

At the ITU World Telecom event in Budapest, Hungary, Satellite Executive Briefing correspondent Roxana Dunnette caught up with ITU Secretary General Houlin Zhao to discuss his vision for the ITU

Roxana Dunnette (RD): As an ITU insider for many years and now as the Secretary General what do you see as the most challenging issues in reshaping the ITU in order to remain as relevant as in the past 150 years?

Zhao Houlin (ZH): *ITU was created 150 years ago and always worked to connect people, technologies, businesses, foster innovation and facilitate the marketing environment. ITU was very successful; we have today good penetration of mobile phones, and good development of Internet and ITU contributed a lot.*

Looking into the future, ITU faces challenges how to connect people not connected yet, how to provide the modern society with new technologies better quality, better speed, better prices, people ask low price or ...no price.

WE have a complicated situation, on one hand we see a very good development of ICT technologies, but the digital divide exists, the technologies you see are changing at a higher speed, business becomes more complicated and you have to create confidence for further investments in ICTs.

My preoccupation is to connect people, who are not connected, to encourage innovation and to create a better environment for investment. Emergency telecommunications, cyber security, disaster management, growth and confidence are issues we need to address.

This year is very special not only because of the anniversary of 150 years of ITU, but we had the review of WSIS and the launch of the UN Sustainable Development Goals and there is a lot of debate about the role of the ITU and ICTs technologies.

People understand the role of ICTs only as an enabler for development, but we need to move further, among 17 SDG goals only 4 list the ICTs. There is a perception that ICT is a self-sustainable business making money. If you do not reflect ICT in SDG goals and is put aside like an independent business making money is dangerous.

RD: I think some people consider ICT like utility, electricity...

ZH: *If ICT is considered as electricity I'll give you an example: when you talk about ICTs in Africa first you have to talk about electricity, then if you want to develop telecom you have to develop electricity as well. Electricity is an obligation, today you have green electricity, solar, wind, but the traditional remains the same. not like telecom today you invest in 3G if you don't invest in 4G tomorrow you loose your market, your business..*

You can't develop telecom in the countryside if there is no electricity; people need to charge their phones. ...These are issues.



InterBEE 2015 Showcase the Latest in Broadcast Technology

by Naoakira Kamiya, Contributing Editor

The 2015 International Broadcast Equipment Exhibition (InterBEE2015) took place at Makuhari Messe convention center located at Chiba City near Tokyo, from 18 to 20 November. The event is regarded as Japan's premier broadcasting equipment show and has been running since 1965.

The 51st exhibition was organized under four categories, Video and Broadcast Equipment, Professional Audio Equipment, Professional

among others on display at the show. Sony unveiled stunning 4K 60p HDR (High Dynamic Range) footage shot by PXW-FS7 camera and color-graded from Sony S-Log to Hybrid Log-Gamma (HLG). HLG, which has been developed by BBC R&D and NHK, is now standardized by Association of Radio Industries and Business in Japan.

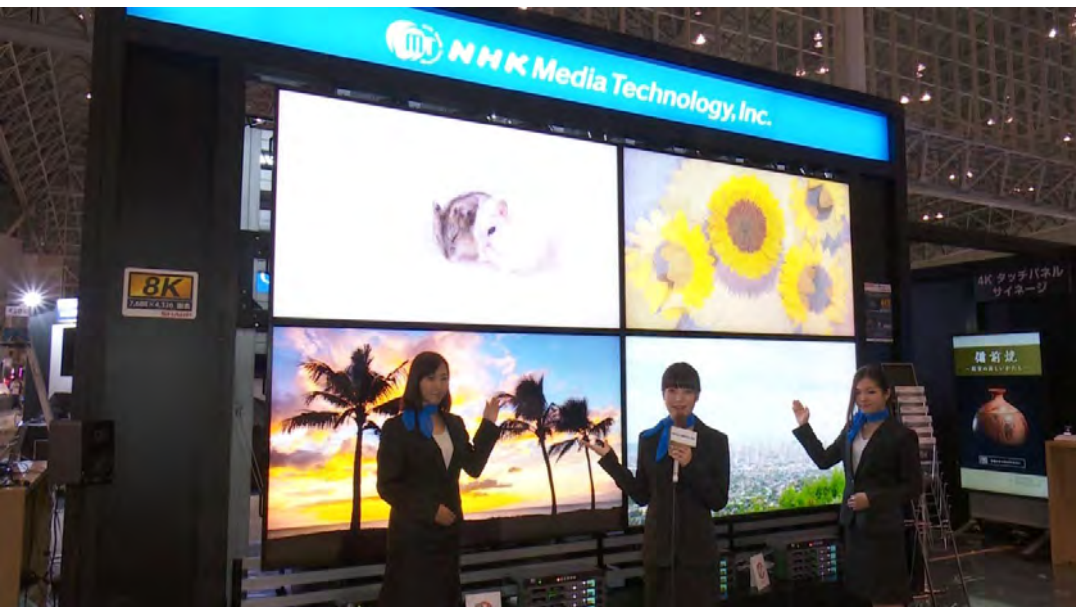
booth was specially broadcasted live from SKY Perfect TV Tokyo Media Center.

Ikegami unveiled surprisingly compact 8K camera SHK-810. Its camera head weighs only 8.5 kilograms. Hitachi also exhibited its latest 8K camera SK-UHD8060B.

Canon showcased two new 4K port-

able zoom lenses, CJ12e x 4.3B and CJ20e x 7.8B, which will be delivered in February and June 2016 respectively. Canon also demonstrated 4K HDR workflow with SGO's Mistika and Blackmagic Design's DaVinci Resolve.

In addition to the above-mentioned exhibits, Next Generation



The 51st edition of Interbee 2015 held in Tokyo, Japan showcased the latest broadcasting technology including audio and lighting equipment and ICT, multimedia, but the highlight of the show were the Ultra-HDTV displays.

Lighting Equipment, and ICT/Cross Media.

The highlight of this year's exhibit was undoubtedly Ultra-HDTV (alternatively referred to 4K and 8K) at Video and Broadcast Equipment stage.

There were more than 30 eye-catching booths from 4K/8K equipment manufacturers such as Sony, Panasonic, Toshiba, Ikegami, Hitachi, Canon

Panasonic showcased 4K studio handy camera AK-UC3000, 4K live switcher AV-HS7300, 4K DLP projector PT-RQ13 and what not under the banner of "Broadcast Solutions with One Panasonic."

Toshiba attracted visitors by introducing its latest premium TV, REGZA Z20X with advanced HDR PRO engine. The 4K HDR content shown at the

Television & Broadcasting Promotion Forum displayed 4K video and NHK showcased 8K clips at the entrance hall of InterBEE2015.

There is no doubt that InterBEE2015 provided the greatest platform for visitors to source the hottest 4K/8K broadcast equipment and HDR image in Japanese market.

In the satellite communications and



4K HDR video transmitted by SKY Perfect JSAT projected on a Toshiba screen showcased at Interbee 2015.

broadcasting sector, a number of leading players such as SKY Perfect JSAT Corporation (SPJC), Mitsubishi Electric Corporation (MELCO), NEC Corp, AT Communications Corp (AT Comm), Moubic Inc, unveiled their latest products and services.

SPJC transmitted 4K content in HDR from Tokyo Media Center to Makuhari Messe via JCSAT-3A satellite. Several live HDR clips were displayed at the booth of Toshiba, Sony, Astrodesign, and Kyoshin Communications for the first time in InterBEE history. Masao Nito, Director & EVP of SPJC, commented at the show floor "4K HDR imaging will certainly appeal to SKY Perfect TV premium channel subscribers. That is why SPJC joined the proponent group of Hybrid Log-Gamma."

MELCO exhibited the satellite communication system called Helisat. This system enables transmission of HDTV video while the helicopter is on the move and has already verified by using Ku-band capacity on the JCSAT-1B satellite. MELCO engineer at the booth said that a maximum transmission

speed of 10Mbps from helicopter can be attained even at a bank angle of 30 degrees.

NEC displayed a hardware-based half-rack size encoder VC970 optimized for featuring 4K 60p with ultra-low-latency of 120msec to 300msec. So it seems the most suitable encoder for Satellite News Gathering (SNG) operator to do real time contribution.

AT Comm represents Rockwell Collins' SWE-DISH brand antenna system in Japan. This year they unveiled SNG vehicle with SWE-DISH CCT120 on the roof of Toyota Land Cruiser SR4. Unique feature is that CCT120 antenna system can be easily removed from the roof and can be used as a separate fly-away in case the vehicle may face with a difficulty to drive into the shooting site. "The concept was actually derived from one of the commercial broadcast stations. They need mobility to get into a narrow road or remote mountain area" said Takeo Asano, Chairman.

AT Comm also showcased another SNG OB eco-Van with CCT120 antenna system and a 4 meter pole on the roof.

This pole uses an air-compressor system for deployment instead of hydraulics. "We are paying special attention to ecology. That is why oil compression system was not selected for elevating pole," said Asano. He also proudly added "All windows are made of polycarbonate resin instead of heavy glasses and the newest 3.6 KVA electric generator was adopted to save energy."

Moubic represents companies such as Vislink, Newtech, and Ericson in Japan. At this year's InterBEE2015, they highlighted the UltraCoder made by Vislink. "The Vislink encoder is the lightest in the world but it is capable to encode 4K UHD, HD, & SD video" said Makoto Ozawa, President & CEO. Moubic also exhibited Newtec MCX7000, which is a new dense DVB-S2X multi-carrier satellite gateway.

The InterBEE2015 was organized by Japan Electronics and Information Technology Industries Association (JEITA) and a record number of 996 companies and organizations including 543 from 31 overseas countries and regions exhibited.

Naoakira Kamiya is Managing Director, **Satellite System Research Institute** and Director of the **Japan Satellite Business Association** based in Tokyo, Japan. He is a frequent contributor to various satellite and broadcasting trade publications. He can be reached at: ZUM05241@nifty.ne.jp

Hughes' Jupiter System Extends Broadband Access to Rural Mexico

Internet access is a major factor in creating economic and social development in remote areas by connecting people to knowledge, capital and markets. Yet only 2.7 of the world's 7 billion people have access to high-performance Internet service, leaving 4.3 billion unconnected to a resource with enormous transformative power, according to a 2014 Deloitte report.

Hughes Network Systems and the Internet Service Provider Pegaso Banda Ancha, a subsidiary of Mexico's Grupo Pegaso conglomerate, have teamed up to extend high-speed Internet and Wi-Fi access to more than 5,000 locations in Mexico's rural areas through a high-performance satellite broadband network.

Mexico is one of the countries where the landline Internet infrastructure's limits contribute to the oft-cited "digital divide" between communities with adequate Internet access and those without. An estimated 26 million people in Mexico's rural areas have little or no Internet access often because they are too far away from the wired Internet or in mountainous areas that are difficult to reach.

The country's Secretariat of Communications and Transportation (SCT) is attacking the obstacles of distance and terrain through a national satellite Internet program designed to provide broadband access to more than 100,000 people in Mexico's rural regions. Locations include rural schools, hospitals, universities, parks, government development and disaster prevention agencies.

The SCT selected Pegaso Banda Ancha from among several Mexican ISPs vying for the job. The SCT needed an ISP with the technical experience to provide the maximum cost-benefit ratio while connecting 5,000-plus sites in remote locations in just four months. Pegaso Banda Ancha combined a strong commitment to social development with more than 15 years of experience providing satellite connectivity to large companies and government organizations.

Pegaso Banda Ancha operates thousands of remote satellite broadband stations in Mexico and also provides Internet access in the U.S., Central America and the Caribbean. The SCT provided Pegaso Banda Ancha with 278 MHz of bandwidth on its Bicentenario satellite to service the 5,000 locations.

The Hughes JUPITER System

Pegaso Banda Ancha chose Hughes' JUPITER™ high-throughput gateway and VSATs to connect facilities at all 5,000-plus locations to the Internet. The JUPITER system's modular design offered a cost-effective, future-proof platform that provides high performance on today's Ku and C-



band satellites plus a migration path to next-generation high-throughput satellites.

JUPITER's efficient bandwidth use and 20 percent more capacity than competing solutions made it ideal for connecting such a large numbers of sites over a vast area in a short time window. Other capabilities that helped Pegaso Banda Ancha implement the sprawling project on time and at cost include:

- Deployment with minimum configuration
- A migration path to next-generation HTS satellite service
- Advanced gateway architecture with "lights-out operation" for lower operating costs
- High throughput remote terminals for cost-efficient high throughput (100 Mbps) leveraging powerful new chipsets capable of supporting many devices simultaneously
- Wideband forward channel with adaptive modulation and coding (ACM) that optimizes performance, and cost advantages on Ku- and C-band satellites.

Results

The Hughes JUPITER system has helped the Mexican government toward its goal of providing Internet and Wi-Fi service to 100 percent of the country's rural schools and municipalities. JUPITER VSAT terminals are currently implemented at 5,062 sites in 362 municipalities in 29 states. They are managed through Pegaso Banda Ancha's Toluca network operations center.

Students and teachers in the 362 communities now have broadband Internet access through their schools and universities. Doctors and health officials use satellite broadband to connect to clinics and regional medical centers, while libraries and community centers are offering Internet service to the public for personal use.





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This Ancient Realm

by Lou Zacharilla

"It is difficult to get a man to understand something when his salary depends upon his not understanding it." –Upton Sinclair

In June 2014 an article appeared in the *New York Times* which claimed that Britain was having a strange "identity crisis." To make his case the London bureau chief of the *Times* noted that "the BBC is marred by scandal, and the famous British tabloids, the 'red tops,' have to be careful after the phone hacking trials." And, he added derisively, "let's not even get started on England's humiliation in the World Cup. Along with institutions like the Church of England, the sense of nationhood is being diluted. The British Prime Minister says it is time for a restoration of British values, even if no one can quite define what they are."

I do not know altogether what British values are as I am an American, born and bred. Yet having the privilege of standing inside the legendary Reform Club in London on the evening of 4 December, and presiding over the first-ever Better Satellite World Awards dinner, I now have a sense that Britain knows perfectly well where it came from and where it is going. Or at least one part of it does. It is going to continue to become not only the financial center of Europe and the world, but also the center of the satellite industry. The two are linked. As SSPI gave its new award to Globecomm, SES, Inmarsat and *Space News'* Paris bureau chief

Peter B. de Selding, amidst a sold out room, it was clear that the British satellite industry, led by companies such as Milbank, Inmarsat, OneWeb, Catapult UK and others are the first to fully embrace the industry's need to tell its story better and to share it more broadly.

This fits a specific national goal. British "values," as I understand them, are centered around a clear-eyed sense of mercantile possibilities. There is a huge one dangling before them now, and they plan to seize it. As SSPI chairman, Manx native and Reform Club

So while the realm with the longest-reigning monarch in its history may be experiencing a political "identity crisis," it does not have a diminished sense of its future. Like nearby Isle of Man, which led a contingent of leaders to the event, including ManSat and local entities such as

Cavendish Trust, its future is in satellites and space. As the great explorers of another time set off to navigate the uncertainty of the seas, it seems that the satellite industry in London, the UK and the Isle of Man have recovered their heritage for the digital voyage ahead.

The engineers and technical wizardry of the industry was NOT on display in London. What people get paid for – or believe they get paid for – was subservient to a greater endeavor in the Reform Club. That endeavor is a reform it self: to make the world a better place. A better satellite world.



SSPI Chairman Chris Stott on left with representatives of Globecomm, Intelsat and SES, winners of the first Better Satellite World Awards. The author, Lou Zacharilla, is second from right.

member Chris Stott pointed out, the UK today commands 7% of the global space and satellite market. It has set a goal to take another 3% by 2030. That is 3% of an estimated \$593 billion global market.



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

LZacharilla@sspi.org

Satellite...From Geneva to 'Connectivity' to CABSAT: Exploring Innovation and Opportunities in The New Digital Ecosystem

by Martin Jarrold

At the beginning of a new year it is traditional to take stock of the year that has just passed and to look forward to opportunities that lay ahead. Here I will do something of the same, noting, of course, that many of the key achievements of 2015 will impact substantially on much of the industry's agenda for 2016 as it continues its unique contribution to building and deploying solutions and so growing the potential of the digital communications ecosystem... at an ever accelerating rate.

For the satellite industry much of the focus during

2015 was on the **International Telecommunication Union World Radio-communications Conference (ITU WRC-15)** which took place in Geneva and occupied almost all of the month November. Preparations for the Conference had been a key program for the industry for almost three years, expressed through the work of the **Satellite Spectrum Initiative (SSI)** – the GVF-led consortium of other (regional and national) satellite industry associations, which was supported by a wide range of many other stakeholder interests, and which was originally founded in preparation for the previous C-band “No Change” campaign leading to WRC-07

In the build-up to WRC-15, and dur-

ing the Conference, “No Change” was again the focus. The SSI variously gathered and presented data, formulated analyses, developed arguments, built stakeholder alliances, and lobbied ITU member administration decision-makers for the protection of current satellite service access to spectrum in the C-band frequencies, and to oppose a global identification of C-band for International Mobile Telecommunications (IMT). As November drew to an

billions of people around the world. (See **WRC Issue box**).

These inter-governmental decisions in support of satellite spectrum reflected a comprehensive strategy in which the unique value proposition of satellite-based connectivity

is recognized as an integral part of a portfolio of synergistic technologies, encompassing terrestrial wireless solutions. A joint statement from the coalition representing the satellite industry

noted that, “WRC-15 has been a turning point in the global recognition of the value of satellite services for the future. We commend the national administrations – and the WRC Chairman, Mr. Festus Daudu – for their commitment

to connectivity for all,” and the state-

ment continued, “These decisions provide the stability necessary for the entire satellite industry to fully leverage its strengths in support of the vision expressed by the WRC delegates.”

Thus, by the conclusion of WRC-15 the world's governments had resoundingly affirmed a clear vision for the importance of many vital and irreplaceable services provided today over satellite. They had agreed on a clear framework for future access to satellite spectrum for innovative satellite communications, accomplished by agreeing to preserve and create new additional valuable spectrum for fixed and mobile solutions used to support a multitude of video, television and data services, to expand Internet access, and to bridge the “Digital Divide” for

Following governmental reaffirmation of the importance of satellite spectrum, GVF will now continue to coordinate with national administrations and other communications stakeholders to increase global advocacy, continuing to preserve critical spectrum – in all key frequency ranges, such as L, X, Ku, Ka, and V-bands – for use by the satellite communications industry and its end users. The work of the SSI will continue in the post-WRC-15 period and will feature as one element of



the GVF's on-going global initiatives and programs. SSI activities will comprise part of the Association's work under the heading of **Improved Market Access and Regulation** through its Regulatory Working Group. The GVF RWG works with governments wherever new reforms are needed to enable a more cost-effective operating environment, and to facilitate expanded market access to affordable satellite-based services.

This area of operations, and several other facets of the GVF agenda, will feature across the programs of **GVF Connectivity 2016**, taking place in London, 16th February, and the **GVF Satellite Hub Summit @ CABSAT 2016** in Dubai, 9th & 10th March.

The context of **GVF Connectivity 2016** is that of being connected to the Internet, whenever you want, wherever you are, wherever you're going to, and however you're getting there, with fast broadband data speeds. This is the universal mantra of today – for both service delivery goals and user expectations – in the digital telecommunications marketplace.

Multiple-tens of Mbps connectivity services have become commonplace in urban, office and home environments, but, increasingly, for an ever-growing proportion of an ever-more demanding user base, this is not enough, particularly as the user-to-device/terminal relationship continues to migrate away from interfacing with desktop/laptop PCs with local hard drive data storage, and towards interfacing with tablets and smartphones with increasing volumes of data storage in the Cloud.

This is a migration which places an overwhelming emphasis on the opportunity for Internet connectivity and access to multimedia services which meet a seemingly insatiable demand for increasingly video-based enterprise and social media applications, whilst the user is entirely mobile, whether pounding the urban street, taking a country stroll, driving a vehicle, riding a train, flying on a plane, or taking a trip across the sea.

This seamless connectivity expecta-

WRC-15 Issues

C-band: The lower 200 MHz of the C-band downlink frequencies (3400-3600 MHz) were identified for IMT in ITU Regions 1 and 2; in Region 3 a handful of countries will sign a footnote allowing potential IMT use of these 200 MHz, while the vast majority of the region will continue satellite use of this band with "No Change". A position of "No Change" was adopted in the band 3600-4200 MHz, and only in Region 2 was a footnote agreed which identified IMT for a few countries in the 3600-3700 MHz band. A "No Change" decision means that administrations have recognized the vital and widespread use of those frequency bands by satellite services. Anywhere that IMT is deployed, it will be subject to adherence to strict protection requirements with neighboring countries. In addition, the Conference declined to consider a proposal for IMT systems in the C-band uplink frequencies (5925-6425 MHz).

L-band: WRC-15 avoided identification of the L-band spectrum, which is used by mobile satellite service operators around the world, for IMT. The Conference identified the band 1427-1518 MHz for IMT, requesting the ITU-R to determine the technical measures to ensure compatibility with the mobile-satellite service operations in the adjacent band (1518-1559 MHz).

Ku-band: In order to address a spectrum imbalance in Ku-band spectrum, WRC-15 identified additional spectrum for FSS systems between 10 -17 GHz. A downlink allocation in the 13.4-13.65 GHz band in Region 1 (EMEA) was approved by the Conference. In addition, an allocation in the 14.5-14.8 GHz was approved in several countries around the world.

Future bands for 5G: The Conference decided that no globally harmonized bands for the fixed satellite service, mobile-satellite service and broadcast-satellite service in C, Ku or Ka-band would be included in the scope of a new WRC-19 agenda item, which aims to identify new frequency bands for future IMT/ 5G use. Throughout the deliberations, multiple administrations in every world region expressed strong opposition to studying the Ka-band for IMT/5G, again confirming the Conference's confidence in satellite being a key player in the future digital eco-system.

ESIMs: The Conference adopted new regulations to facilitate the operation of "Earth Stations in Motion" (ESIMs) in part of the Ka-band satellite spectrum (19.7-20.2 GHz and 29.5-30 GHz). ESIMs operating in this band provide satellite broadband connectivity to mobile terminals, such as on ships and aircraft. The new regulations adopted by WRC-15 will facilitate the global roaming of such terminals, while protecting other services and applications from interference.

tion, and the objective of universalizing a seamless connectivity experience which goes way beyond the practical and commercially-sustainable geographical boundaries of today's 3G and 4G wireless networks, whether over public or private networks, is something that, at the practical deployment level, can only be achieved with a combination of different wireless telecommunications/broadband access technologies – a combination that will in-

creasingly engage the most mobility-enhancing and nomadic communications technology of all, **satellite**.

GVF Connectivity 2016: Air, Sea, Surface & Rail: Evolving the "New" New Verticals will examine some of the key themes, technological developments, and market trends that feature on the path to a universal connectivity ecosystem, with particular, though not exclusive, reference to the latest developments in the satellite communica-

tions marketplace which are focused around the launch of more-and-more high throughput satellite payloads into orbit. These payloads have already changed the paradigm of satellite communications capabilities in the realms of the satellite-only connectivity solution, but are also bringing a vastly enhanced dynamic to the wider realms of the satellite + terrestrial hybrid solution – solutions used in the corporate, enterprise, government, military, consumer, and other, sectors.

One key theme of **Connectivity 2016** will center on the future of mobile backhaul. Satellite networking has always been an imperative for extending the typical service area of terrestrial cellular wireless systems. Now, with more of the world having 3G – and much of it looking forward to a 4G and LTE near-future, and then to 5G – and with mobile network operators (MNOs) wanting (a) new backhaul architectures that are robust and flexible enough to accommodate shifting traffic loads on cell sites without massive bandwidth over-provisioning, and (b) the segmentation of macro-cells into smaller (femto-, pico-) cells, there are new challenges for the satellite backhaul vendor. So, we must ask, “What does the future hold in store for demand for mobile backhaul?” Other key themes under analysis during the London program will include:

- Comms on the Move (COTM)/Comms on the Pause (COTP)
- Train Networks, Fleets of Aircraft and Cruise Liners and other COTM Markets
- Machine-to-Machine (M2M) and the IPv6 World
- Integrating the Digital World
- Vehicle Telematics... and beyond
- Mining & Remote Resource Extraction
- Hospitality & Unlimited Mobility Connectivity
- What will the Satellite - Cloud Interface look like?
- Satellite and Terrestrial Wireless Technologies

“...inter-governmental decisions in support of satellite spectrum reflected a comprehensive strategy in which the unique value proposition of satellite-based connectivity is recognized as an integral part of a portfolio of synergistic technologies, encompassing terrestrial wireless solutions...”

- **Network Cyber Security, and**

Smart Cities--Given that Smart city initiatives are constantly evolving around the globe and that, at present, more than 100 cities are implementing some kind of smart solution within their ecosystem, and that, by 2020, it is predicted that the global market will grow to more than US\$2 trillion, this is an important theme for **GVF Connectivity 2016**.

The **GVF Satellite Hub Summit @ CABSAT 2016** will comprise a two-day program, which will take place within the CABSAT exhibition area, and follows on the widely recognized success of the 2015 Hub Summit. It will include the following themes:

- **MENA's Satellite Broadcast & Telecoms: Overview of an Evolving Market Access Environment**
- **Spectrum & the Future Digital Ecosystem: Satellite after the 2015 ITU World Radiocommunication Conference**
- **High Throughput Satellites: Leveraging New Technologies for New Services & New Markets**
- **Constellations for Connectivity: A New Dawn for Low Earth Orbit Solutions?**
- **Cyber Security: How the Satellite Industry is Addressing the Challenge**
- **From Niche to Mainstream: New Strategic Markets for VSAT with Communications on the Move**
- **Ensuring an Interference-Free World of Satellite Services**
- **Integrating the Digital World: Satellite, Big Data, the Internet of Things & the Cloud**
- **A New Crisis Connectivity Charter: Satellite and Humanitarian Assistance & Disaster Response**

I opened this article by observing that the beginning of a new year presents an opportunity to evaluate new opportunities. Of course, this is true not only in the satellite communications environment but throughout the ever-expanding digital communications solutions ecosystem. The agreements reached by national administrations at WRC-15 will continue to underpin the fact that satellite has always worked extremely effectively with other communications technologies, bringing hybrid solutions to best-meet user requirements. In the post-WRC-15 world satellite is very firmly positioned to continue to evolve collaborative, synergistic answers to humanity's fixed and mobile communications needs.

Readers can find out more, as follows:

GVF Connectivity 2016: Air, Sea, Surface & Rail: Evolving the "New" New Verticals

www.uk-emp.co.uk/current-events/connectivity-2016/

Contact: Martin Jarrold at martin.jarrold@gvf.org, or Paul Stahl at paul.stahl@uk-emp.co.uk

GVF Satellite Hub Summit @ CABSAT 2016

Contact: **Martin Jarrold** at martin.jarrold@gvf.org



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

Ericsson to Acquire FYI Television

Stockholm, Sweden, January 19, 2016--Ericsson (NASDAQ: ERIC) announced its intention to acquire FYI Television, the premier entertainment metadata and rich media content supplier based in Grand Prairie, Texas. The acquisition, which is subject to customary closing conditions, will strengthen Ericsson's already industry-leading position in broadcast and media services. FYI Television accumulates and distributes TV entertainment content and linear scheduling data from over 9,000 TV networks daily, aggregating the information into customized formats for various digital, media, content, analytics and print clients for use on their connected devices such as tablets, phones, desktops, internet portals and gaming consoles.


The growing range of TV and video services available on a variety of devices creates a wide range of options for viewers to choose between. Based on Ericsson's latest ConsumerLab research, 50 percent of linear TV viewers say they can't find good programming to watch on a daily basis - highlighting the importance of content discovery. Combining FYI Television's US-market expertise in metadata, conversion and integration services with Ericsson's leading position in these areas in Europe will create a powerful global force in content discov-



ery. Whether viewers are watching linear or on-demand video, Ericsson will ensure they can discover content whenever - and wherever - they search for it; and always in the right format.

Magnus Mandersson, Executive Vice President and Head of Business Unit Global Services at Ericsson, says: "As the TV industry evolves and viewing behavior changes, we believe that high-quality, rich metadata will be a key component for a personalized TV experience. Combined with our capabilities in TV platforms and content discovery, we will be able to help our customers to improve the video experience and identify new revenue opportunities. FYI Television's expertise and customer base in the US is a great complementary fit for Ericsson and will be an integral part of our growth strategy. It will strengthen our position as one of the leading providers of media services in the world."

FYI Television's employees will join Business Line Broadcast & Media Services, part of Ericsson's Business Unit Global Services, with the acquisition expected to close in Q1 2016.

Earlier this year, Ericsson established a US broadcast and media services hub based in Atlanta, Georgia. The company currently provides closed captioning services to broadcasters around the world from this hub, with plans to roll out video description services over the coming months. 


ARRIS Completes Pace Acquisition

Suwanee, GA, January 4, 2016--ARRIS International plc (NASDAQ: ARRS), the new parent company of ARRIS Group, Inc., today completed its US\$ 2.1B (£1.4B) acquisition of Pace plc - combining the two companies' strengths in entertainment and communications delivery.

The transaction combines the strengths of both companies on a global scale--broadening ARRIS's worldwide CPE leadership with a competitive stake in satellite communications; leveraging new synergies in telco TV; expanding its cloud, network, home, and services portfolio; and increasing its collaboration with the world's leading service providers. In addition to CPE, the combination further establishes ARRIS as a global leader in HFC/Optics, complementing its established CMTS leadership position.

ARRIS acquired Pace with a combination of stock and cash. The newly combined company is incorporated in the U.K., with operational and worldwide headquarters remaining in Suwanee, GA, USA. ARRIS International's shares are listed on the NASDAQ stock exchange under the ticker sym-

bol ARRS. ARRIS shareholders will own approximately 76 percent of the new company, with

former Pace shareholders owning the remaining 24 percent. Based on current information, including the closing price for the ARRIS Group shares on January 4, initial analysis indicates that the transaction will not be taxable to U.S. holders of the former ARRIS Group shares. However, final information regarding the aggregate stockholder basis as of the closing of the transaction in the former ARRIS Group shares and applicable earnings and profits will not be available for some time, and the current expectation as to the taxable nature of the transaction may change. ARRIS will communicate and post on the investor relations portion of its web site any changes in the determination, and the final determination will be made and announced by ARRIS following the end of the 2016 tax year. 



LeoSat Appoints Chief Commercial Officer

Washington, DC, January 18, 2016 – **LeoSat Enterprises**, an emerging company with plans to launch a constellation of up to 108 low-earth-orbit communications satellites has announced the appointment of Ronald van der Breggen as Chief Commercial Officer. In this position van der Breggen will be responsible for managing the global sales and marketing operations of LeoSat.



Ronald van der Breggen

Van der Breggen has more than 20 years of experience in the telecom and satellite industries. Prior to serving at SES, where as Vice President he was globally responsible for back-office sales and customer contract- and service implementations, van der Breggen worked for Dutch telecom incumbent KPN and later KPNQwest where he oversaw the design, roll-out, marketing and sales of all IP services on EuroRings, a newly-built pan-European fiber network.

A native of the Netherlands, van der Breggen began his telecom career at KPN, rising to the position of VP IP Services. From 2003 to 2013, he served as Vice President Customer Account Management at SES, one of the world's leading satellite operators. Ronald has since undertaken a number of consultancy assignments. He holds a Bachelor's degree in Business Administration from Nijmegen University as well as a Masters in Business Telecommunications from the Technical University of Delft, both in the Netherlands.

Intelsat Appoints Mansharami as VP-Financial Planning

McLean, Va, January 11, 2016--**Intelsat** has appointed **Narendra Mansharamani** as Vice President of Financial Planning & Analysis (FP&A).

In his role, Mansharamani will lead Intelsat's finance team in further enhancing and sustaining a strong analytic framework that will bridge strategy and operations with finance and accounting to support the company's business objectives.

He will be based in McLean, VA and report to Stephen Spengler, Chief Executive Officer and interim Chief Financial Officer. Mansharamani joins Intelsat from Sabic Innovative Plastics, a world leader in providing engineering ther-

moplastic material solutions, where he served as Director of the Americas. In his role, he was responsible for the overseeing the financial performance of the company's \$3 billion Americas division. He also held the role of Director – Global Auto Finance & Pricing, for the company's \$2 billion auto strategic business unit. Prior to joining Sabic Innovative Plastics,

Mansharamani spent ten years at GE where he held increasing roles of responsibility in finance for many of the company's business divisions, including GE Plastics, GE Silicones and GE Healthcare.

Mansharamani holds a B.Com from Delhi University and is a Certified Public Accountant.



SSPI Inducts Six Industry Leaders to Hall of Fame

New York City, NY, January 12, 2016--The Society of Satellite Professionals International (SSPI) announced six new inductees for the 2016 Satellite Hall of Fame. They will join more than 40 Hall of Fame members including Dr. Arthur C. Clarke, Dr. Harold Rosen, Olof Lundberg, Eddy Hartenstein, Frederic d'Allest, Sidney Topol, Takayushi Yoshida, Mary Ann Elliott, Mary Frost, Peter Jackson, Dick Tauber, Dirk Breynaert, Mark Dankberg, Susan Irwin and Robert Berry.

The 2016 honorees, in alphabetical order, are **John Celli**, President, Space Systems Loral; **Richard Hadsall**, Chief Innovation Officer, EMC; **Penelope Longbottom**, President, Longbottom Communications, a division of Sage Communications; **Philip A. Rubin**, President & CEO, RFK Engineering Solutions; **Phillip Spector**, Of Counsel, Milbank; and **Andrew Sukawaty**, Non-Executive Chairman, Inmarsat.

"The 2016 inductees into the Satellite Hall of Fame are more than just recognized leaders in business, technology, deal-making and communications," said SSPI Executive Director Robert Bell. "Their careers offer lessons to our industry on how to build a challenging and rewarding career in a business that changes the world for the better every day."

The Hall of Fame Ceremony will take place at the 2016 Hall of Fame Benefit Dinner on March 8 at the Gaylord National Resort & Convention Center in National Harbor, Maryland, where the Hall of Fame inductees will be presented with Ariane trophies courtesy of Arianespace. Hall of Fame members are selected by a committee of industry leaders chaired by Richard Wolf, Executive Vice President, The Switch and past Chairman of SSPI. Committee members include Dianne VanBeber of Intelsat, Tim Jackson of Ateme, Thomas Van Den Driessche of Newtec, Jean-Paul Hoffmann of Radio 100.7 Luxembourg, David Cavossa and Dr. Denis Curtin.

The SSPI Satellite Hall of Fame was introduced in 1987 to recognize the enormous contributions of the visionaries and pioneers who have made possible the age of satellite communications - individuals who have devoted their careers to the advancement of technology and to helping build the political and commercial foundations of the industry.



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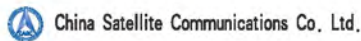
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Polar Satellite Markets Heating Up

NSR projects the polar satcom market reaching \$ 447 million by 2024

Cambridge, MA – December 15, 2015 – NSR's newest report, **Polar Satellite Markets**, released today, finds a growth market for Arctic and Antarctic satellite communications, supported via a range of applications, orbits, and frequency bands all serving to build value in this nascent region. Driven mainly by telephony/trunking and video, NSR projects the polar satcom market reaching \$ 447 million by 2024.

"While the polar regions often tend to be an overlooked part of the globe when it comes to satellite communications, NSR found that despite challenges from geography, limited populations and infrastructure, growth opportunities do exist in the polar regions, if you know where to look" stated Alan Crisp, NSR Analyst and report author.

FSS C- and Ku-band together drive the highest transponder leasing revenues with over \$146 million in 2015, and are expected to continue showing growth to 2024. FSS fill rates also remain over 80%, indicating an Arctic supply shortage and pent-up demand. However, NSR found there is currently no dedicated supply in the Arctic, with most supply coming as spillover from Russia, Europe and North America."

LEO-HTS constellations, as a secondary market, will be able to address the technical challenges to bring broadband speeds for the first time to the more extreme regions of the Arctic and Antarctic. This will be a game changer for key applications, especially Broadband Access, which will accelerate

leverage opportunities in the Arctic, but Antarctica is significantly more limited. LEO-HTS systems, which will be able to address the technical challenges in the polar region, and make the cost equation more compelling, could also lead to more government spending on USO type programs.



Polar Satellite Markets is the industry benchmark report assessing current and future Arctic and Antarctic satellite requirements by application, vertical and by frequency platform, offering key insights for industry players looking to navigate and gain insights into the market's future supply and demand

revenue growth for the region and in the process bring new capabilities to industry, mine sites, and Arctic shipping routes, among others. Nevertheless, FSS C- and Ku-band still have a significant role to play long-term, driven by video broadcasting applications and telephony & carrier.

"Though satellite operators are not actively launching capacity solely for the high risk polar regions, incorporating polar demand into a go-to-market strategy will increase ROI by targeting communities with traditionally high cost and poor service communications solutions, limited competition and by having a 'first mover advantage'" added Crisp. Satellite operators can

potential. The report enables satellite operators, service providers and equipment vendors to anticipate polar market developments and assess their market position in both existing and new segments that offer either long-term revenue opportunities or a highly risky investment. For additional information on this report, including a full table of contents, list of exhibits and executive summary, please visit www.nsr.com or call NSR at +1-617-674-7743.

For additional information on this report, including a full table of contents, list of exhibits and executive summary, please visit www.nsr.com or call NSR at +1-617-674-7743.





CES Launches Reflect OTT TV Mobile Boom

Las Vegas, Nev., January 11, 2016 - The standout CES 2016 trend towards multiscreen TV experiences is supported by new research, which finds that mobile devices are the most popular choices for watching paid OTT TV content, with 66% of consumers globally preferring to access Internet TV via a mobile, tablet or laptop.

CES launches of 4K screens on mobile devices and debuts of new Airplay, Chromecast and Miracast enabled devices support research findings that younger audiences (18-34s) now use almost twice as many devices as over 55s to watch TV – which jumps to three times as many in the US - and therefore increasingly demand seamless switching between content across connected devices. This is according to a recent Research Now study, commissioned by Paywizard, the expert in subscriber management for pay-TV.

Bhavesh Vaghela, CMO at Paywizard comments: “In December, over 50% of consumers worldwide planned

to use OTT TV services such as Netflix, and this recent popularity surge – led by millennials – has altered day-to-day device usage. At CES we’ve seen companies like Samsung address this changing landscape, and so too must pay-TV providers, by making sure that popular content is easily accessible via numerous platforms, without leading to fragmented consumer experiences. Responding to this trend will also be key to combating churn in the year ahead. The fact that different devices are favoured by different demographics shows the need to treat customers in different ways. Based on how they want to consume their entertainment, operators can employ sophisticated customer retention tactics that target specific persona profiles – from marketing to billing to personalising the user experience,” continued Bhavesh.

The findings come from a global study which analysed how consumers in Australia, Brazil, Germany, Singapore, the UK and US, planned on

watching TV in late December 2015, including which TV services they prefer and which devices they plan to use. Other highlights from the research include:

- **Gamers have a soft spot for Internet TV:** Game console owners are the least likely to watch TV in general, however are the most likely consumer group to watch Internet TV content at 89% and also the most likely to consider signing up to a new Internet TV service.
- **US consumers are most likely to access TV in general via game consoles:** Compared to all other countries surveyed, US consumers are most likely to watch TV via a games console at 12% compared to the UK at 8%.
- **Younger audiences gravitate to mobile:** 18-24s are the age group most likely to watch TV on mobile (35%), whereas 25-34s are the most likely group to watch TV on tablets (32%).



STBs Top 250 million in 2015

Monterey, Calif., Jan. 14, 2016—Announced today by SNL Kagan, a division within S&P Capital IQ and SNL, global set-top box (STB) shipments maintained elevated levels in 2015, buoyed by demand in emerging market such as China and India. Worldwide STB shipments are on track to reach 253.1 million in 2015, up marginally from 248.6 million in 2014, as the global multichannel market swelled to an estimated 959 million subscribers, according to SNL Kagan estimates for global volumes.

Highlights from the SNL Kagan report:

- Worldwide cable STB unit shipments are forecast to reach almost 75 million units in 2015, roughly the same total that shipped in 2014. With many of the world's largest cable TV markets approaching saturation, or experiencing increasing competition from other pay TV platforms, demand for cable STBs is expected to be flat in the near-term.
- Satellite STB unit shipments continue to be the largest

market segment, on track to account for 47% of all global STB unit shipments in 2015.

The market for IP (Internet Protocol) STBs is also projected to remain relatively flat over the next few years, as growing demand for IP STBs in Europe and Asia is offset by declining demand in North America.

- Shipments of DVR (Digital Video Recorder)-enabled STB products trended lower in 2015. Select service providers are reducing their DVR product purchases due to cost concerns, and other are introducing cloud DVR services, which can obviate the need for an installed DVR-enabled STB.

- HD (High Definition)-enabled STBs are forecast to account for 76% of all global STB unit shipments in 2015, which means there are still more than 60 million SD STBs shipped.

Despite higher volumes, product revenues are forecast to also continue decreasing. By 2019, STB product revenues are projected to be \$14.55 billion, down from \$17.50 billion at year-end 2015.





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CABSAT 2016 to Drive Transformative Middle East/North Africa Media Market

Dubai, UAE, March 8-10, 2016

Dubai, UAE, January 4, 2016—The 22nd edition of CABSAT - the leading platform for the broadcast, production, content delivery, digital media and satellite sectors across the Middle East, Africa and South Asia (MEASA) - will continue to drive disruptive innovation and monetisation opportunities across the MENA filmed & audio entertainment media market.

Running March 8-10 at Dubai World Trade Centre (DWTC), CABAT 2016 will welcome more than 15,000 regional and international visitors involved in the creation, management, distribution and monetisation of content to explore pioneering products, technologies and regional investment avenues. The tailored event provides an opportunity for industry professionals to test, use and experience the latest equipment in the broadcast, satellite communication, content delivery and electronic media industries.

With the Middle East and Africa filmed and audio entertainment media market undergoing a fascinating transformation, forecasts by the global analyst division of Pricewaterhouse Coopers, *Strategy&*, predict entertainment and media spend will reach US\$66 billion by 2018. In this lucrative environment, CABSAT provides a tailored experience for industry experts to engage, strategise and debate future market trends.

Leading the CABSAT 2016 agenda are the rise of time-shifted, or 'binge' viewing, on Video on Demand (VOD) platforms, and the mass regional adoption of internet-driven content delivery platforms including Internet Protocol Television (IPTV), TV delivered over broadband, and Over The Top (OTT) methods - content streamed directly to handheld devices, game consoles and SMART TVs connected to broadband.

In a region where more than 900 free to air TV channels serve the Arab world, satellite distribution still accounts for over 80 percent of the regional market. Despite being relatively new options, IPTV and OTT already contribute nearly 20 percent of regional content delivery platforms, thereby

providing new opportunities for broadcasters and PAY-TV operators to monetise content via an emerging post-TV market.

With more than 950 local, regional and international exhibitors at CABSAT 2016, the event will also boast the all-new Content Marketplace – a dedicated content market for TV and film content creators, production houses and studios, distributors of content, producers, editors and advertising houses. The Content Marketplace will focus on buying, selling and co-production opportunities for Arabic and International content. Partners include Dubai Studio City TV

and Film Commission, Dubai Film, VIACOM, Zee TV, Fox, MBC Group, NBC Universal and many regional broadcast pavilion organisers including the Nigerian Broadcast Commission.

"The Content Marketplace is the region's first exhibition focused purely on the selling and exchange of filmed entertainment content," added LohMirmand. "International players from east and west will meet to discuss accessing

and procuring content, co-production and format opportunities for scripted & non-scripted content, as well as monetising viewing mechanisms that are thriving across the Middle East and beyond – from the demand for increased production of local, Arabic content, to the highly-lucrative, emerging post-TV market for multi-language content."

CABSAT 2016 will also boast a rebranded conference called the Content Congress - held under the theme 'The Future of Television in a Connected World' - and meetings programme dubbed the 'Red Carpet Lounge'.

Finally, the show will also feature expanded certified Post-Production trainings, CxO Roundtables, an Aerial Robotics & Drone zone, the Content Delivery Hub, a live Hackathon competition to develop apps for the next-generation viewing experience and CABSAT Connect – a dedicated C-level evening network event.

The Satellite Hub - held in partnership with the GVF - will focus on key technical trends and major satellite issues and challenges across the Satellite Communications industry.

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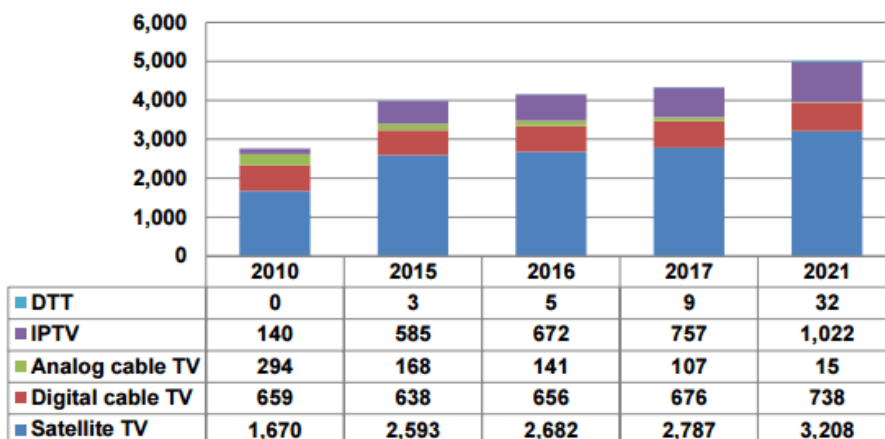
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The Middle East Pay TV Market

Legitimate pay TV revenues in the Middle East will climb by 82% between 2010 and 2021 to \$5.02 billion. However, growth will only be 25% between 2015 and 2021. Turkey and Israel are expected to contribute 45% of the region's pay TV revenues in 2021; down from 52% in 2015 and 63% in 2010. From the \$1,028 million pay TV revenues to be added between 2015 and 2021, Turkey will supply \$206 million, the UAE \$141 million and Saudi Arabia \$194 million. Revenues in Israel will fall slightly over this period due to greater competition and the conversion of subscribers to bundles (which means lower TV revenues per subscriber).

Middle East & North Africa pay TV revenues by platform (\$ mil.)



Source: Digital TV Research Ltd