

Satellite Executive BRIEFING

Vol. 9 No. 4 May-June 2016

SATELLITE
Markets & Research

Industry Trends, News Analysis, Market Intelligence and Opportunities

Trends in the Japanese Satellite Market

by Naoakira Kamiya

With 13 commercial satellites at the geostationary orbit, Japan is one of the largest satellite operating countries in the Asia Pacific Region.

Broadcasting Satellite System Corp (B-SAT) currently operates three satellites: BSAT-3a, -3b, and -3c, at 110 degrees east.

SKY Perfect JSAT Corp (JSAT) has a larger fleet of 10 satellites. Their satellites are located at 82 degrees east (JCSAT-6), 110° (JCSAT-110R), 124° (JCSAT-4B), 128° (JCSAT-3A), 132° (JCSAT-5A), 136° (N-Star-c), 144° (Superbird-C2), 150° (JCSAT-1B), 154° (JCSAT-2A), and 162° (Superbird-B2). In addition JSAT maintains two backup satellites called N-SAT-110 and JCSAT-RA. Furthermore JSAT and Intelsat jointly own and operate Horizons-1 at 127 degrees west and Horizons-2 at 85 degrees east.

To gain a stronger foothold in the market, B-SAT ordered

BSAT-4a from SS/L in June 2015. JSAT is anxiously waiting for three SS/L-built satellites, JCSAT-14, -15, -16, and one MELCO/NEC-made satellite, Superbird-8, to be launched during this year. One more satellite, JCSAT-17, is under construction at Lockheed Martin and planned for launch in 2019. In addition JSAT and Intelsat jointly placed an order of Horizons-3e satellite with Boeing in November 2015.

In view of the above-mentioned status, the most obvious trend is a superb consumption of duopoly in satellite broadcasting sector. B-SAT was established in 1993 and started BS digital broadcasting via BSAT-1b from December 2000. They are currently operating their third generation satellites,

BSAT-3 series, and broadcasting 29 TV, 1 radio, 2 data channels. More than 40 million households all over Japan are equipped with a small 45cm dish to watch BS digital programs.

Japan Satellite Systems and SKY Perfect Communications merged into SKY Perfect JSAT Corp (JSAT) in 2007. Next year in 2008 JSAT acquired Space Communications Corp. As a result, four DTH platforms

built in the past, i.e. SKY Perfect, JSkyB, Direct TV Japan, and Plat One, were marvelously integrated under JSAT's SKY Perfect TV. At the end of January, 69 TV channels were broadcasted via JCSAT-110R satellite and 162 TV channels over JCSAT-3A/JCSAT-4B satellites. They claim their total subscribers are more than 3.4 million.



Japan is at the forefront of development of 8K Television among other innovations.

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The Asia-Pacific Market



CommunicAsia in Singapore, which is held concurrently with BroadcastAsia and Enterprise IT Asia is the largest and most important show for the Asian communications market. This year, CommunicAsia is being held earlier than usual starting on May 31st. There are also other significant events held before CommunicAsia such as the APSAT conference in Indonesia from May 25-26 and CASBAA Satellite Industry Forum on May 30th (see featured event article on page 37). We will be at all these industry events.

I personally will be chairing sessions at the APSAT Conference and at the CommunicAsia Satellite Summit conference track. Given the importance of the Asia-Pacific market, we will be discussing important trends such as the impact of High Throughput Satellite (HTS), 4K and even 8K TV. To give you a sense of the significant developments in the Asian market, our cover story this month focusing on the leading market in Asia—Japan and the innovative new technologies rolling out as it prepares to host the Olympics in 2020.

We will have a booth at CommunicAsia at Level 1 of the Marina Bay Sands (booth # 1U5-03).

We look forward to seeing you in Singapore.

Virgil Labrador, Editor-in-Chief



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Satellite Executive Briefing

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

SYNTHESIS PUBLICATIONS LLC

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West Covina CA 91791 USA
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*Trends in the Japanese Satellite Market...From page 1***4K TV, UHD, 8KTV**

The second prominent trend is the four tier broadcasting structure of SDTV, HDTV, 4K UHD, and 8K UHD. The most advanced 8K UHD has been developed by NHK and is well known in Japan as Super Hi-Vision.

B-SAT is currently broadcasting 1 channel of SDTV and 28 channels of HDTV. JSAT is broadcasting 34 channels of SDTV, 195 channels of HDTV, and 2 channels of 4K UHD. JSAT will add one more 4K UHD channel from May 1. According to their announcement, two existing channels will be based on monthly payment and the new channel

“...JSAT is facing intensifying competition from other established satellite operators such as Intelsat and Inmarsat as well as upstarts such as Thaicom...”

4K upon launching BSAT-4a satellite. As for commercial broadcasters, MIC's current target is to assign 18 to 21 channels for JCSAT-15 and BSAT-4a to be launched in 2016 and in 2018 respectively.

In light of such trend, 4K OB Vans have been built by several live production companies in Japan. As for 8K, NHK has already constructed two 8K OB Vans and tested at the time of Super Bowl 2016 held at Santa Clara, Califor-

satellite telecommunications companies. Historically Intelsat and Inmarsat established strong foothold in Japan. As a newcomer, Thaicom Public Company (Thaicom) from Thailand has been successfully penetrated into Japanese market with their iPStar-1 satellite. They secured Softbank as a solid customer and have been providing backhaul services for their mobile telecommunication networks all over Japan. Thaicom's main gateway is located at



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will be offered free-to-air.

For the past two years or so, B-SAT has been doing occasional tests of 8K transmission. From August 1, NHK will be officially permitted to commence 8K test broadcasting via BSAT-3c satellite. In addition Ministry of Internal Affairs and Communications (MIC) granted a license on February 27 to A-PAB (The Association for Promotion of Advanced Broadcasting Services) to commence test broadcasting of 4K programs from December 1.

Furthermore MIC's roadmap says that NHK will be permitted to broadcast 1 channel of 8K and 1 channel of

nia, on February 7. NHK's next big event for the 8K trial is, of course, Summer Olympic Games to be held from August 5 to 21 in Brazil. They plan to hold live public viewing events with latest 8K monitors and screens at 50 locations in Japan. There is no doubt that the live transmission of sport events is a key to succeed in 4K and 8K broadcast.

Competition Among Satellite Operators

The third important trend is a keen competition among JSAT and overseas

Ogano-machi in Saitama prefecture.

As is known, iPStar-1 is a pioneer HTS. It was launched in 2005 at 119.5 degrees east and is expected to come to the end of life around 2019. Japanese satellite specialists are wondering what kind of satellite is planned to replace iPStar-1.

Disaster Mitigation and Warning

The fourth trend is well-established disaster mitigating and warning networks via satellites. The backbone of such networks is operated by Local Authorities Satellite Communications



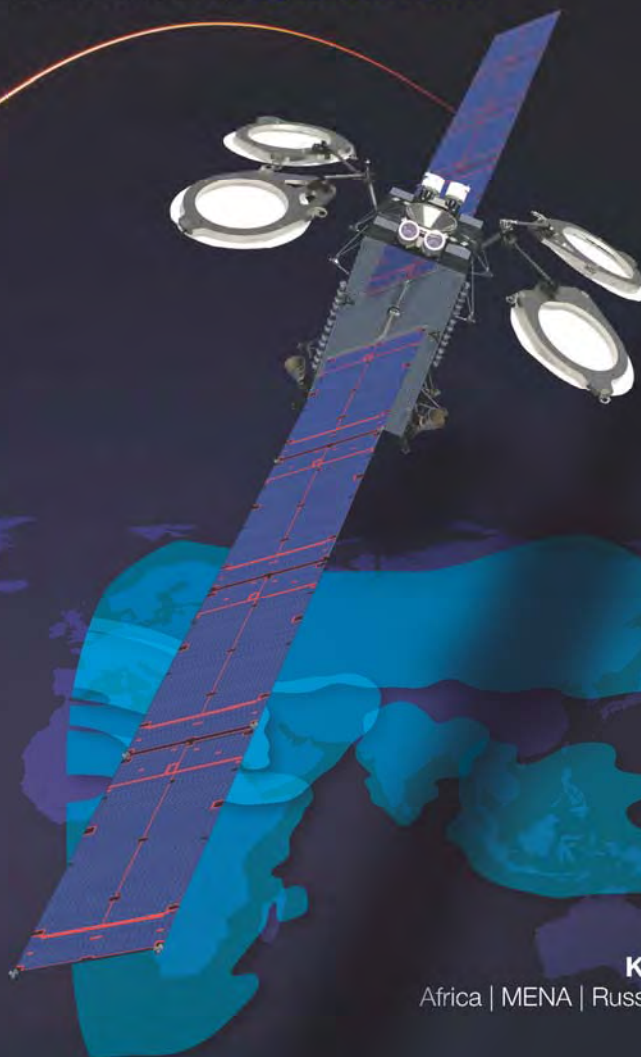
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Organization (LASCOM). LASCOM's network is built by utilizing three Ku-band transponders of Superbird-B2 satellite. Their main gateway stations are located in Yamaguchi, Yamaguchi Prefecture, and Bibai, Hokkaido Prefecture. At the end of January, about 3600 VSATs were remotely controlled by these gateways.

Another interesting system is called J-Alert. The Fire and Disaster Management Agency is responsible for this system and also uses Ku-band transponder of Superbird-B2 satellite.

JSAT itself also provides three kinds of BCP network services called Exbird, Esbird, and SafetyBird from their Yokohama Satellite Control Center. Their backup facility is located at Yamaguchi.

Issues

As to issues of Japanese satellite industry, the most serious one is belated investment in High Throughput Satellite (HTS) systems. For reasons of small land mass and dense fiber networks, HTS has not been seriously promoted. Horizons-3e looks like the first satellite to be taken up by JSAT. Meanwhile Thaicom seems to have a plan to launch next generation iPSat-2 and cover Japanese territory with HTS capacity. JSAT must find out more favorable approach and introduce better capacity at lower cost.

Conditional Access Systems

The next serious issue is Conditional Access Systems for Pay TV receivers. As was already mentioned, Japan is firmly



An artist's rendition of the opening ceremony of the 2020 Tokyo Olympics. The Olympics is driving broadcast innovations and developments in Japan including the first 8K broadcast transmission via satellite.

in the driving seat of 4K and 8K UHD. But B-SAT's subscribers are currently controlled by B-CAS and JSAT has been using Multi-2 based on 64 bit scrambling system. Both B-SAT and JSAT must improve such low level algorithm to 128 bit level as soon as possible.

The third and broader issue is a fragile ecosystem among B-SAT, JSAT, Mitsubishi Electric, NEC, and Mitsubishi Heavy Industries. Influential members of Japan Satellite Business Association are saying that more intimate ecosystem among five companies must be accomplished to gain stronger marketing power in the Asia Pacific Region. On this issue, Japan must learn from

the US and the EU.

In any case Japan's goal based on the current roadmap is to commence commercial 4K and 8K broadcasting at the time of Tokyo Olympics and Paralympics in 2020. To accomplish such goal NHK and A-PAB must attract as many people as possible to watch test broadcast programs set to start from this year.



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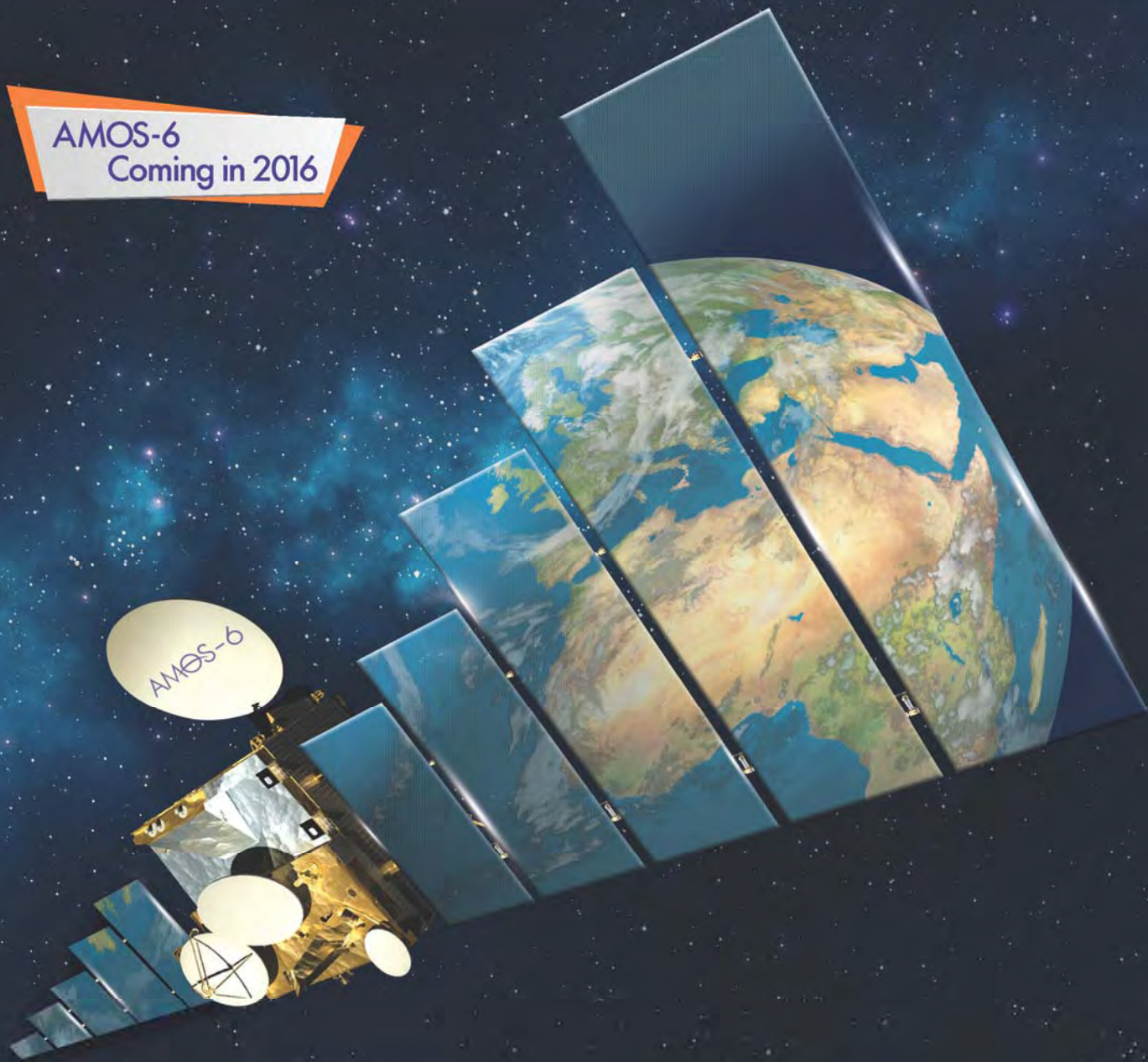
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Providing On-Board Satellite Broadcast Equipment for a Grueling Ocean Race

Six celebrities joined an experienced team of Volvo Ocean Race veterans to sail from Belfast to raise money for Sport Relief. The on-board reporters used the media centre to tell the story. The addition of newly launched RazorLink® technology from Livewire Digital enabled network acceleration, traffic prioritization and bonding of satellite and cellular services.

VOR65 yachts are designed for speed not comfort, and sailors and equipment alike must be capable of taking a 24 by 7 pounding. The on-board equipment needs to survive the

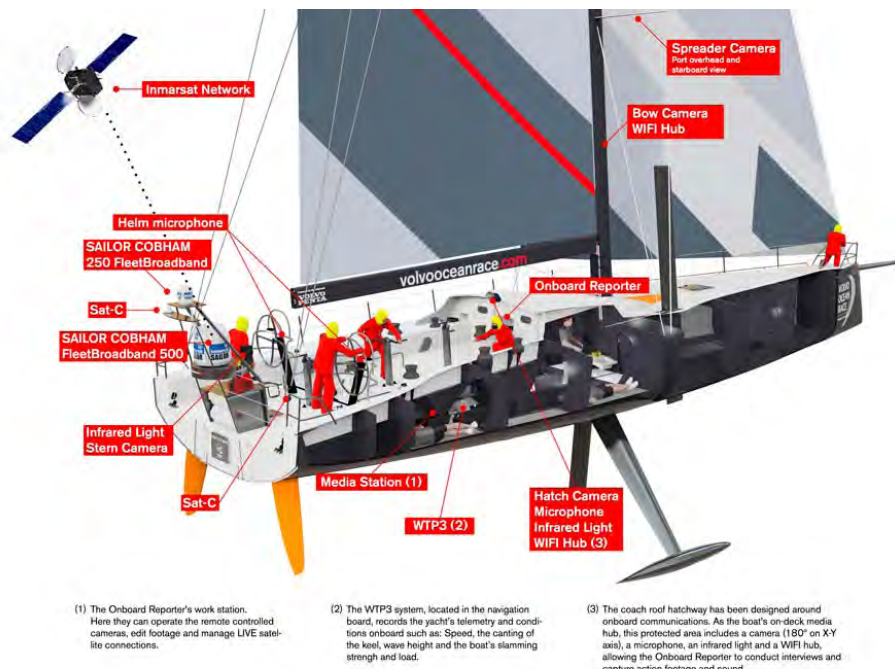
physical battering as well as the corrosive nature of salt water. Couple this with a working environment that is noisy, cold, cramped, damp and moves in three dimensions and it is easy to see why it is named the

“broadcast studio from hell”. Two highly experienced “on board reporters” (OBR’S) Matt Knighton and Sam Greenfield were tasked with making sure that all angles were covered.

The challenge was to design, produce, install, maintain and support the compact equivalent of an entire outside broadcast set up, capable of withstanding the extremes of temperature, constant vibration, and the corrosive saltwater environment for the nine-month epic adventure. All this, whilst making it simple enough to use by the 7 On Board Reporters (OBRs), who have the job of camera operator, sound recordist, editor and production engineer.

All equipment, including the four 1080i custom waterproof HD cameras and waterproof microphones, are powered from the yacht’s 24V DC battery bank; the media workflows have to be simple and always come with a backup plan.

The communication system is key and can make use of all available links. This means using cellular when close to shore combined with satellite links when in isolated waters. Not just for media, the communications system is also used for downloading weather files, delivering real time telemetry and providing Internet access for the crew and celebrities.



Access to the Internet is through the “services” shown on the right hand side; two Inmarsat Fleet Broadband satellite terminals and four cellular modems. The yacht side network has a wired LAN and a wireless access point mounted on the stern of the yacht.

The “Network Controller” in combination with

“RazorLink” manages the “services”. The Network Controller is responsible for establishing the appropriate satellite connections and managing the different types of traffic generated on board.

RazorLink “bonds” the satellite terminals and cellular services, making more bandwidth available to the on-board systems. In addition it accelerates data transfer by overcoming the inherent issues of satellite delay and cellular packet loss. This allows on-board systems to optimise use of the available bandwidth. When the yacht is within cellular coverage data rates in excess of 40Mbps were available. As cellular coverage drops off, the Inmarsat services transpar-

ently become the main stay, RazorLink bonds the data services of both the FB250 and FB500 satellite terminals, providing in excess of 500Kbps to the on-board systems from virtually anywhere in the world.

The Inmarsat terminals offer telephone and a range of data services. The Media Station makes use the "background" data service for general file transfer and Internet access, and the "streaming services" for Live video feeds. The streaming service guarantees a particular Quality of Service (QoS) and bit rate. For the Sport Relief challenge, Inmarsat made changes to the satellite network to allow the FB500 terminal to establish 384Kbps streaming connections. Previously, the fastest Fleet Broadband streaming service was 256Kbps, so another "first" providing higher quality live feeds.

The on-board system was configured to deliver both Live and File based media to the BBC's RazorLink enabled M-Link server.

File based media was encoded as H.264AVC at 4Mbps, a good compromise between quality and the transmission rates of the Fleet Broadband terminals. Higher encoding rates were chosen when in good cellular coverage.

Live feeds could be operated directly over the Inmarsat Fleet broadband services at up to 384Kbps, but where there was good cellular cover RazorLink allowed full HD profiles to be used that adapt to the network conditions.

Operating media and satellite equipment on a racing yacht will always be very challenging and an important aspect is line of sight. The OBR could examine a 3D model of the yacht showing the line of sight to the satellite for each terminal in real time.

The RazorLink enabled media system was used to great effect during the challenge; moments of high drama were captured using the delay line. Daily live interviews were conducted during the One Show throughout the week, these were complemented by store and forward footage that had been captured, edited and transmitted during the day.

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For most of us, slavery is a horror of the past. It is a modern reality, however, in more than 100 countries around the world. The Walk Free Foundation estimates that there are nearly 30 million people living today as forced laborers, forced prostitutes, child soldiers and child brides in forced marriages. According to the UN, girls account for two out of every three child victims and girls and women together make up 70 percent of all victims.

The exploitation of human beings for sex, labor and other purposes happens everywhere, but it clusters in less developed nations, with hot spots in sub-Saharan Africa, India and parts of southeast Asia. It is also in these regions that hope arises, often from unexpected directions.

World Changing Gifts from iDirect and SkyVision

The Crossover International Academy is a school and home in the Lake Volta basin of Ghana. It is dedicated to helping children escape from slavery and rebuild their lives. Slavery is embedded in the fishing and agricultural economy of the region, and David Yayravi, a refugee from Togo living there, chose to do something about it. He recognized that children could not escape slavery if they had no place to escape to and no hope of a better life. He launched the Crossover Academy in a small schoolhouse to give ex-slaves a safe haven where they could gain an education.

The challenges were as great as the number of children seeking freedom. Education takes dedication and talent but also money, and that last resource was in short supply. Seeking access to better educational resources, Crossover sent an email in April 2013 to iDirect, which sells satellite equipment for Internet connectivity. The cost of that equipment turned out to be much more than the Academy could afford. But days after giving up on the satellite option, Crossover received an email from Josh Cohen of iDirect. Cohen had learned that Crossover was not just

a business prospect but a life-saving mission, and he offered to provide the equipment for free. Cohen also introduced Crossover to a local service provider, SkyVision, which agreed to provide 12 months of satellite connectivity free.

Taking the Mission Global

Internet access via satellite brought the world to Crossover's students. Old textbooks and rough chalkboards were suddenly supplemented by streaming video, Skype, social media, email

and online educational programs. The school built links with seasoned educators and counselors in the US, UK, Italy and China, and kids began collaborating on assignments with American students at a sister school.

Good communications also made Cross-over more effective at another essential mission: rescuing more children from slavery.

Depriving slave owners of their property takes courage, timing and coordination. Crossover's leaders had the first asset in abundance. Better communications helped do the rest.

From its lakeshore location in Ghana, Crossover Academy has little access to the funding and support it so badly needed. Connecting by satellite to other nations proved transformative there. Less than a year after establishing the satellite link, Crossover had grown significantly. New concrete buildings house classrooms, and the school has established a fish farm with help from overseas experts to provide a steady source of income.

Free service made all the difference to Crossover Academy's mission. But gifts from enlightened donors can only go so far. "We need more sustainable programs," says Cohen of iDirect. "If an aid agency or other donor could support ongoing service, the opportunities are huge. We could substantially improve education for all of the region's children."



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Getting Better All the Time...*Really*

by Robert Bell

This is a time of turmoil for the major satellite operators that dominate the satellite transmission business today, with huge technology change, new entrants and the shrinkage of some legacy business. "Turmoil" sounds bad. But if pressed, we will all reluctantly admit that it can also be good. It is the pressure of change pushing us to abandon long-held positions, to think in new ways and to entertain new possibilities. The old moral admonition is to "be the change you want to see." Even if you prefer not to see it, you usually get more mileage in a market from *being* the change than from *fighting* the change.

The World Teleport Association recently published its sixth annual *Satellite Operator Benchmarks* report. It is a unique bit of research in our business, because it asks teleport operators what they think of the commercial and operational performance of the satellite operators they buy from. Satellite operators, of course, conduct their own customer surveys, but this one takes place in the light. From the first edition in 2011, we have believed that end customers, teleport operators and – ultimately – satellite operators have more to gain from a public airing of views than from a private one.

For one thing, it gives you faith that the voice of the customer matters, even in an industry of concentrated ownership of orbiting assets as this one. It also shows the good side of turmoil – that it shakes us from complacency and makes us more sensitive to what the customer (in this case, the teleport operator) wants.

Getting Better

In the 2016 study, teleport operators

reported that the commercial performance of satellite operators is improving. Most changes were nominal between 2015 and 2016 – but 91% of the material changes were positive. Longer term, from 2013 to 2016, teleport operators reported improvements in commercial flexibility, portability and their ability to escalate issues to upper management.

"Commercial performance" is a broad category. It means such things as the quality of sales reps, contracts and customer service – but also such critical issues as how much the satellite operator competes with teleport operators (their customers) for managed service business, and how fair teleport operators perceive that competition to be. It is encouraging that, on the most critical issues, teleport operators saw the biggest improvement.


From 2014 to 2016, teleport operators reported a decline in how often the biggest satellite operators competed with them for the same business. On the issue of the fairness of that competition, the review was more mixed – but with only one exception, the fairness of competition was judged as the same or better in 2016 than in 2014.

The teleport executives also weighed in on the operational performance of their vendors, and there was more good news. Operationally, the satellite operators received the strongest average rating this year since 2012. Teleport operators rated them as "strong" on 85% of operational factors in 2016, up from 67% in 2015 and 50% in 2013.

Why It Matters

The Benchmarks survey was launched to address the difficult issue of channel conflict between teleport operators selling managed services and satellite operators selling the same thing. Given how much of the total cost of a satellite-based service comes from transponder charges, satellite operators have the opportunity for predatory pricing of a managed service contract, which makes it impossible for teleports to compete with them. Taken to extremes, it makes it impossible for teleport operators to survive. The decline of the teleport sector, in turn, would sharply limit the ability of satellite operators to serve their customers. That would be a bad outcome for all concerned.

Six years into this project, teleport operators are telling us of the improvement they have seen in both the commercial and operational practices of the satellite operators they buy from. There are areas of continued concern, of course, but the positive trends are there for all to see.

Coincidence? I think not. I think it is a vindication of the decision made six years ago to bring important issues out of the shadows and into the light. 



Robert Bell is Executive Director of the **World Teleport Association**, which represents the world's most innovative teleport operators, carriers and technology providers in 46 nations. He can be reached at rbell@worldteleport.org. *Satellite Operator Benchmarks 2016*, like all of WTA's reports, are available at www.worldteleport.org. They are available free to members and for sale to non-members.

Satellites for Below and Above Ground: From Digital Oilfields to Digital Flight

by Martin Jarrold

With a dialog focusing on the central question “What is the near & mid-term future for oil industry exploration budgets and satellite communications solutions spending?” the **GVF Oil & Gas Connectivity 2016: North Sea, Arctic Ocean & Atlantic Margin** (www.uk-emp.co.uk/current-events/o-g-connectivity-2016/) conference takes place in Aberdeen on 10th May. This will be the 26th event in the entire GVF-EMP Events Partnership Oil & Gas Connectivity series and the 9th conference devoted to Europe’s oil and gas patch.

Of course, the backdrop to the event is the continued slump in the oil price. As at the end of April 2016, the price of Brent crude had ‘rallied’ to over US\$48 a barrel, despite continuing market disappointment about the mid-April failure to achieve agreement amongst oil producing countries in Doha, Qatar – a meeting that it was hoped would secure an oil production cap that could have tightened up supply. Thus, the North Sea continues to be part of the global oil glut crisis, wherein much-troubled hydrocarbons sector companies are operating with a price-per-barrel of some US\$25-30 below breakeven point.

In this crisis, other questions of concern to satellite solutions providers abound, such as, “With the oil glut and low price having the effect of severely curtailing exploration and future exploration/development plans, what are the effects on spending on satellite connectivity solutions?” Another key question is: “With about one-third of the known recoverable resources below the United Kingdom Continental Shelf (UKCS) remaining to be exploited, and given that this is not ‘easy oil’, but ‘marginal oil’, located in even more

challenging extraction/production environments, when will essential communication solutions budgets increase to a level that meets ever-more critical connectivity and applications needs.” Yet another important question is “To what extent are the satellite solutions providers, for whom the oil exploration companies have always been an important customer, going out into other markets, increasingly diversifying their end user base so as not to be so reliant on the hydrocarbons sector?” And, linked to this question, “To what extent are the struggling oil companies looking for new, alternative, non-traditional, satellite connectivity solutions providers based on their better-priced offerings?”

The Aberdeen program is divided into four principal sessions, each encompassing a range of key points in the current oil & gas connectivity dialog.

Beginning with **Technology Solutions for the Digital Oilfield**, speakers from **Advantech Wireless**, **UHP Networks Inc**, **Hughes**, **Harris CapRock**, and **Sematron** will look at: Oil & Gas Patch Communications: Now & Next Technology Trends for Europe’s Hydrocarbons Frontiers; Maximising Growth Opportunity via High Throughput Satellites; Bandwidth, Traffic & Throughput Optimisation Imperatives; Connected Devices & the Intelligent Process: M2M and IoT; Remote Deployment of Robust Auto-Deploy Antenna Technology for Oil & Gas; and, Satcoms and Automated & Remote Controlled Drilling Operations.

Continuing with **Service Solutions in the Digital Oilfield**, contributors from **Advantech Wireless**; **Harris CapRock**; **Integrasys**; and, **Baker Hughes** will address such themes as: ‘Big Data’ Networking Solution Innovations for Cloud

-over-Satellite in E&P; Advanced Networking Communications Infrastructures & Value-Added Services to Realise Marginal & Emerging Potential Reserves; Communications Infrastructures: Networks & Cyber Security; SCADA Data-Flows, Video Applications & the ‘Internet of Things’: The Cloud Again! Comparative Portfolios of Satellite & Satellite-Terrestrial Hybrid Services; and, E&P Satcom Service Business Models: Getting More, Paying Less.

The third session will examine **Applications Development & Deployment: Building-Out the Digital Oilfield** with panellists from **Comtech EF Data**, **Access Partnership**; and, **Intellian Technologies** adding the following to the event dialog: High Demand Communications for Crew Welfare, Crew Safety, and Crew Training Applications; Mission Critical Applications Requirements for Europe’s Continental Shelf; Digital Oilfield Monitoring & Management: Real-Time; and, Evolving Commercial Oil & Gas Applications to the Offshore Mobile Environment.

Finally, **The Bigger Connectivity Picture** will be addressed by representatives of **SES**, **Intelsat**, **CETel GmbH**; and, **GVF Training**, and will cover: Radio Frequency Interference in the Oil & Gas Space: Industry Prevention & Mitigation Strategies; Communications & Business/Emergency Continuity; Intelligence, Security & Reconnaissance (ISR) in the E&P Remote Space: UAVs, Satellites & Infrastructure Protection; The Wireless World of the Oil & Gas E&P Environment; Out-of-band Control & Monitoring Solutions; and, Connectivity in the Remote Mining Extraction Space.

For many years now, extending beyond the oil and gas connectivity program frontier of GVF-EMP have

YAMAL-300K

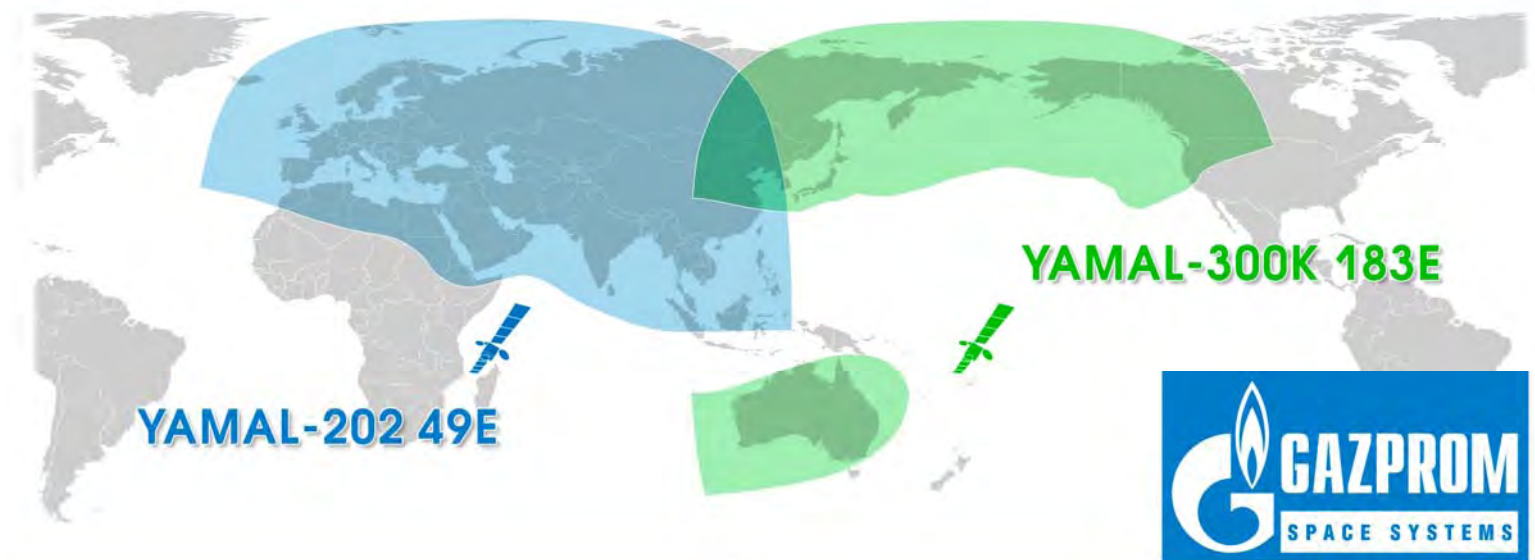
YAMAL-401

YAMAL-402

YAMAL-202



www.gazprom-spacesystems.ru



been the Partnership's events covering maritime, HTS, and "Connectivity". Now, the frontier is being extended further, encompassing within our topical remit **Cellular Backhaul: Smartphones & Tablets to the Satellite Network & the World** in June 2016, and **AeroConnect 2016: The In-Flight Online Revolution** in November 2016, both events to be held in London.

More information about the **Cellular Backhaul** event will appear in this column in May, but here I wish to extend the thematic horizon to November this year, and to **AeroConnect 2016**.

In early 2016 the GVF-EMP Events Partnership announced plans to expand and enhance its core portfolio, extending its topic coverage to encompass detailed analysis of the technologies, services, equipment deployment and markets of the aeronautical in-flight connectivity and entertainment space.

The success of the Partnership's event **GVF Connectivity 2016: Air, Sea, Surface, and Rail: Evolving the "New" New Verticals**, which explored broadband connectivity to the Internet, whenever you want, wherever you are, wherever you're going to, and however you're getting there, featuring a keynote entitled '*Airline In-Flight Connectivity: The New Paradigm of Passenger Experience*' from the CEO of the Airline Passenger Experience Association (APEX), Joe Leader, clearly favored an event agenda specifically and wholly dedicated to the aeronautical segment of the Communications-on-the-Move (COTM) market.

During his keynote in February, Mr. Leader particularly noted that "According to a recent APEX survey of global passengers, Wi-Fi was rated the highest in terms of increasing satisfaction with the inflight passenger experience. This demonstrates a huge opportunity for in-flight connectivity with an insatiable desire for higher broadband speeds." He continued by citing the 41% of passengers would be willing to pay for Wi-Fi connectivity.

Within the overall dynamics of the in-flight connectivity and entertainment (IFEC) ecosystem, Mr. Leader emphasized the significance of this as a critical data point for airlines, because the carriers that make the most ancillary revenue are those that lead in the connected passenger experience.

As of 2015, 72 of the world's airlines were already offering, or planning to offer, customer in-flight connectivity, reflecting powerful market demand trends. Also last year, *The Economist* magazine reported on US\$10 billion of on-board passenger experience upgrades during 2015 for existing aircraft alone, and that half of all airline profits, industry-wide, are being redirected to enhance the passenger experience.

Reflecting this, satellite operators are increasingly covering the world's principal air corridors with high throughput satellite (HTS) service solutions and the greater availability of broadband capacity over airline routes is increasingly able to ensure that the connectivity demands of the mobile consumer as airline passenger are met.

As noted above the aeronautical connectivity ecosystem encompasses not only the IFEC experience but also airline carriers' operational data requirements. For the former, the event program will examine the characteristics of passenger online activities divided between Entertainment (streaming, general web browsing, etc.); Productivity (work email, LinkedIn, etc.); and, Communication (Skype, social media such as Facebook, Instagram, etc., as well as voice); together with general travel planning websites (Expedia, TripAdvisor, etc.) and airline carrier-specific travel, reservations, ticketing, baggage tracking, on-board duty free shopping apps; as well as the architectures for connecting passenger devices (smartphone, tablet, laptop). For the latter, the program will cover the data environments of the aircraft cockpit (flight navigation, real-time flight-tracking, weather situational

awareness, QAR, etc.); cabin crew (digital crew operations, live on-board sales, telemedicine, etc.); aircraft management & maintenance (aircraft operations IT); and, air traffic management (ATC, tower communications, etc.).

The event program as a whole will seek to characterize the various determinants of, and the prime drivers of, the nature and scale of the investments being made today – and the investments being planned for tomorrow – by key market players to provide the infrastructure for the current generation, and for future generations, of in-flight connectivity which will render the airline seat a fully functioned extension of the office desk and of the domestic living room. This fully functioned extension of office broadband and home broadband brings massive new revenue potential not only for the Satellite-on-the-Move (SOTM) solutions provider marketplace, but also for the airline carriers, the connectivity investment budgets of which will be well-positioned within a multi-billions of dollars virtuous circle of enhanced revenues-increased profits-expanded investment...

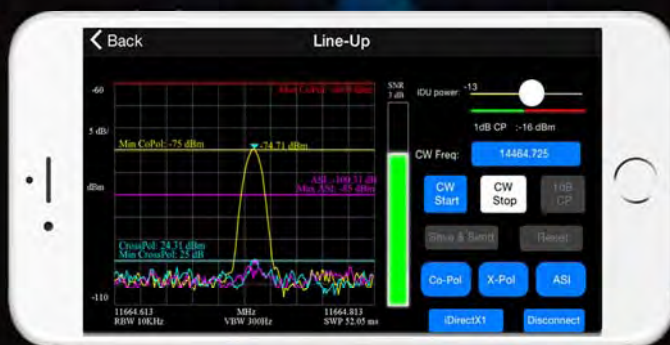
The program for **GVF AeroConnect 2016: The In-Flight Online Revolution** will encompass four principal themed sessions: on **Technologies**; on **Aeronautical Applications & Passenger Services**; on **Terminal Equipment**; and, on **The Expectations & Capabilities Matrix (of the connectivity user, and the solution provider)**. For more information on this, and all GVF-EMP events, please contact me at martin.jarrold@gvf.org. Alternatively, please consult www.uk-emp.co.uk/current-events/.



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



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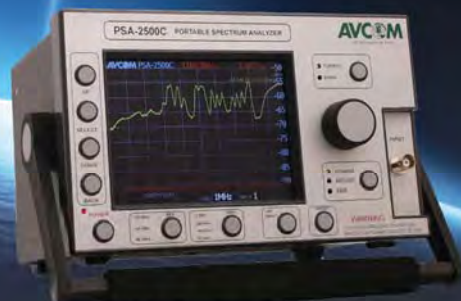
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Backed by the best customer support in the industry.



Products and Services MarketPlace

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

ABS

Level 1 booth # 1R3-01

www.absatellite.com



ABS operates a global fleet of 6 satellites including ABS-3A at 3°West the latest addition to the satellite fleet. Its extensive teleport network provides comprehensive coverage to 80% of the world's

population across 5 continents. ABS has strategic alliances and partnerships with state of the art communication hubs, to deliver the best possible satellite solutions.

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

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

Advantech Wireless

Level 1 booth # 1J2-01

www.advantechwireless.com



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

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



AvL Technologies

Level 1 booth # 1N1-01

www.avltech.com



AvL Technologies' booth at CommunicAsia 2016 will feature new and cutting-edge antennas. On display

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



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

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

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

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

C-COM Satellite Systems Inc.

Level 1 booth # 1Q4-12

www.c-comsat.com



C-COM Satellite Systems Inc. is a leader in the design, development and manufacture of commercial grade mobile SOTP antennas. iNetVu® systems are available in Vehicle Mount, Flyaway, Airline Checkable and Fixed Motorized platforms. More than

7000 C-COM antennas have been deployed in 103 countries around the world in a variety of vertical markets including Emergency Response, Oil & Gas, SNG/Broadcasting and

many more.

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



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

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

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

Comtech EF Data Corp. is the global leader in satellite bandwidth efficiency and link optimization. Our integrated SatCom infrastructure solutions encompass Advanced VSAT Solutions, Satellite Modems, RAN & WAN Optimization, Network & Bandwidth Management and RF Products. The offerings feature groundbreaking efficiency (industry-leading coding, modulation, compression and physical layer operation), robust intelligence (traffic shaping, dynamic bandwidth allocation and integrated network management) and unparalleled horsepower (processing power for your pps and Mbps transmission requirements). Commercial and government users utilize our solution suite to reduce OPEX/CAPEX and to increase throughput for the most demanding fixed and mobile networks.

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

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



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



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

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

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



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

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

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

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

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

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

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

INTEGRASYS
Level 1 booth # 1Y1-09
www.integrasys-space.com



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

Our software products are the state-of-the-art in Control Systems in terms of speed, flexibility, efficiency and scalability and introduces a new concept in signal monitoring communications

At CommunicAsia 2016, Integrasys will be showcasing its Satmotion Pocket is the most innovative technology worldwide for VSAT commissioning and maintenance, minimizing OPEX time and interferences. Satmotion Pocket is the winner of the "Most Innovative Technology of the Year" Award 2014.

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

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

The new SKYWAN 5G unlocks new business opportunities for service providers. Total cost of ownership is significantly reduced thanks to the



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

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

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

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



Newtec MDM5000 Satellite Modem

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

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



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

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



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

RSCC
Level 1 booth # 1V1-07
www.rsc.ru



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

The company possesses the largest satellite constellation in Russia located in the geostationary orbital arc from 14 West to 140 East and cover the whole territory of Russia, the CIS, Europe, the Middle East, Africa, the Asia Pacific region, North and South America, and Australia. RSCC offers a full range of telecommunications services such as TV and radio broadcasting, data transmission, telephony, multimedia and others using its own terrestrial engineering facilities and satellite constellation.

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



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

The company's new manufacturing facility on the southern edge of Silicon Valley has nearby access to an abun-

dance of high technology supporting infrastructure and a highly skilled labor force.

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



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

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



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

SES Takes Controlling Stake in O3b

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

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

investments.

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



ed strategy and complements SES's growth strategy.

O3b delivers a unique capability and solution, which is already in operation, for Enterprise, Mobility and Government clients, particularly for applications where low latency is an increasingly essential feature. The combined GEO/MEO satellite network and capa-

bilities give SES a truly compelling and differentiated service offering within the industry, strengthening SES's unique positioning across the data-centric markets.

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

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



ORBCOMM to Acquire Skygistics (PTY) Ltd.

Rochelle Park, NJ, April 12, 2016-- ORBCOMM Inc. (Nasdaq: ORBC), a provider of Machine-to-Machine (M2M) and Internet of Things (IoT) solutions, announced that it has entered into a definitive agreement to acquire Skygistics (PTY) Ltd. and its South African and Australian subsidiaries. Based

outside of Johannesburg, South Africa, Skygistics provides a broad range of satellite and cellular connectivity options as well as telematics solutions centered around the management of remote and mobile assets to more than 250 telematics and enterprise customers.

Skygistics will add distribution for ORBCOMM's broad range of products in some of the fastest growing IoT markets, including South Africa and 22 other African nations.

Skygistics is a long-time partner of

SkyWave, a subsidiary of ORBCOMM, and a distributor of SkyWave's satellite connectivity products. Satellite connectivity is used widely in Africa for cost-effective, mission-critical cross-border security monitoring and asset management applications.



"The acquisition of Skygistics supports ORBCOMM's long-term strategy of becoming a leading global, full-service provider in the Interhttp://www.orbcomm.com/net of Things," said Marc Eisenberg, ORBCOMM's Chief Executive Officer. "Adding incremental products and services to Skygistics' infrastructure will build a stronger presence on the African continent, which is an important growing market," he added.

"ORBCOMM provides Skygistics with the breadth of products, solu-

tions, support and technical resources needed to make a greater impact in the African telematics market," said Kevin Eborall, Skygistics' Chairman. "We expect to more fully meet our customers' requirements and vastly grow the business through the distribu-

tion of industry-leading transportation, heavy equipment and a host of other solutions and services in this underserved region. The strength of the ORBCOMM brand combined with Skygistics' regional footprint and technology make this transaction a great fit," said Eborall.

Skygistics has more than 40 employees with an established sales and distribution network throughout Africa. The transaction is expected to close in May 2016, subject to customary closing conditions.



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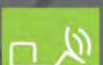
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SSL Names VP of Washington Operations

Palo Alto, Calif., May 9, 2016-- Satellite manufacturer **Space Systems Loral (SSL)**, announced that **Michael Gold** has assumed the role of Vice President, Washington, DC Operations. Gold, who previously served as Director of D.C. Operations and Business Growth at Bigelow Aerospace, will expand SSL's Washington, D.C. presence to support the company's increasing U.S. government business.



Michael Gold

Gold founded Bigelow Aerospace's Washington office in 2003, and over the course of his tenure there helped lead the company through numerous political and regulatory challenges and two international launch campaigns. At the same time he has served on several advisory committees, working with the FAA, NASA and other government organizations.

"Expanding our DC-Area office demonstrates our commitment to further build on the work we are doing with U.S. government agencies," said John Celli, president of SSL. "Michael Gold brings a wealth of experience with both civil and defense organizations and will strengthen our ability to make a contribution to government programs," he added.

SSL is currently working on projects with several U.S. government agencies, including on-orbit robotic satellite assembly with DARPA and NASA. The company also recently announced other work with JPL for the Mars 2020 project and is the industry partner for a potential NASA Discovery Mission to the asteroid Psyche.

Gold holds a Bachelor of Arts degree in Political Science from Brandeis University in Massachusetts, and a Juris Doctorate from the University of Pennsylvania School of Law.

AsiaSat Appoints Zhang Yan as New VP, China

Hong Kong, May 3, 2016--Asia Satellite Telecommunications Company Limited (AsiaSat) announced the appointment of **Zhang Yan** as its new Vice President, China, to take over the responsibility of Mr. Zhang Hai Ming as he retires from May 1, 2016.

Zhang Yan started working with AsiaSat in 2008 as the Chief Representative of AsiaSat Beijing Office and General Manager of CITICSat, AsiaSat's partner in China. She will assume all responsibilities previously held by Zhang Hai Ming, and lead a strong team to continue to serve existing customers and develop new business in the China market. She will also maintain our close working relationship with CITICSat, who holds the exclusive right to market AsiaSat's transponder capacity in China. Zhang Hai Ming will take on a consultancy role to continue to serve AsiaSat.

"We welcome Zhang Yan to an expanding role to grow our business and enhance our customer services in China. Over the past years, Zhang Yan has made considerable contributions to our satellite business in China, notably our recent successful re-entry into the video market there. I trust Zhang Yan's strong leadership, along with her wealth of expertise, marketing and customer service experience will lead our strong China team to new heights."



Zhang Yan

"On behalf of AsiaSat, I would like to thank Hai Ming for his years of dedicated service and the significant contribution he has made to our Company. I am pleased that Hai Ming is assuming a new consultancy role and will be working closely with Zhang Yan to ensure a seamless handover," said William Wade, President and Chief Executive Officer of AsiaSat.

Zhang Yan has over 22 years of experience in the satellite industry with various management positions, covering areas in engineering, sales and marketing. Prior to joining AsiaSat, she worked for a satellite operator for more than 15 years. She holds a Bachelor's Degree in Engineering, majoring in Image Transmission and Processing, and an Executive Master's Degree in Business Administration, both from Beijing University of Posts & Telecommunications.

Angelique Boissy to lead Inview's Sales and Partnerships Globally

Northwich, United Kingdom, April 15, 2016-- Inview Technology Ltd. today announced that **Angélique Boissy**, a leading figure in the digital television industry, will be working with the company to spearhead its sales and partnerships initiative and develop Inview's strategies and customer base globally. US and European educated Ms. Boissy has spent more than 18 years operating at management board level for US, European and Chinese companies and played critical roles in delivering transformational solutions and services to operators and broadcasters throughout the globe. For the past three years, she has been Vice President of Global Sales for Skyworth, one of the world's leading manufacturers of set top boxes, and previously held the position of Vice President of Sales and Services EMEA for UTStarcom.

"This is an exciting time for our industry", said Angélique, "Inview



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Technology, with its unique core competences and focus on providing dedicated middleware, services and solutions to enhance and monetize the television experience, has a tremendous international reputation. I believe we are perfectly positioned to perform an even more pivotal role globally for customers in active and new markets. Julie Austin, CEO, Inview Technology Ltd. commented "We are delighted that Angélique has chosen to work with us going forward. We have achieved significant success in developing our customer and partnership base in recent years and there is a huge potential for further growth for Inview in Asia, Africa and the Americas. Angélique is already well known and respected in our market sector and her considerable knowledge in the industry will be invaluable in shaping our commercial activities and implementing driving our global strategy."

Monteverde Joins Hiltron as Sales Director

Backnang, Germany, April 6, 2016--
Hiltron Communications



Antonio Monteverde

announced the appointment of **Antonio Monteverde** as Sales Director. He joins Hiltron from AFT Microwave where he was responsible for sales and business development of microwave components


for space, defence, medical, sensor, and industrial applications.

Monteverde holds a masters degree in telecommunications and informatics from the University of Genoa,

Italy. He joined Italtel SpA in 1996 as System and Project Planning Manager, progressing to management roles at Bosch Telecom, Marconi and Ericsson before joining AFT in 2012.

"We are pleased to welcome Antonio Monteverde to Hiltron," says Managing Director Jan Molter. "He has exactly the mix of business and technical experience required for this position plus a good understanding of project management from the customer side which is always an asset for senior staff working in manufacturing and systems integration."

Hiltron Communications is a globally active system integrator, manufacturer and distributor in the field of satellite and wireless communication. The company operates from modern purpose-built headquarters at Backnang near Stuttgart.

Hiltron is part of the Danmon Group, one of Europe's leading suppliers of audio, video, transmission products. and digital media solutions. 

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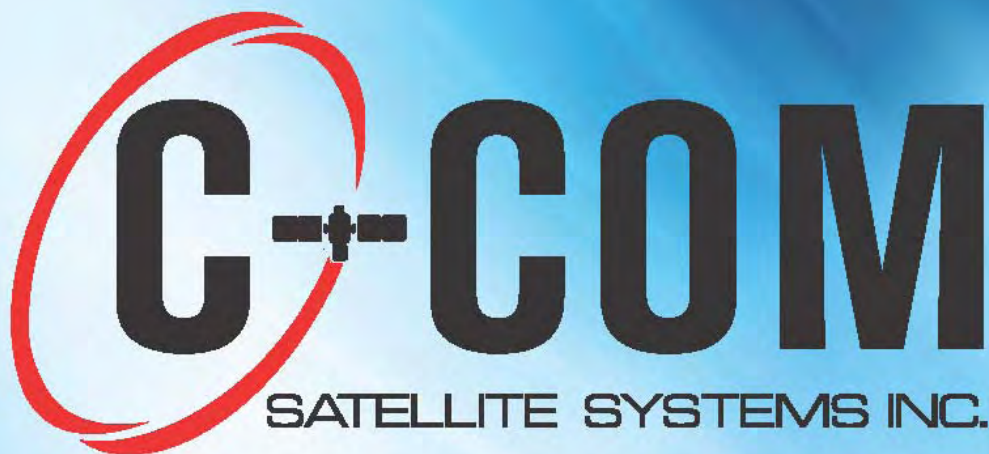
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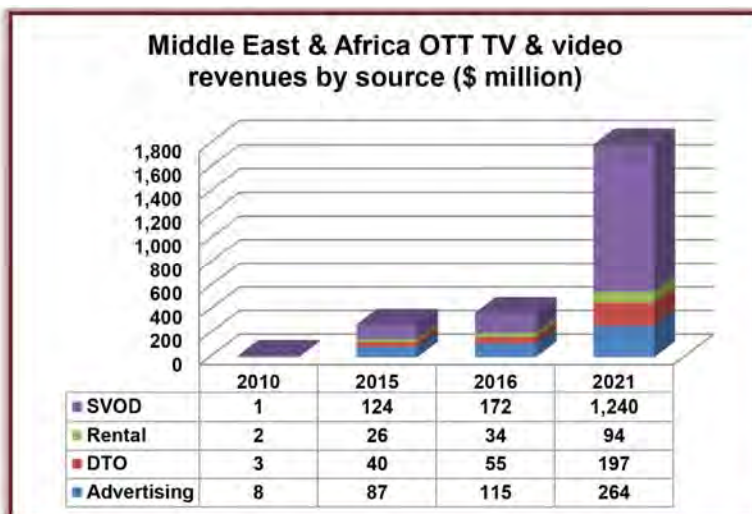


Middle East and Africa SVOD Revenues to Climb Tenfold

London, UK, May 9, 2016--Europe, Middle East, and Africa expected to grow to 69% of the OTT total in 2021 from 45% (EMEA) Subscription Video On Demand (SVOD) revenues in 2015. Unlike Western Europe for example, OTT TV and video advertising revenues will increase tenfold from US\$ 124 million in 2015 to US\$ 1.24 billion in 2021. The Middle East & Africa Over the Top (OTT) TV and Video Forecasts report estimates that Turkey will remain market leader covered, with US\$ 257 million in SVOD revenues by 2021.

Digital TV Research forecasts 19.59 million SVOD homes across 28 countries in the region by 2021, up from only 15,000 in 2010 and 2.79 million expected by end-2016.

Total OTT TV and video revenues will reach US\$ 1.8 billion in 2021; up from only US\$ 13 million recorded in 2010 and US\$ 277 million in 2015. SVOD's dominance is



video advertising revenues will be limited in the Middle East and Africa as few free-to-air broadcasters have deep online ar

From the US\$1.5 billion in OTT revenues to be added between 2015 and 2021, Turkey will contribute US\$ 264 million, with South Africa bringing in a further US\$ 222 million and Israel US\$ 187 million more. Simon Murray, Principal Analyst at Digital TV Research, said: "Middle East & Africa OTT TV and video will still be an immature sector by 2021.

However, 2016 is a watershed year – the year that OTT really started to take off." He continued: "Fixed broadband penetration is low in many of the region's countries, so more OTT viewing will take place on smartphones. Digital TV Research forecasts that 304 million smartphone subscribers will be watching OTT TV & video at least once a month by



NSR Projects Aero Market Growth

Cambridge, Mass., April 12, 2016 – NSR's Aeronautical Satcom Markets, 4th Edition report, published tomorrow, forecasts commercial aircraft connectivity markets reaching retail revenues of US\$ 4.6 billion by 2025. Market growth is driven by in-flight passenger connectivity, reaching new heights with HTS capacity.

"For most airlines today, in-flight connectivity (IFC) is no longer a question of 'if', but 'when' and 'how' as passengers now see it as part of essential services they expect," states Claude Rousseau, NSR Research Director and report author. "Quality of IFC service is an issue that airlines will need to con-

sider seriously as part of their brand value, if take rates of expensive satcom and air-to-ground services are to grow in step with the interest of travelers."

In a market where over 115,000+ aircrafts, across all airframes, could benefit from some form of connectivity, NSR notes there are only 49,500 in-service satcom units deployed. With the number of passengers flying for business and tourism growing yearly, such amenities as IFC are an ever more important part of passengers' onboard experience. Recent capacity deals with HTS operators point to a huge supply jump in capacity for long and medium-haul aircraft that will address demand

brought about by passengers bringing more personal electronic devices (PEDs) with them on commercial flights.

Now, with over 60 airlines offering some form of IFC solution to connect passengers and crew alike, competition is heating up across the board. In a currently small market, this means there may be contraction and fewer players in the future. As a result, lower prices with better bandwidth available everywhere will enable more services, such as operational connectivity that airlines are evaluating more closely today."



IoT Market Expected to Grow at 15.2% CAGR from 2015 to 2022

San Francisco, Calif., May 4, 2016--

The Internet of Things (IoT) market was worth US\$ 605.69 billion in 2014 owing to rising requirement for internet connectivity worldwide coupled with technological advancements according to a report by Grand View Research. The emergence of start-ups in different industries to satisfy growing need of consumers is anticipated to result in increasing venture capital investments. The market is estimated to grow at 15.2 % to reach over US\$ 1.88 trillion by 2022.

IoT market is projected to increase at a significant pace on account of its ability to improve efficiency and enable new services. IoT connects devices including industrial equipment and consumer electronics through a network that allows users to gather information and manage devices via software. Key factors that are expected to propel future growth include improving connectivity and internet access, data processing requirements and decreasing costs of internet enabled sensors. In addition, the market is likely to witness significant growth opportunities over the forecast period owing to increase in demand for gadgets such as wearable devices and futuristic elements including connected homes, vehicles, and cities coupled together with industrial internet of things (IIoT)

The absence of universally accepted standards that give rise to security and privacy issues are expected to hamper growth in the industry. Moreover, the introduction of stringent rules and reg-

ulated by the consumer electronics application segment followed by manufacturing and retail. The introduction of new concepts such as connected cars in the transportation sector is expected to

propel demand for IoT over the forecast period. In 2014, about 25.0% of the overall industry was acquired by this segment.

Emerging economies such as Japan, India and China are expected to be the key drivers of IoT industry on account of manifestation of major component and technology manufacturers such as Huawei and Samsung coupled with the potential for the high-speed broadband inter-

net. Asia Pacific is thereby projected to grow at a CAGR of approximately 16.0% over the next seven years.

IoT is a dynamic market majorly fuelled by new product developments and enhancements in technology. Organizations are focussing on investing in IoT divisions, innovation labs, and R&D to obtain the first-mover advantage to expand globally and mark their presence. Key companies include major telecom and technology giants such as Alcatel-Lucent, Accenture PLC, Google Inc., Apple Inc., General Electric, IBM, Freescale Semiconductors, SAP SE and Samsung Electronics.

A significant revenue share in the IoT market is anticipated to be occu-



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Pay-TV and OTT in Asia

At its third annual OTT Summit, CASBAA, the Association for digital multichannel TV, content, platforms, advertising and video delivery in Asia released a groundbreaking study on Asian OTT regulation. The new publication, *Same Same but Different? Video Policies for Asian Pay-TV and OTT*, details an "unsustainable" situation, which sees governments maintain legacy regulatory policies that disadvantage their local operators, while television supply is moving online and undergoing a "comprehensive transformation."

Same Same but Different is the result of a collaboration between highly regarded experts in Asian capitals. It takes an in-depth look at the regulation of pay-TV and OTT video in countries and regions across Asia and Australasia, drawing comparisons with current leg-

islation in the UK and United States.

The report provides specific descriptions of each government's policies affecting OTT television on subjects as diverse as content censorship, advertising limits, copyright protection, and consumer protection. It observes that many governments are levying burdens on "onshore" OTT operations while leaving "offshore" services virtually unregulated. One result of this discrepancy is a big boost for offshore operations providing pirated content. It's of note that these offshore outfits are unburdened by any ethical, legal, or social constraints, and they continue to grow in importance.

In launching the report, CASBAA warned that if the "tilted playing field" persists, media investments will move offshore. "Why would any media com-

pany locate a new OTT business in a heavily-regulated jurisdiction," asked Medeiros, "if they can serve the market more cheaply and without compliance burdens from offshore?" CASBAA urged that governments review their pay-TV rules "and determine whether existing burdens are still required given the evolution ... of the television market in recent years." And it went on to say that governments should seek to "stem the growth and proliferation of illegitimate OTT services."

For more information about CASBAA and *Same Same but Different? Video Policies for Asian Pay-TV and OTT*, which is available for download by members, please visit <http://casbaa.hk/1Lpz1sz>

Asia-Pacific Boosts Pay TV Revenues

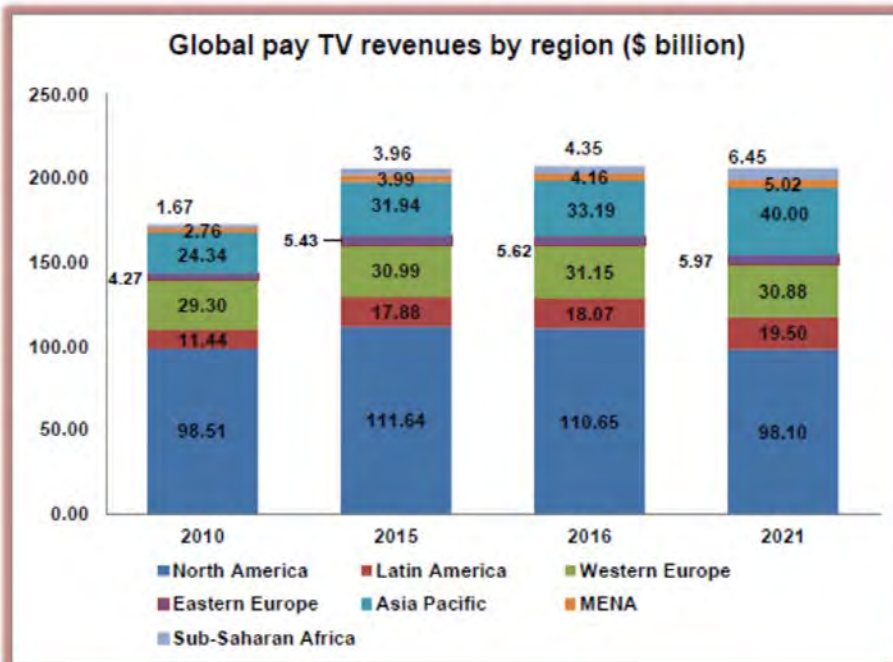
Singapore, May 3, 2016--Global pay TV revenues [subscription fees and PPV movies and TV episodes] for 138 countries will only grow by US\$ 99 million between 2015 and 2021 to US\$ 205.92 billion; having peaked in 2018. This follows 19.5% growth between 2010 and 2015, according to the Digital TV Revenue Forecasts report.

North American pay TV revenues will fall by \$13.5 billion between 2015 and 2021. Cord-cutting is responsible for some of this loss, but greater competition and conversion to bundles (with the lower revenues for TV than standalone offers) are more pressing factors. Western Europe will be flat at \$31 billion.

Simon Murray, Principal Analyst at Digital TV Research, said: "Most of the rest of the world will not follow the North American experience. True, pay TV revenues will fall in 27 countries between 2015 and 2021, but not to the same extent as in Canada and the US. Most countries are nowhere near the market maturity achieved in North America."

Excluding TV revenues will climb by \$13.6 billion (up by 14%) between 2015 and 2021 to \$107.82 billion, having recorded \$20 billion growth (up by 28%) between 2010 and 2015. Asia Pacific's share of revenues will fall from 54.2% in 2010 to 47.6% in 2021. Asia will grow by \$8 billion (up by 25%) between 2015 and 2021 to \$40 billion.

Asia Pacific's revenues will be \$40 billion (up by 25%) between 2015 and 2021 to \$40 billion. Sub-Saharan Africa will pass MENA in 2016. Pay TV revenues in Eastern Europe will be 40% higher in 2021 (\$5,970 million) than in 2010 (\$4,271 million). However, the revenue increase will only be 9.9% between 2015 and 2021. Latin America will add a further \$1.6 billion (up by only 9.1%) between 2015 and 2021.



Source: Digital TV Research Ltd

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Revenues will decline for 27 countries between 2015 and 2021. However, revenues will more than double for a further 19 countries during that period. Most of the fast-growth nations by percentage increase will be in Africa, with Myanmar, Laos, Oman and Bangladesh providing exceptions. India's revenues will climb by \$3.5 billion between 2015 and 2021 to \$7.8 billion, with China up by \$1.9 billion to \$11.7 billion.





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Company Name	Symbol	Price (Apr 07)	% Change from Last Month	52-wk Range	
Satellite Operators					
Asia Satellite Telecommunications Holdings Limited	1135.HK	10.80	(0.03)	9.15	33.50
Eutelsat Communications S.A.	ETL.PA	27.755	(0.03)	25.34	32.71
APT Satellite Holdings Ltd.	1045.HK	6.10	0.01	5.03	9.83
Inmarsat Plc	ISAT.L	993.00	0.00	881.00	1,153.00
SES GLOBAL FDR	SES.F	25.51	0.03	22.02	34.90
Satellite and Component Manufacturers					
The Boeing Company	BA	127.01	0.05	102.10	155.50
COM DEV International Ltd.	CDV.TO	5.86	-	3.68	6.29
Macdonald Dettwiler & Associates Ltd.	MDA.TO	82.28	(0.05)	70.55	100.63
Lockheed Martin Corporation	LMT	226.19	0.04	181.91	227.91
Orbital ATK, Inc.	OA	86.35	0.11	56.06	94.92
Ground Equipment Manufacturers					
C-Com Satellite Systems Inc.	CML.V	0.92	(0.03)	0.85	1.17
Comtech Telecommunications Corp.	CMTL	22.03	0.03	17.27	32.13
Harris Corporation	HRS	76.05	(0.04)	70.10	89.78
Honeywell International Inc.	HON	111.61	0.06	87.00	113.47
ViaSat Inc.	VSAT	71.6895	(0.02)	56.02	76.58
Satellite Service Providers					
Gilat Satellite Networks Ltd.	GILT	4.40	0.13	3.11	6.88
Iridium Communications Inc.	IRDM	7.44	0.08	5.85	11.36
ORBCOMM, Inc.	ORBC	10.07	0.15	5.27	10.49
TeleCommunication Systems Inc.	TSYS	4.99	-	3.03	5.06
RRSat Global Communications Network Ltd	RRST	7.233	-	6.06	9.60
Consumer Satellite Services					
DIRECTV	DTV	93.55	-	82.04	95.51
DISH Network Corp.	DISH	43.5075	(0.10)	38.85	76.29
Globalstar Inc.	GSAT	1.73	0.15	0.97	3.35
Sirius XM Holdings Inc.	SIRI	3.83	0.02	3.29	4.20
SKY DEUTSCHLAND	SKYD.MU	1,019.00	(0.04)	953.50	1,180.00

INDEX	Index Value (Apr 07)	% Change from Last Month
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S & P 500	2,035.56	3.29%

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

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