Satellite Executive BRIEFING

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SATELLITE Markets & Research

Industry Trends, News Analysis, Market Intelligence and Opportunities

Update on the African Satellite Market

by Peter I. Galace

This month the West Africa Cable System (WACS) that will link Southern and Western Africa with Europe will start providing 15 African countries with 5.12Tbps submarine cable bandwidth capacity. In another month or so, the US $700 million Africa Coast to Europe (ACE) 5.12 Tbs submarine cable that will connect 23 countries will also start carrying broadband Internet traffic commercially.

The two cable systems will play a key role in reducing digital divides across the region and in connecting Africa with the rest of the world. The question is, will the sudden increase in fiber connectivity cause satellite's appeal to lose luster?

There is a lot of potential in the African market with only 139 million internet users with over 1 Billion population.

Africa: So Much Potential

Amid dramatic political problems and tumultuous regime changes last year, Africa continues its strong march towards economic recovery, defying the global trend. The United Nation's *World Economic Situation and Prospects 2012* forecasts an increase in its overall growth from 2.7% in 2011 to 5.0% in 2012 and 5.1% in 2013, indicating a return to solid growth for the world's second largest continent. Thanks in part to improved economic policies, Africa is now one of the fastest growing developing regions in the world.

A big plus factor is the continued surge in commodity prices, promising great returns for Africa's oil producing nations. Africa's long-term growth is thus seemingly assured as reflected in interrelated social and demographic changes that create new domestic engines of growth. Key among these are increasing urbanization, an expanding labor force, and the rise of the middle-class African consumer, which all require improved infrastructure services from all fronts. No wonder, demand for better telecom services continues to rise rapidly.

Today, Africa, the second-largest and second most populous continent, after Asia, with as estimated 1.03 billion people in 2011, roughly 15% of the world's population, remains the least connected continent with the highest fees for the lowest speed connections. According to the International Telecommunications Union, Africa has a density of only 1.4 telephone lines per 100 people, equivalent to less than 2% of the world's fixed lines compared to around 19% of the global average. In its *2011 Facts and Figures*, ITU said disparities between regions

Continued on page 4

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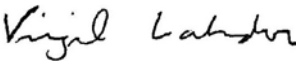
Home and Away

This month, Satellite Markets and Research will be exhibiting at two important shows: the SpaceCraft Tech Expo in Los Angeles, California where we are based, and Satcom Africa in Johannesburg, South Africa. We are very pleased to be a media partner of the Spacecraft Tech show, which will be holding the show in Los Angeles for the very first time. Los Angeles is a major center for the space and satellite industry and has not had a satellite trade show for several years since the ISCe show (which we were also a partner of) ceased operations a few years ago. We are happy that the city where we are based will be hosting another important industry event and we hope to se you there from May 8-9 at the Los Angeles Convention Center. We'll be at booth no. 3016.

Just a couple of weeks after the SpaceCraft Tech Expo, we head off clear across the world to Johannesburg for Satcom Africa. The African market is the focus of this issue and it is quite apparent that that market is gaining some traction. This is our second time to be a media partner with Satcom Africa and again we will have a booth (no. 9) and hope to see you there as well.

The geographic spread of the industry events just shows how truly global and interconnected the industry has become. From our base here in Los Angeles, we do our best to cover all the developments globally and through our correspondents spread across the world, we strive to give you both the regional and well as global perspective on developments in this ever-changing industry.



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The African Satellite Market... From page 1

in terms of available Internet bandwidth per Internet user remain, with on average almost 90 Kbit/s of bandwidth per user in Europe, compared with 2 Kbit/s per user in Africa. Over the past ten years, the number of mobile connections in Africa has grown an average of 30% per year and is forecast to reach 735 million by the end of this year. *Internet World Stats* says Africa only has only about 139.87 million Internet users as of December 31 last year, with a penetration rate of 13.5% of its total population, representing only 6.2% of the world's Internet users. Television ownership remains concentrated in the major urban centres and currently, there is only an estimated 44.2 million TV households.

Africa's vast distances, the sometimes near impassable terrain, the spotty infrastructure, the resulting isolation and remoteness of many communities, make satellite an ideal answer to many of the continent's connectivity challenges. In a continent where terrestrial and fixed-line networks are limited if they exist at all, communication via satellite is an indispensable tool for the modern African economy. With so much room for growth, satellite-based services are supporting everything from pay TV and cellular phone services to robust broadband and niche VSAT markets throughout Africa. The large potential room for growth makes the satellite market growing at a meteoric rise.

WACS and ACE

But now comes the WACS and ACE submarine systems. Alcatel-Lucent won the contract in April 2009 to build the 14,000 km. US $650 million WACS and many other big operators like MTN, Telkom South Africa, Vodacom, Tata's Neotel, CWW and Gateway Communications are taking part in the project. WACS consists of four fibre pairs and is 14,000 km in length, linking Yzerfontein in the Western Cape of South Africa to London in the United Kingdom. The US$ 650 million WACS has 15 terminal stations along the western coast of Africa.

"...Africa's vast distances, the sometimes near impassable terrain, the spotty infrastructure, the resulting isolation and remoteness of many communities, make satellite an ideal answer to many of the continent's connectivity challenges. ..."

The 17,000 km-long ACE submarine communications cable championed by France Telecom Orange and initiated on June 5, 2010 will be the first international submarine cable to land in coastal countries such as Equatorial Guinea, The Gambia, Guinea, Liberia, Mauritania, Sao Tome and Principe and Sierra Leone and indirectly through terrestrial links for landlocked countries like Mali and Niger.

Analysts predict that WACS will reduce bandwidth costs in Africa by 50% from current costs and an additional 50% drop with ACE's launch. The effect in Africa will be revolutionary. Recent deregulations in many west African countries have further encouraged many foreign telcos to invest, boosting the overall African telecom infrastructure.

And there's even more coming. In November last year, WASACE Cable Company Worldwide announced its ambitious plans to build a new submarine cable system connecting four continents – Africa, South America, North America, and Europe. It said it will be the first cable system designed to use 100-Gbps transmission technology from the outset.

The project will be divided into four sections: WASACE North connecting Europe to North America, WASACE South connecting South America to Africa, WASACE America connecting South America to North America, and WASACE Africa connecting Nigeria, Angola, and South Africa.

The project is headed by WASACE Cable Company Worldwide Holding, a multinational development company represented by CEO Ramon Gil-Roldan of Spain. Project development will be managed by the David Ross Group, represented by CEO David Ross of the US.

But despite the significant upswing in cable connectivity, analysts continue to believe there is plenty of room for both fiber and satellites to co-exist. With recent studies showing that more than 50% of the African population will continue to have no fiber connection, despite the onset of WACS and ACE, the African satellite opportunity will not go away very soon. And with the economies of today largely driven by internet and other ICT connections, which are enablers of faster global connectivity, the demand for bandwidth will ever be increasing.

Cable and Satellite's Role in Africa's Digital Migration

The digital television transition is under way in compliance with an ITU deadline of June 2015 agreed by most African countries. Ironically, the transition process, which took from 3 to 14 years in richer countries, seems to have a shorter gestation period in Africa from the time the "Digital Broadcasting Roadmap in Africa project" was initiated in Doha in 2006. Observers say only a minority of African countries have started the policy work needed to create the transition, and most of the discussion is focused on technical questions.

Knowing the difficulties of rolling out terrestrial digital (DTT) broadcast equipment, satellite companies are enjoying an edge in putting forward DTH satellite as an alternative. Christoph Limmer, senior director market deve-

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With AMOS-2 and AMOS-3 serving Europe and the Middle East, AMOS-4 scheduled to commence operations in 2013 and AMOS-6 in 2014, Spacecom offers its vast experience to DTH operators, TV broadcasters, ISPs, VSAT broadband providers and telcos throughout Africa.

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lopment of SES, said requests for information on satellite TV are flooding in. "Quite often we get asked if satellite can really reach more homes than other infrastructures like cable or terrestrial. The answer simply, is yes. Unlike DTT or cable which are ground based infrastructures and normally roll-out in certain areas only; satellite has no limitations in achieving 100% population reach," said Limmer. Digging cable is costly and time consuming and rolling out DTT network infrastructure is facing similar challenges.

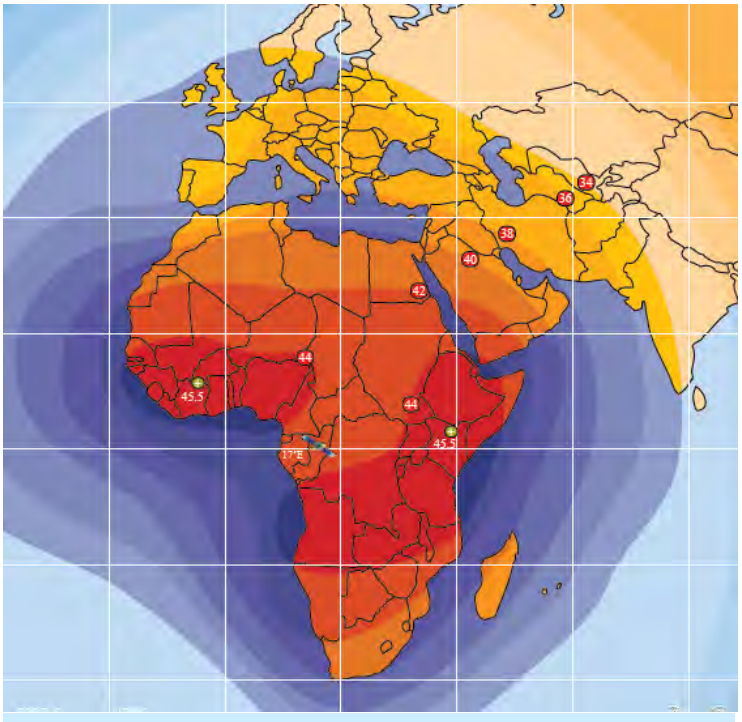
While increased cable connectivity is welcomed by all, the bottom line is that digital terrestrial television (DTT) cannot provide the required reach and bandwidth on its own. Satellite can feed and complement DTT roll-out if network architecture is aligned, and digital terrestrial coverage in combination with satellite can notably reduce infrastructure investments and costs, making hybrid technology a logical next step.

Satellite has the opportunity to reach an unlimited number of end-users quickly, independent of existing infrastructure, terrestrial challenges and borders. It also complements innovation and can handle all formats including digital, HDTV, 3DTV and IP.

"Right now, SES has satellites over Africa providing broadband and broadcast connectivity – but the demand is great and more reach and services are required," said Norbert Hölzle, who now leads the European sales team of SES. "Today only one out of three homes in Africa has a TV set, but this number is expected to grow significantly in the coming years. The digital migration in Africa is already being driven by satellite, and the markets are ready and eager for assistance which SES is ready and able to provide," he added.

TV to reach 50 million homes in Sub-Saharan Africa by 2017

Highlighting the continued role of satellites is the soaring digital TV penetration, especially in South Africa in the next five years. A new report from Digital TV Research said Sub-Saharan Africa will have 50 million TV households by 2017 – or 30% of total homes.



In December 2011, Israel-based Amos Spacecom launched its Amos-5 satellite offering pan-African coverage featuring a high-powered C-Band beam and three regional Ku-Band beams for the African market. (image courtesy of Spacecom)

According to the Digital TV Sub-Saharan Africa report, Nigeria will account for about a quarter of the region's TV households in 2017, with South Africa contributing a further 15%. Three-quarters of the region's TV households still received analog terrestrial signals at the end-2011, though this proportion will drop to 46% (23 million TV households) in 2017.

About a quarter of TV homes (9.2 million) received digital signals at end-2011, and this digital TV penetration will rocket to 54% by 2017 – with household numbers tripling to 27.3 million. South Africa, the market leader by far, will have achieved 100% digital migration by 2017 (or 7.9 million homes). Proportions in the other countries will be much lower, though Nigeria will have 7.0 million digital homes by 2017 (up from 1.9 million in 2011).

According to the study, pay TV penetration of TV households will grow from 19% in 2011 to 28% in 2017. Of the 7.2 million pay TV subscribers at end-2011, 6.1 million were pay DTH. The pay TV total will double to 14.1 million by 2017, with DTH contributing 8.2 million and pay DTT chiming in with 5.2 million. South Africa supplied 4.0 million of the 2011 total, and will grow to 5.1 million in 2017. Nigeria will climb from 1.2 million in 2011 to 3.1 million in 2017.

A third of homes will take DTT (pay and FTA combined) in 2017, up from only 4% at end-2011. Sub-Saharan Africa will have 16.4 million DTT homes by 2017 – 11.2 million FTA and 5.2 million pay – up tenfold from 2011. Nigeria will be the largest DTT nation in 2017, both for FTA (3.2 million) and for pay (1.7 million).

Digital pay DTH penetration will remain at just over 16% of TV households. However, this is distorted by South Africa where penetration is nudging 60%. The next highest penetration will be 12% in 2017 - in Tanzania and Uganda.

Intelsat's Investments in Africa

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Intelsat, which was the first to launch a satellite covering Africa way back in 1969, continues to invest heavily in the region.

On March 25 this year, Intelsat successfully launched Intelsat 22 satellite. When it enters service in a couple of months, Intelsat 22 will deliver enhanced satellite capacity for telecommunications leaders in Asia, the Middle East, Africa and Europe, such as the UAE's Etisalat and Ethio Telecom of Ethiopia.

Before the end of the year, Intelsat plans to launch two more satellites — Intelsat 20 and Intelsat 23 — that will both provide incremental capacity to Africa and the Asia Pacific region. With the launch of Intelsat New Dawn in April last year, Intelsat's African fleet has grown to 23 satellites, representing a multi-billion dollar investment in the region.

Intelsat's African infrastructure also includes five DVB platforms on four satellites, and the flexibility to set up customized IntelsatONE^{SM} Network Broadband VSAT services. These broadband platforms provide direct access to Intelsat's Internet backbone and global IntelsatONE^{SM} fiber network. Intelsat's partnership with BT, announced last year, expands the reach of the IntelsatONE terrestrial network to new locations across the globe, including Nigeria and South Africa.

On February 29, service provider Globecast in cooperation with Intelsat announced the launch of a Multi-Channel Per Carrier (MCPC) media platform for Africa. As part of the IntelsatONE^{SM} network, the platform provides a cost-effective solution for both regional and international programmers wishing to expand their distribution to cable and Direct-to-Home (DTH) services across sub-Saharan Africa.

SES Satellite Launches

Last February 15, SES successfully launched SES-4 satellite into orbit. The company's largest and most powerful satellite to date, SES-4 will provide service to Europe, the Middle East, West Africa, as well as North and South America. SES-4, a 20-kilowatt satellite based on Space Systems/Loral 1300 platform, has 52 C-band and 72 Ku-band transponders. Its C-band beams will serve the eastern hemisphere of Europe and Africa, full coverage of the Americas, and a global beam to support mobile and maritime customers. Four high-power, regional Ku-band beams will provide service to Europe, the Middle East, West Africa, as well as North and South America with extensive channel switching capability between C - and Ku-band transponders for enhanced connectivity.

SES-4 is the 50th satellite in the global SES fleet, six of which currently serve the African continent. It is set to replace the NSS-7 satellite at 338 degrees East longitude and provide replacement as well as incremental capacity at this orbital slot over the Atlantic Ocean.

More than a year ago, SES announced its plans to launch at least five additional satellites with capacity dedicated to providing services to customers in Africa in the next three years.

In March this year, SES partnered with Samsung to drive digital broadcasting via satellite in sub-Saharan Africa. Samsung will introduce an LED television with an integrated free-to-air satellite receiver, the Samsung LED TV Free Satellite that will be distributed in Nigeria, Ghana, Cote D'Ivoire, Senegal, Democratic Republic of Congo and Cameroon in August 2012.

The integrated satellite receiver will allow consumers to receive free-to-air television channels without the need for an additional set top box as the LED TV will be directly connected with the satellite dish. In preparation for the launch, SES and Samsung will jointly arrange training sessions with distribution partners and installers to ensure the proper connection of the TV device to the satellite dish. Both partners will also run a joint marketing campaign in June 2012.

SES already delivers more than 60 free-to-air channels in more than 40 African countries. The launch of the new Samsung LED TV Free Satellite coincides with more channels becoming available in Africa. Samsung said it hopes to bring more channels to more African regions in 2013, with a new satellite launch plan from SES, a major satellite operator in a number of African regions. For now, its agreement with SES will allow Samsung to provide around 30 English channels, and more than 30 French channels, to the six launch nations.

Ubiquitous Capacity, Competition

Penny Hill, marketing director of Asia Broadcast Satellite (ABS), believes there are three factors that will continue to form the digital landscape in Africa-competition, ubiquitous capacity and deregulation. She said, today's satellites can easily address two of these -- ubiquitous capacity and competition. But with over 15 well established satellite operators providing services into the continent, the satellite market within Africa will remain to be highly competitive.

"The breadth and depth of the reach of satellite services is bringing connectivity to support all types of applications to the whole of Africa," Says Hill. "While fiber is bringing a massive amount of capacity to the coastal areas and to some of the major cities, it is satellite that is truly providing ubiquitous coverage of Africa. Another aspect is reliability of service. Again, this is an area where satellite capacity shines." She adds that the availability of satellite-based capacity still far exceeds that of terrestrial/undersea fiber especially in Africa.

ABS currently provides solutions to its business partners and customers in the African market. Its ABS-3 at 3° West, an inclined orbit satellite over the Middle East and Africa, offers an affordable cost solution for companies for IP Transit. This service gives ISPs a reliable internet backbone via satellite at extremely cost effective rates and with higher availability compared to traditional Ku or Ka Band services. As part of this service, ABS also provides

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With the launch of ABS-2 satellite in the first half of next year and the tentative plan to relocate ABS-1 to 3° West, Hill says ABS will have Ku- and C-band capacity in the continent to meet the growing demands. She adds that ABS is fully committed to Africa and will continue to invest in the region. "Access to affordable and reliable capacity is key for the overall development of the African countries, benefiting businesses and consumers," said Hill.

ABS sees the changing market dynamics in Africa presenting both opportunities and challenges. Hill says the legacy intercontinental point-to-point circuits have been replaced by fiber and from a historical perspective these, circuits had represented a significant portion of what satellite customers were using satellite bandwidth to support.

"While some see this transformation as the death toll for satellite operators in Africa, we at ABS see it as an opportunity," says Hill. "As cost effective fiber delivers vast amounts of bandwidth to the edges of the continent, the "unconnected" portions of Africa are in need of capacity to support a variety of applications. What used to be intercontinental bandwidth demands has morphed into intra-continental requirements. GSM, IP backhaul, enterprise VSAT networks and video distribution applications are driving demand for satellite capacity across all parts of Africa."

Regional Operators Make Headway

Not to be ignored in all these developments is the Regional African Satellite Communication Organization (RASCOM), representing the interests of 44 African telecommunications operators. RASCOM currently operates the second Pan African telecommunication satellite, Rascom-QAF1R, which offers telecommunication services, direct TV broadcast services and Internet access in rural areas of Africa. Under an agreement with RASCOM, RascomStar-QAF (a private company registered in Mauritius) now implements RASCOM satellite project.

In March 2012, RascomStar-QAF entered into an agreement with IPX Extenso to jointly provide telephony services in low ARPI communities in Congo. Under the contract, RASCOM contracted IPX to deploy GSM mobile and fixed telephony access in 50 remote and rural areas of Congo through RascomStar-QAF VSAT terminals.

"...Access to affordable and reliable capacity is key for the overall development of the African countries, benefiting businesses and consumers..."

-Penny Hill, Marketing Director, ABS

RascomStar-QAF offers end-to-end solutions which include rural terminals (phone boxes or stand-alone BTS/MSC) connected to the operator's core network by satellite backhaul through a gateway installed in the capital. These innovative solutions, which have been developed in partnership with ViaSat and ip.access, allow operators to minimize investment costs but also recurring costs.

Following the successful launch of Nigeria's NigComSat-1R into space on December 19 last year, the communications satellite commenced full commercial service in March this year. The Nigerian Communications Satellite Limited (NigComSat) replaced the failed NigcomSat-1, which was sent into orbit in 2008. The new satellite operates in four different bands (C, Ku, Ka and L), has a minimum life-span of 15 years with payloads of seven antennae and 28 transponders, with additional 12 transponders to address redundancy.

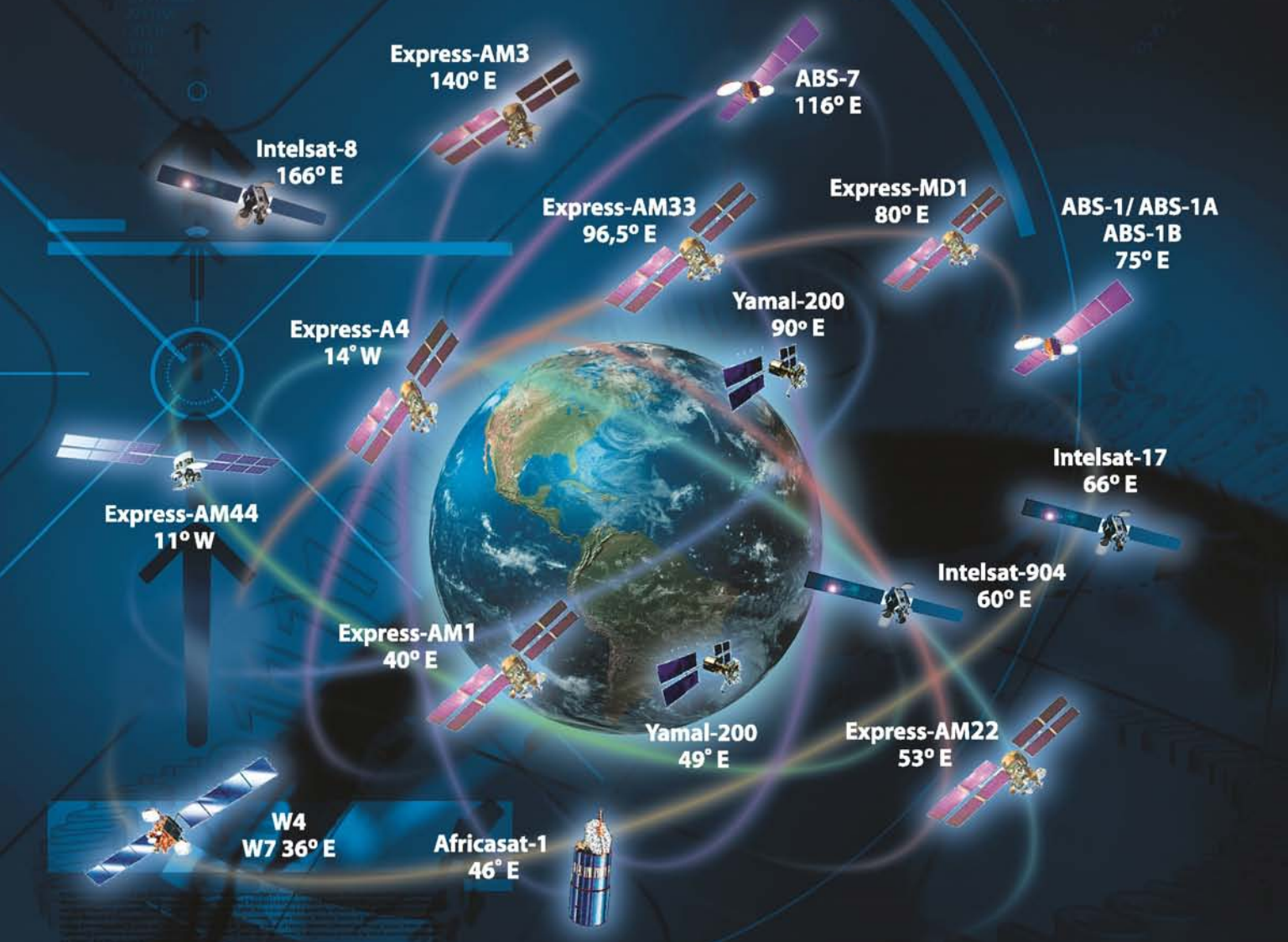
Timasaniyu Ahmed-Rufai, managing director of NigComSat, said the satellite is only the first step in the country's satellite program. "We plan to double the capacity by providing telecommunication services by commencing the development of two additional communication satellites in the next two years," he said. Nigeria's broadband access currently stands at a paltry 5% with only 28% of the population connected to the Internet. He told a forum in Lagos last month NigComSat is aiming for 40% of Nigerian households to be connected to broadband by 2015.

Several other operators are active in the African market. Last September Arabsat launched its Arabsat-5C satellite which added much needed Ka-Band capacity for the Middle East and Africa as well as C-band capacity for DTH and other applications. In December 2011, Israel-based Amos Spacom launched its Amos-5 satellite offering pan-African coverage featuring a high-powered C-Band beam and three regional Ku-Band beams for the African market.

Conclusion

All the indicators are pointing towards a vibrant market for satellite services the next few years for Africa. The only caveat is the danger of overcapcity and over regulation. However, if we leave the African region to the normal market forces it should be a good market to be

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



The Intersputnik International Organization of Space Communications was established on November 15, 1971. Today, Intersputnik has 25 member states in practically all parts of the world from Latin America to South-East Asia and from Europe to the south of the Arabian peninsula.

Intersputnik's core business is to make satellite capacity available to telecommunications operators, broadcasters and corporate customers under agreements with partner operators and to offer full-scale services via its subsidiary Intersputnik Holding, Ltd. for the purpose of installing and operating satellite telecommunications networks. Such full-scale services include access to internet backbones, uplink services, switching and digital platform services as well as supply and integration of ground equipment. The Russian satellite telecommunications operator Isatel LLC, which is part of the Intersputnik Holding, Ltd. group, offers Russian and international telecommunications operators and corporate customers the required technological platform for the establishment of satellite telecommunications networks and provision of telecommunications services based on this platform.

Currently, we are offering the capacity of telecommunications satellites located in the geostationary orbit from 11° West to 166° East. One of our key partners is Russia's domestic operator – the Russian Satellite Communications Company – that owns a fleet of up-to-date Express-series spacecraft. Also, Intersputnik is the official distributor of satellite resource belonging to the European operator Eutelsat and the resource of the Africasat-1 satellite owned by the Asian operator Measat. We provide service using the resource of the global systems such as Intelsat, SES World Skies, Telesat, have long-lasting partnership with the Asian operator «Asia Broadcast Satellite» and cooperate with other regional and domestic satellite telecommunications operators.

Intersputnik distinctive feature and main advantage is that it is an all-purpose supplier of satellite capacity and technological solutions. This is why Intersputnik's government and private customers in over 40 countries have a very wide choice of satellite resources in various systems operating on the global market and can receive all kinds of information from a single source.

Intersputnik's principal asset is its long-standing experience while the availability of its own orbit and spectrum resource guarantees its successful development. Using this resource, Intersputnik is implementing projects aimed at procuring and deploying spacecraft in its own orbital positions to provide service in the most rapidly developing regions with growing demand for satellite telecommunications services.

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Feature

(photo: Viasat-1)

HTS-Powered Consumer Broadband Services: Are They Late to the Party?

by Rajiv Hazaray

During Satellite 2012, the Society of Satellite Professionals International (SSPI) bestowed the Industry Innovators Awards on Eutelsat Communications and ViaSat Inc in recognition of the development and launch of their High Throughput Satellites (HTS), KA-SAT and ViaSat-1, respectively. High frequency reuse and multiple spot beam architecture have packed 10 times capacity on these Ka-Band satellites without any deployment cost penalties.

Eutelsat's 70 Gbps KA-SAT satellite with 82 spotbeams was put in service in May 2011. KA-SAT powers the Tooway™ broadband service to provide speeds of up to 10 Mbps down/ 4 Mbps up. It has ambitious plans to serve various European countries as well as the Mediterranean Basin. October 19th, 2011, ViaSat launched ViasSat-1, with coverage over North America and Hawaii. It made ripples with the announcement of its 12 Mbps 'Excede' service for $50/month. Hughes, is not quite far from the launch of its 100 Gbps Ka-band high-throughput satellite to be called "Jupiter.". HTS platform won another confidence vote recently. NBN Co., the Australian state-owned broadband provider, selected Space Systems/Loral (SS/L) to build two next-generation Ka-band satellites, scheduled to be launched in 2015.

The launch of HTS-powered consumer broadband service, for the very first time, has placed satellite broadband in parity with (and in a few cases, in superiority to) the terrestrial technologies in terms of cost per bit of throughput and let it augment its box of goodies beyond the sole virtue of ubiquity.

But is it too little, too late?

ViaSat pointed out during the presentation of their 2011 3rd Quarter results (see Figure 1) that HTS has moved satellite broadband up the food-chain from being a dial-up substitution to be a DSL-substitution. But, in this ever-dynamic wonderland of broadband marketplace, is this triumph a bit too little, too late, in a world where video wants to go mobile and multi-screen? Satellite broadband has definitely jumped out of the frying pan, but has is landed in a fire?

Figure-1 depicts HTS to be in the same ecosystem quadrant as Mobile 4G and 3G. AT&T and Verizon have been accumulating prime spectrum "real-estate" to dominate the supply in this quadrant. FCC has pledged to add another 500 MHz of prime spectrum to the wireless arsenal by 2020. Verizon is defending a US$ 3.6 billion deal with Time Warner Cable., Comcast, and Bright House Networks to acquire additional spectrum for rolling out its 4G network. AT&T has announced that it will serve 70 million Americans with its 4G LTE Network by end-2012.

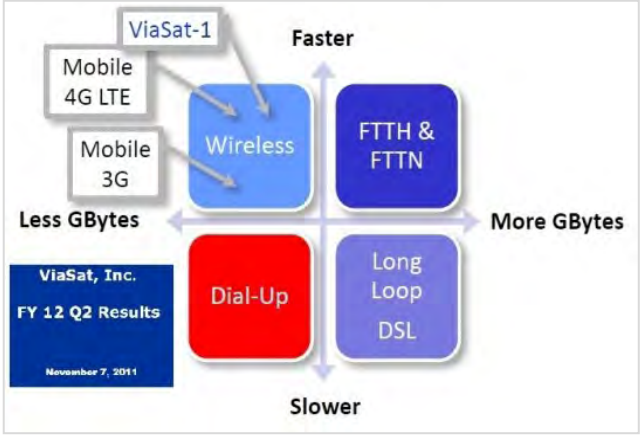


Fig. 1: ViaSat's View of the Broadband Market

In this context, the multi-billion dollar question is: will HTS-powered consumer satellite broadband withstand the com-

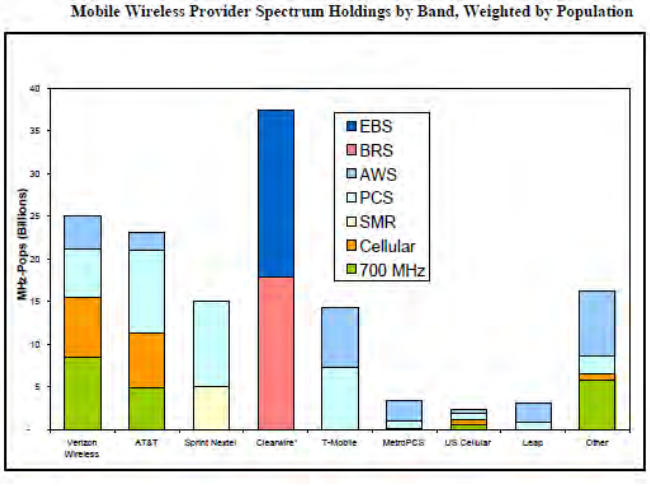


Fig. 2: FCC Analysis of Competitive Markets Conditions

petitive pressure from the new 4G wireless service and thrive?

Fortunately, there is no one answer!

4G LTE has the capacity to support a robust broadband service. However, the demographic and topographic diversity in the service areas and the limitations inherent in the terrestrial wireless technology will offer HTS-powered consumer satellite broadband enough opening to snatch a few beachheads from its competition on which it can build its future battle plan.

The visual map in Figure 4 (next page) compares the network deployment cost advantages/disadvantages of various technology platforms. Deployment costs directly impact the economic wellbeing of a network. High network deployment cost may mean a suboptimal service that may increase the churn, which in turn would not let the operator recover the CPE subsidy during average subscriber life.

Fig. 3: Impact Factors of Various Services

Impact Metrics	Legacy Satellite Broadband	HTS	4G LTE	
			Lower Frequencies	Higher Frequencies
Coverage Scaling				
Dense Urban	🟢	🟢	🟢	🟢
Suburban	🟢	🟢	🟡	🔴
Rural/Remote	🟢	🟢	🔴	🔴
Capacity Scaling				
Initial	🔴	🟢	🟢	🟢
Incremental	🔴	🟡	🟢	🟢
Terrain Impact				
Plain	🟢	🟢	🟢	🟢
Hilly	🟢	🟢	🟡	🔴
Backhaul Cost Impact				
Dense Urban	🟢	🟢	🟢	🟢
Suburban	🟢	🟢	🟢	🟡
Rural/Remote	🟢	🟢	🟡	🔴

HTS Sweet and Sore Spots

Let us take a closer look at each of the impact factors mentioned in Figure 3.

Coverage Scaling:

One doesn't need a proverbial rocket scientist to tell us about the coverage superiority of satellites over terrestrial wireless networks. Though, HTS's coverage advantage is more pronounced in spread-out service areas, this benefit varies widely. We know that for an identical QoS, the radius of the

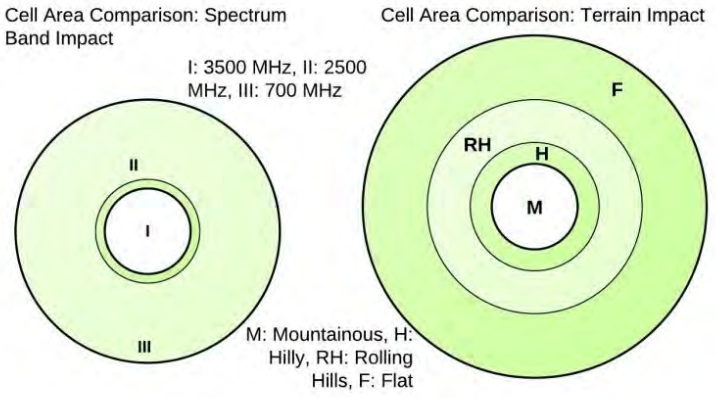


Fig. 4: Network Deployment Cost Advantages and Disadvantages of Various Technology Platforms

cell tower is inversely proportionate to the Hz rating of the wireless spectrum used (Figure 4). Thus, wireless networks using higher frequencies require many more cell stations to cover a given service area and would have a greater disadvantage compared to the ubiquitous coverage of HTS. The heavy cost of base station build-out is bound to result in considerable gaps in the 4G Wireless coverage, at least for the next few years helping HTS penetration.

Capacity Scaling:

In contrast to the coverage superiority, satellite networks have historically not fared well against the terrestrial networks on the capacity front. This disadvantage is considerably alleviated by High Throughput Satellites. Noteworthy is the meteoric drop in capacity cost since the increased capacity comes with no cost penalty. HTS still needs to follow a step function to scale if its present satellite becomes constrained.

In comparison, the capacity of a terrestrial 4G network is largely a function of the amount of spectrum controlled by the competing wireless operator possesses and the extent of frequency reuse achieved through cell build-out. A wireless operator with fewer spectrum can quickly get capacity-constrained and will need to build new cell stations to reuse the available spectrum. Of course, such build-out can get expensive, especially when cell radii are smaller. Thus, low-cost HTS throughput can neutralize some of the capacity-scaling advantages of wireless operators; particularly those using higher frequencies.

Terrain Impact:

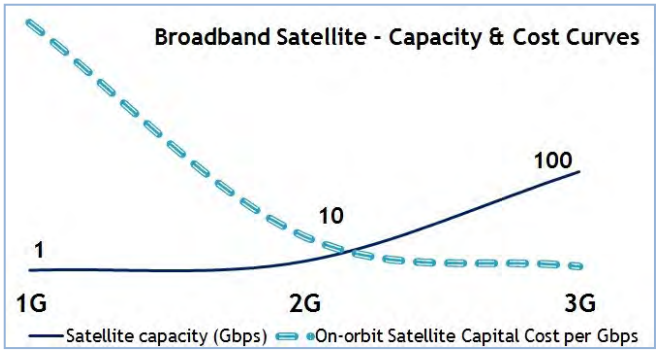
Less than half of the US is flat. Terrain has a significant impact on the network deployment cost of any terrestrial network, more so in case of a wireless network. Areas with rougher terrain require smaller cell radii since mountains and hills block wireless signals (refer back to Figure 4). Obviously, HTS may have cost superiority providing coverage in such topography since it is not impacted by terrain issues.

Backhaul Cost:

Backhaul is a crucial cost element for the terrestrial 4G networks, especially while connecting the far-flung service areas. A vast majority of the cell towers in US still depend on the traditional DS-3 connections for the backhaul, which prove very expensive at high throughput levels. On the other hand, Fiber and Microwave backhaul get expensive if the target service area is farther away. This will augment the advantage that HTS has over 4G Wireless in rural areas.

Can HTS Win?

Satellite industry had seen big wins against terrestrial networks in the television arena. Can those spectacular wins be repeated in the broadband battlefield? Will HTS lead the way?



HTS has undoubtedly achieved a quantum leap in throughput and significantly reduced the cost per bit. It has taken the battle to the competitors' safe grounds. During next few years, HTS can aim to gain foothold in a few beachheads by capitalizing on its comparative strengths discussed above. The big & prime-spectrum 4G Wireless roll-outs (AT&T and Verizon) would be sequential – beginning with dense urban areas, going out. This would leave out enough service gaps that HTS can leverage and win a good number of battles. However, for a sustainable win in the war with its 4G competition, it will need a quick and significant follow-on progression towards HTS+. Fortunately, industry leaders are already planning the next moves!

Rajiv Hazaray is the Managing Principal of Business Analytix (www.business-analytix.com), an advisory firm that has served many leading satellite, broadcast, and technology companies as well as investors in strategic analyses covering new ventures & projects, partnerships & acquisitions, public policy issues, techno-economic studies, market profiling, pricing, and valuations. He can be reached at rajiv.h@business-analytix.com.

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Products and Services Market*Place*

A guide to key products and services showcased at Satcom Africa 2012 exhibition in Johannesburg, South Africa from May 21-24, 2012.

ARABSAT
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www.arabsat.com

Arabsat has recently succeeded in transfering telecommunications network services from Arabsat-2B satellite to its new Arabsat-5C satellite at 20 degrees East which was launched successfully in September 2011.

The new satellite carries telecommunications networks for the Arab States and the African continent and private networks operating at Ka-band in addition to Direct To Home bouquets transmitted in C-band to the African continent. With more than 450 FTA TV channels, 160 radio channels, 30 HDTV channels and four Pay TV networks, Arabsat has the largest Arab community in the sky.

Amos - Spacecom
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Spacecom operates the AMOS satellite fleet, currently consisting of the **AMOS-2, AMOS-3** and **AMOS-5** satellites. **AMOS -2 and AMOS-3**, co-located at the 4°W "hot spot" orbital position, deliver a wide range of communications and broadcasting services to Europe and the Middle East. AMOS-5, located at the 17°E orbital position, offers a pan-African C-band beam, connecting Europe and the Middle East alongside three Ku-band regional beams, enabling it to be a prime carrier of African traffic in both broadcast and data services. With the launch of the **AMOS-4** and **AMOS-6** satellites, Spacecom will expand its reach to serve additional markets, including Asia and Russia, positioning the company as a genuine multi-regional satellite operator.

NEWTEC
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At Satcom Africa, Newtec will be showcasing its new product, M6100 Broadcast Satellite Modulator, our **next generation broadcast platform**. The M6100 will deliver bandwidth efficiency performance among the best on the market, and help broadcasting businesses evolve through ongoing market and technology transitions.

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O3b stands for the 'Other 3 billion', a reference to nearly half of the world's population living in markets that are not adequately served with broadband internet access or mobile phone services.

With world-class financial and operational support from investors, O3b is creating a global internet backbone to serve several billion consumers, businesses and other organizations in 177 countries. O3b became fully financed in November 2010 and Arianespace will launch the first eight satellites in the first half of 2013 with a Soyuz launcher from French Guyana.

The O3b satellite constellation will deliver on its promise to its customers by enabling them to cut down on the cost of transmission. While traffic in urban and sub-urban areas justify the transmission costs of fiber optic and microwave transport networks, the same cannot be said for rural and remote areas.

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What Media Distributors Think About

by Robert Bell

Bright lights. Big crowds. Penn & Teller, Circe de Soleil and showgirls wearing costumes that would make their grandfathers blanch. If it's April, it must be NAB in Las Vegas.

This year's NAB was interesting to me as much for what it was *not* about as for what it covered. In past shows, there has usually been a Big Idea that you could escape only by keeping both eyes closed. The last couple of years, it was 3D. Before that, it was HD. But this year, it was…all of the above. Over-the-Top, mobile TV, 3D, HD, what have you. The strong impression I developed was that nobody knows what the heck is going to happen next, which I think is a true reflection of what is going on in the media business.

That made it a good time for talking with the people who are responsible for getting media content to its final destination. As distribution becomes increasingly complicated, content owners turn to them for solutions. How does a media executive ensure that one piece of content can cost-effectively and securely reach all of the devices in all of the markets when it is hard to predict exactly what those devices and markets will be? They either need to invest unlimited funds – not likely in an industry undergoing severe financial pressure – or find partners who can help them stay ahead of the curve. Content distribution providers are those partners, who can spread the technology and infrastructure costs across enough customers to make the business case work.

For two days on the show floor, we conducted video interviews with senior executives of content distribution companies, both service providers and technology pioneers. They talked about the burning issues of the business, and how their companies were responding. They spoke about the changing priorities of their customers in the media industry, and tried to predict what we will be talking about three years from now at the 2015 NAB Show.

We spoke, among others, with Bill Tillson, COO of Encompass Digital Media, who has built a remarkable content distribution business spanning the globe. We heard from Joel Ledlow, CEO of ScheduAll, which has grown from a scheduling system into a workflow management tool underpinning production and distribution for thousands of companies. Itzik Wulkan, the founder and CEO of NovelSat, talked about the company's revolutionary compression technology. Crystal Solutions CEO Roger Franklin spoke of new advances in the battle against satellite RFI. And that is just a sample of what's available at www.youtube.com/WorldTeleport.

After watching the interviews, one thing becomes clear. The content distribution business is not about to get any simpler or any easier. But managing rising complexity as business models evolve is likely to be a good business for years to come.

View interviews with key industry executives expounding on the new multiplatform content management and distribution environment at: www.youtube.com/WorldTeleport

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

Events Calendar

May 8, 9, 10, 2012, **SPACECRAFT TECHNOLOGY EXPO 2012**, LA Convention Center, LA, California. US Toll Free: +1 877 842 6289, International Callers: +44 1306 871348, e-mail: info@spacetechexpo.com web: www.spacetechexpo.com/

May 21-24, 2012, **The 15th Annual SatCom Africa, Conference and Exhibition – co-located with The TV Show Africa, Telecoms World Africa and Submarine Networks World Africa** Johannesburg, South Africa. Tel: +27 (0)11 516 4030 E-mail: tarryn.volkwyn@terrapinn.co.za web: www.terrapinn.com/2012/satcom-africa/

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CommunicAsia Continues to Grow

CommunicAsia2012, Asia's largest telecommunications and ICT event, has seen take up from more than 200 first time exhibitors to date. Debut exhibitors such as AMOS-Spacecom, Anritsu, Calix Networks, CE+T Power, Dowslake Microsystems, Integrasco, Kavveri Telecom, Mentum, NovelSat, SLA Mobile, Smaato, Softlayer Technologies, SPB TV, Vidiator, and Yokogawa Engineering Asia, will share their expertise and launch their latest products and solutions at the show this year. The region's international ICT showcase will be held at the Marina Bay Sands in Singapore from 19-22 June 2012.

EnterpriseIT, held in conjunction with CommunicAsia, will showcase exhibitors comprising international IT systems providers and companies offering enterprise solutions ranging from cloud computing, data centre services, security and M2M software to mobility solutions and video conferencing. Notable **debut exhibitors** include AIMS, Aver Information Inc, Christie, CMC Telecommunication Services, FaceMe, IDLink Systems, LogMeIn, MobiWeb, NTT Singapore, O'Connor's, Puffersoft Labs, T.C.C. Technology, Ufida, Winmate Communication, Xyxon and many more.

"Solid numbers of first-time exhibitors who participate in CommunicAsia every year testifies to the event's continued success and relevance to the ICT industry. Companies from all over the world see the show as the destination of choice to launch their solutions and be a part of the buoyant growth in Asia. As we constantly enhance the shows, we endeavour to continuously showcase the best in technology and services in the sector while drawing quality visitors and buyers," says Mr. Victor Wong, Project Director of Communications Events, from show organizer Singapore Exhibition Services (SES).

Among the many other new entrants, Calix, a leading global provider of broadband communications access systems and software, plans to showcase their latest products.

Andy Lockhart, Senior Vice President, International Sales and Marketing at Calix, says: "This is the first time we will be participating in CommunicAsia, which will represent a significant part of our international growth plan and expansion into Asia – building on our other international achievements as we continue to expand worldwide. CommunicAsia is known as a key event in the ICT calendar in the region and provides a superb networking opportunity as well as a showcase for our innovative range of access solutions."

More than 90 % of exhibition space at CommunicAsia2012 has been booked. The show also welcomes back some of the most prestigious names in their respective fields including 3M, AsiaSat, Conax, National Instruments, Tata Communications, ThinkCube and FiberHome, who were first-time exhibitors in 2011 and are returning this year.

Mr. Amit Sinha Roy, Vice President, Marketing & Strategy, Global Enterprise Solutions, Tata Communications, says: "Asia is an important geography for Tata Communications and we have specifically chosen to base our international headquarters in Singapore for this reason. CommunicAsia offers us a unique local forum to showcase our powerful service solutions across sectors and technologies. The event resonated very well with our customers last year and cemented our faith in CommunicAsia. I have all confidence that the event will yet again offer us excellent prospects for showcasing our various global technology innovations. It will also give us valuable networking opportunities with potential customers and business partners."

For the tenth year in a row, Huawei, together with major industry players Arianespace, Comba Telecom, Comtech, Eltek Valere, Inmarsat, Intelsat, Iridium, Newtec, SES, Speedcast and Thaicom will once again return to the shows to network and connect with regular key industry peers and new business partners.

Affirming the international standing and reputation of the show, Mr. Lim Chee Siong, Chief Marketing Officer of Huawei Southern Pacific Region adds that "CommunicAsia provides exhibitors a brilliant opportunity annually, to display their innovative technologies and solutions in addition to offering visitors from around the world a platform to keep track of the latest technologies and market development trends. CommunicAsia has a long track record of success that speaks for itself and is what has made us return every year since 2002."

For more information on CommunicAsia2012, go to www.communicasia.com

MERGERS & ACQUISITIONS

EchoStar to Shut Down US STB unit

EchoStar Technologies is withdrawing from the US cable set-top box market . Instead, the company is to shift resources to support what it describes as it "unique intellectual property and advanced content-delivery technologies".

The company owns Sling Media, developer of the Slingbox device, and acquired the adaptive bit-rate technology of Move Technologies in 2011 for US$ 45 million.

EchoStar said it remained "firmly committed" to supplying advanced hardware, software, and system solutions to its global cable, satellite, and telecom customers outside of the US cable set top box market.

"EchoStar recognises that the highly demanding and competitive nature of the US set-top market is very cost-competitive," the company said. "After considerable review of the market and EchoStar's sales/product development efforts, EchoStar has concluded the US cable market offers insufficient revenue return opportunities to the company and our investors," accrding to a company statement.

Foxtel Acquires Austar

The proposed A$1.9 billion acquisition of **Austar** by **Foxtel** is not expected to encounter any opposition from the Australian Competition and Consumer Commission after accepting court-enforceable undertakings from Foxtel. Austar shareholders voted March 30 to approve the deal.

"This is a great outcome for consumers because we will now be able to create a company of scale that will deliver innovative new digital products and services, and parity for regional and city customers," said Foxtel's Chief Executive Officer, Richard Freudenstein.

"The new national Foxtel will be one of Australia's most progressive and dynamic media companies, it will directly employ 2500 people and support a subscription television sector which spends close to $600 million a year on new and original Australian content," Freudenstein added.

Foxtel currently services the major metropolitan cities and Western Australia, while Austar services rural and regional Australia. Foxtel and Austar share 50:50 ownership of the major subscription TV channels group XYZ Entertainment. When the merger is completed, Foxtel will own 100 per cent of XYZ.

EXECUTIVE MOVES

RTL Group Appoints New Chairman and Co-CEOs

Following the annual general meeting of **RTL Group**, the Group's newly composed Board of Directors has appointed **Thomas Rabe** as its new Chairman. **Guillaume de Posch** and **Anke Schäferkordt** have been appointed as new Co-CEOs of RTL Group.

Thomas Rabe, Chairman and CEO of Bertelsmann AG, succeeds Siegfried Luther whose mandate as Non-Executive Director expired after the AGM. Siegfried Luther had been a member of the RTL Group Board of Directors since 24 July 2000 and its Chairman since December 2004.

The AGM appointed the following new members to the RTL Group Board of Directors: Elmar Heggen – RTL Group CFO and Head of the Corporate Centre in Luxembourg – Guillaume de Posch and Anke Schäferkordt as Executive Directors, and Bernd Kundrun and Rolf Schmidt-Holtz as Non-Executive Directors.

DISH Appoints Moorhead Chief Marketing Officer

Pay-TV provider **DISH** announced that **James G. Moorhead** has been named senior vice president, chief marketing officer. Moorhead will be responsible for marketing, advertising, public relations and market research. He will report to DISH CEO Joe Clayton and serve on DISH's senior leadership team.

James Moorehead

For the past eleven years, Moorhead held increasingly senior marketing roles at The Procter & Gamble Company. He brings to DISH a strong brand-building background and a successful track record of leading health care and grooming brands, including Prilosec OTC, Vicks, Old Spice and Gillette.

Most recently, he led the strategy and marketing for a diverse portfolio of Gillette products. Before assuming these responsibilities, Moorhead oversaw the Old Spice brand and is credited with the brand's revival and market leadership position. For this work, Brandweek editors named him as the 2010 Grand Marketer of the Year and Advertising Age named him to the 2011 Creativity 50. His team's television commercials have received many awards, including two Cannes Grand Prix, the Grand Effie and the Emmy for Best Commercial.

International Datacasting Corp. CFO Resigns

Cory Garbolinsky has resigned as the Chief Financial Officer and Vice President of Finance of **International Data-**

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casting Corporation (IDC) to be effective on June 6, 2012.

Garbolinsky has committed to assist the IDC with the completion of its first quarter of fiscal 2013 consolidated financial statements and related filings. , according to IDC. IDC has initiated a search for a new Chief Financial Officer.

Foss Joins Encompass Digital Media

Encompass Digital Media, Inc. announced the latest addition to its executive team, **Sarah Foss**, as its Executive Vice President, Sales and Client Services. In this role, Foss will be responsible for developing and leading the company's commercial growth strategy in the U.S. to include network channel origination, central-casting, occasional-use and digital media services. Reporting to Simon Bax, Encompass' Chief Executive Officer, Foss brings a wealth of experience in sales, marketing, product development and executive management.

Sarah Foss

Foss has a background in marketing and engineering. Previous roles include serving as President and Chief Executive Officer of VCI Solutions where she was responsible for operations; sales and marketing; and product development. Prior to VCI, Foss served in various roles at Harris Corporation including Managing Director of their European subsidiary, Question d'Image. She holds a master's in management/ telecommunications from Ohio University as well as a bachelor's degree in communications. Foss will be based in New York City.

Van Fosson to Lead CVG-Avtec

Kratos Defense & Security Solutions has hired Marion Van Fosson to lead its **CVG-Avtec** subsidiary as vice president and general manager.

Van Fosson, a retired U.S. Army officer, will be responsible for managing all aspects of CVG-Avtec's operations from its facility in Chantilly, Va. CVG-Avtec provides fixed and tactically deployable solutions that support both the uplink and downlink sides of satellite communications.

Van Fosson previously served as vice president and general manager of **EMS Defense & Space** and as vice president and general manager of **BAE Systems'** Military Vehicle Systems business unit.

Jean-Louis Robin to succeed Izy Béhar as Eutelsat Director Human Resources

Eutelsat Communications announced that from 27 April, Jean-Louis Robin will assume the post of Director of Human Resources of the Group, replacing Izy Béhar who is retiring from Eutelsat after 12 years with the company. Jean-Louis Robin will also oversee the Group's IT Department, headed by Jean-Michel Pernaut.

Robin will bring to Eutelsat extensive experience in human resource management in international groups, including almost 10 years at TDF where he was Group Secretary General and Human Resources Director, five years in subsidiaries and divisions of France Telecom and four years at Coca Cola Enterprise. He began his career in the energy sector, at Framatome (today Areva).

Robin is a French national and a graduate of IEP (Institut d'Etudes Politiques) of Paris.

Priestley Joins Thomson Broadcast as VP of Sales and Marketing

Thomson Broadcast has appointed **Perry Priestley** as vice president of sales and marketing. Reporting directly to Richard E. Fiore Jr., Perry will be responsible for the development and direction of the company's sales and marketing approach in North American. In addition, he will drive the strategy execution of all of the Thomson core technologies and new product initiatives in the American broadcast market.

Perry Priestly

Priestly has worked in the professional broadcast industry in technical and commercial positions for more than 25 years. Most recently, Perry worked for Linear Industries as vice president of sales, and iBiquity Digital Radio as director of International development.

Prior to his employment at iBiquity, he worked for Thales Broadcast & Multimedia as a director of sales and previously held positions with Marconi, Varian, and Philips. As a broadcast engineer with Philips, Perry was responsible for the design and implementation of television and radio transmitter installations. His activities with both Thales and iBiquity Digital included the marketing and broadcast standards promotion of digital radio and television.

Go to
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Global Space Industry Grew 12.2% in 2011

Washington, D.C., April 5, 2012-- The global space economy grew to US$ 289.77 billion in 2011, reflecting a surprisingly robust single-year expansion of 12.2 percent and five-year growth of 41 percent in a global economy that has been suppressed in many other sectors, according to the Space Report 2012 published by the Space Foundation.

The US$ 289.77 billion total comprises worldwide commercial revenues and government budgets compiled from original research and a wide variety of public and private sources and analyzed by Space Foundation researchers.

"The Space Foundation believes strongly that space is good business, with vast social and economic benefit," said Space Foundation Chief Executive Officer Elliot Pulham. "These data, demonstrating vigorous year-over-year growth in products, services and economic activity -- proves it."

Commercial Growth Once Again Fuels Increases

The primary growth engine was, once again, in the commercial segments of the global space economy. Space infrastructure and support industries increased nearly 22 percent and space products and services grew almost 9 percent. The biggest growth continued to be driven by global consumer demand for two space-derived products and services: GPS devices and chipsets and direct-to-home (DTH) television.

Commercial space companies' stocks also out-performed the marketplace in 2011. As of December 2011, the Space Foundation Index, which is reported continuously on the Space Foundation website and analyzed in The Space Report, was 17.39 percent above its value at inception in June 2005. All three of the Space Foundation Indexes outperformed the S&P 500 and the NASDAQ during 2011.

Government Spending Varied Dramatically

According to The Space Report, overall governmental space spending grew by 6 percent globally, although changes varied significantly from country to country. India, Russia and Brazil each increased government space spending by more than 20 percent, while other nations, including the United States and Japan, saw very little change from previous years.

"Sadly," said Pulham, "these data reflect a continuation of the trend that sees the U.S. losing ground compared to other spacefaring nations, including both established and emerging space powers."

Key Findings

The 164-page Space Report contains worldwide space facts and figures and is illustrated with photographs, charts and graphs. Both the PDF and CD-ROM include hyperlinks to the companies, organizations, reports and references mentioned in the text.

The book is divided into five sections: Space Products and Services, the Space Economy, Space Infrastructure, Workforce and Education and an Outlook for the future. Within those chapters are myriad examples of the benefits of space exploration and utilization, the challenges facing the space sector, the opportunities for future growth and the major factors that shape the industry. In addition, The Space Report includes an overview of each sector, easy-to-understand definitions and up-to-date information on space infrastructure, facilities, launches and programs.

Following are just some of the many interesting facts and analyses found in The Space Report 2012: The Authoritative Guide to Global Space Activity:

- In 2011, there were 84 launches, 14 percent more than the previous year; Russia led with 31, China had 19 and the U.S. had 18, marking the first time that Chinese launches exceeded those of the United States; the U.S. led in launch vehicle diversity, with eight types of orbital rockets launched throughout the year

- At the end of 2011, there were an estimated 994 active satellites in orbit around the Earth

- Among the top 25 fixed satellite services operators by revenue, only one is based in the U.S.

- The U.S. space workforce declined for the fourth year in a row, dropping 3 percent from 259,996 in 2009 to 252,315 in 2010 (the most recent year for which data is available); this was the second-lowest employment level recorded during

1 in 5 US Households have a TV Connected to the Internet

Scottsdale, Ariz., April 27, 2012--At least 21% of US households (approximately 27 million) have either an Internet-ready TV, game console, standalone Blu-ray player, and/or smart set-top box connected to their home network. Of these four device categories, the game console is the most used device, reaching over 80% of these connected TV households, followed by Internet TVs (27%), standalone Blu-ray players (24%), and smart set-top boxes (13%).

"Game consoles got an early lead in the connectivity space when Microsoft's Xbox 360 launched in late 2005. Multiplayer gaming, along with the attention devoted to features outside of gaming from all three key console manufacturers, Microsoft and Sony in particular, have helped catapult the game console to the top of the connected CE space," says senior analyst Michael Inouye.

In total, nearly half of US households have at least one current generation game console, while almost 16% has an Internet-ready TV, a base similar for standalone Blu-ray players (smart set-top boxes comes in at under 5%). Considering the aforementioned connect rates, it is clear that a relatively large number of consumers have not connected some of these devices to the network, most notably Internet-ready TVs. Looking out to 2017, the penetration rates are expected to exceed 60% for game consoles, TVs, and Blu-ray players, and while not all of these devices will be connected, there is certainly room for growth, as only 48.5% of consumers with a home network currently have one of these devices connected to the Internet.

Inouye adds, "As CE manufacturers increase the value proposition by adding new services and features to these connected devices, the connect rate will certainly climb. This in turn will lead to an increased amount of time spent on these devices, but currently ABI Research does not anticipate a significant shift away from traditional pay-TV services, although it is possible these devices will contribute to limiting pay-TV's growth potential."

ABI Research's new report, "**Connected Home Devices Market Data**," provides information on market forecast data for DVD players, DVD recorders, Blu-ray players and recorders, standalone PVRs, game consoles, and more. Additionally, ABI Research's "**Digital Lifestyle Market Data**," presents an overview of the select connected CE penetration rates.

ABI Research provides in-depth analysis and quantitative forecasting of trends in global connectivity and other emerging technologies. From offices in North America, Europe and Asia, ABI Research's worldwide team of experts advises thousands of decision makers through 40+ research and advisory services. Est. 1990. For more information visit www.abiresearch.com, or call +1.516.624.2500 .

the previous ten years; conversely, both Europe and Japan saw increases in their space workforces

- The U.S. military space workforce rose to 16,739 in 2011, a 6 percent increase from 2009; the Air Force space workforce grew 8 percent, while the Navy space workforce declined 5 percent

- Average annual space industry salaries were 15 percent more than the average salary for the ten science, technology, engineering and mathematics careers that employ the largest number of people in the U.S.; in 2010, the average space industry salary was US$ 96,706, more than double the average U.S. private-sector salary; the states with the highest salaries were, in order, Colorado, Maryland, Massachusetts, California and Virginia

- More than 70 percent of the NASA workforce is between 40 and 60 years old, with less than 12 percent under age 35, compared to the overall U.S. workforce, where less than 45 percent is between 40 and 60

- The need for aerospace engineers, astronomers and atmospheric scientists is expected to grow in the coming years
- 34 percent of U.S. fourth-graders and 30 percent of eighth-graders performed at or above the proficient level in science in 2009; 40 percent of fourth-graders and 35 percent of eighth-graders scored at proficient or higher levels in math in 2011, an improvement over past years

Outlook is Positive

According to The Space Report, the global outlook for the future is largely positive. As governments around the world evaluate budgets devoted to space programs and make difficult investment decisions, a host of public-private, private-private and international partnerships are emerging among spacefaring nations large and small.

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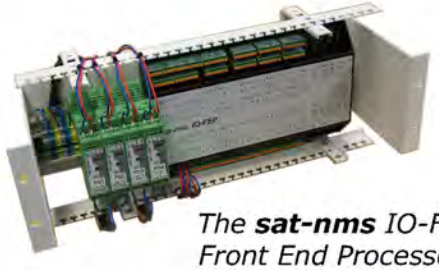

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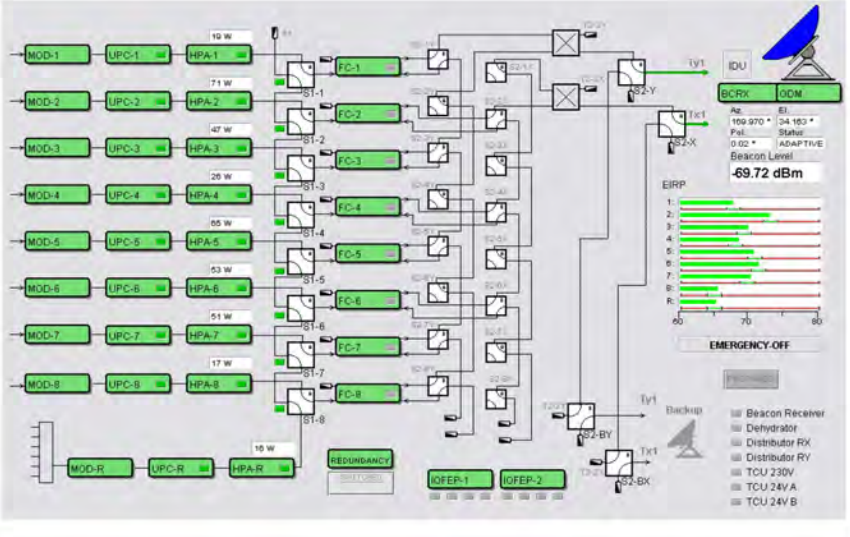

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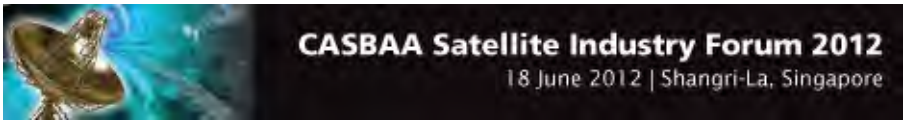
CASBAA Satellite Industry Forum to Highlight Trends and Opportunities in the Asia-Pacific Satellite Market



Optimism is high in Asia. With increased digital deployments, multichannel-TV will create more demand for satellite services across the region.

But do the needs of Asian broadcasters differ from the rest of the world? Where are the opportunities? Are there potential roadblocks?

Leading satellite industry experts will answer these questions and discuss industry issues at the CASBAA Satellite Industry Forum 2012 to be held on June 18 on the eve of CommunicAsia in Singapore.

CASBAA's Satellite Industry Forum gathers together top level executives from the world's leading satellite companies and associated industries. Hear from the best in the business as they share their expertise and insights through informative keynote sessions and panel discussions.

What is the competition? Are requirements changing? What are the key trends and opportunities in the Asia-Pacific satellite market? These are some of the questions that the Forum aims to answer.

Senior satellite executives will come together to decipher the complex Asian satellite business. Among the speakers include:

- **Michel Rosen**, CEO, **Eutelsat**
- **Tom Choi**, CEO, **ABS**
- **Cheng Guangren**, Executive Director & President, **APT Satellite**
- **Bill Wade**, President & CEO, **AsiaSat**
- **Andrew Jordan**, President & CEO, **GE-Satellite**
- **Paul Brown-Kenyon**, CEO, **Measat**
- **Adrian Ballintine**, CEO & Board Member, **NewSat**
- **Osamu Inoue**, Senior EVP & Director of the Board, **SKY Perfect JSAT**
- **Terry Bleakley**, Regional VP, Asia-Pacific Sales, **Intelsat**
- **Andrew Taylor**, CEO, **Pactel International**
- **Barry Matsumori**, SVP, Sales & Business Development, **SpaceX**

Speakers will be presenting at several panel sessions that focus on specific markets as well as important issues in the Asia-Pacific satellite market. Among the session include: "China, Indonesia and Vietnam – The Great Upside"; "Deconstructing WRC – Implications of the World Radio Conference 2012 for the Asian satellite sector"; "The DTH Edge"; and "Flying High - India Satellite Services", among others.

The session on India will focus on the government mandate to digitize India's fragmented cable TV network which is projected to provide a boost for the economy, increase consumer choice, competition, revenues for all stakeholders and investment. Digitization is inevitable, but what are the consequences, especially as pressure on limited spectrum increases and the licensing procedure remains cumbersome?

The panel on China, Indonesia and Vietnam, with a combined population of 1.7 billion consumers and forecast GDP growth of at least 8% for 2012, will put a spotlight on these important markets.

For more information contact: Kenneth Wong at phone +852 3929 1714 or e-mail: kenneth@casbaa.com Or go to: www.casbaa.com

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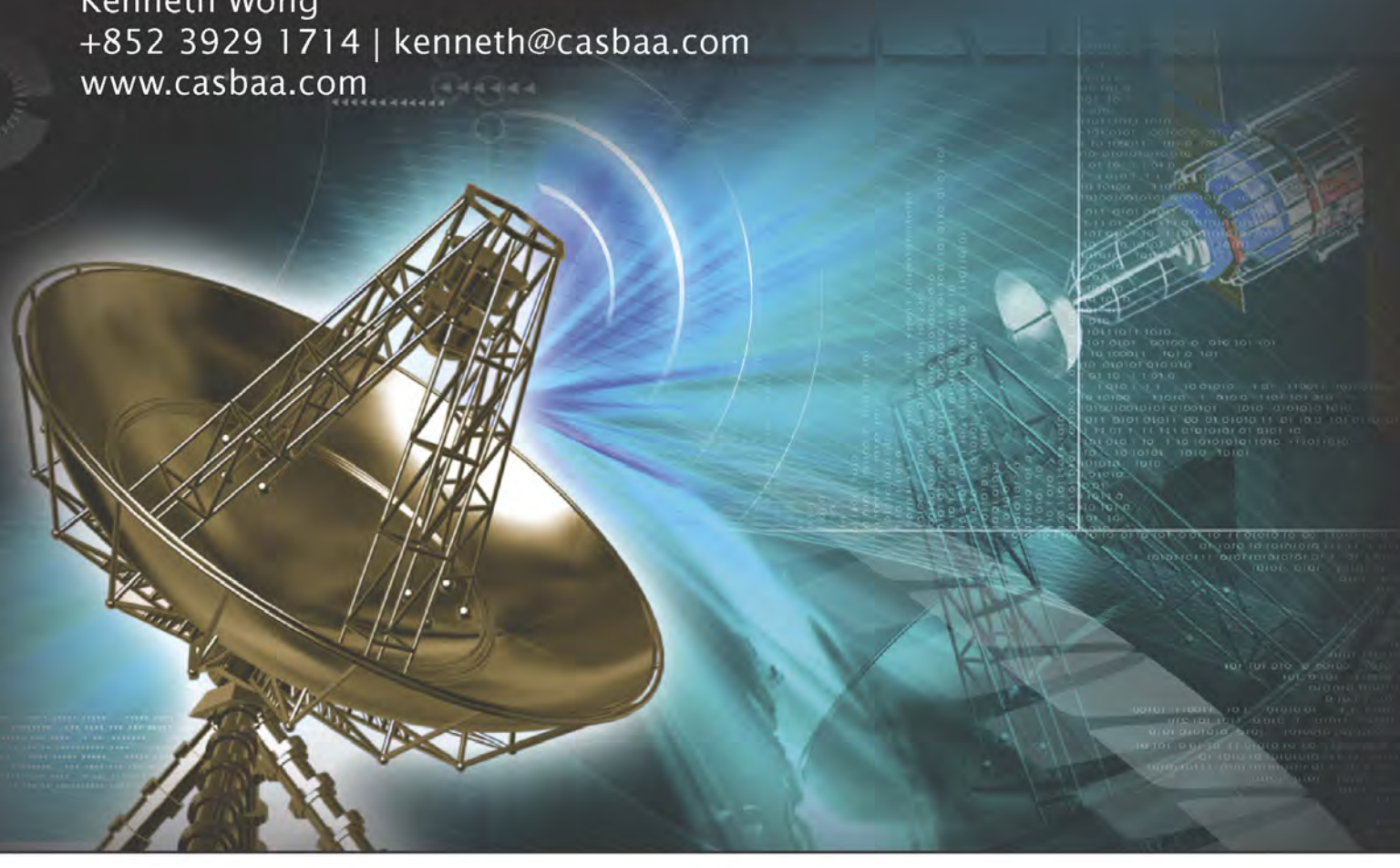

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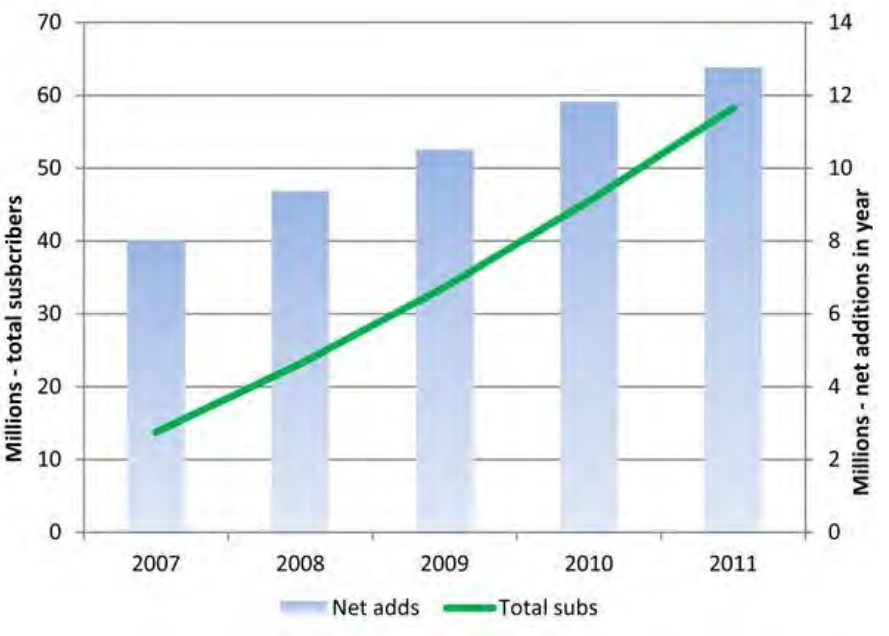
Vital Statistics IPTV Subscribers Up in a Competitive Market

According to broadband analyst firm Point Topic, global IPTV subscriptions closed in on 60 million at the end of 2011, with the last yearly quarter witnessing the biggest three month increase in subscribers yet.

"The year end is often the strong quarter but in combination with the global recovery in consumer spending and the will and technical ability to deliver a service, IPTV is really starting to find the sweet spot," comments Oliver Johnson, CEO of Point Topic.

IPTV as a service is very important to operators. It is the 'stickiest' of residential services and is a necessity for most ISPs. It also offers the best opportunity, at the moment, of increasing revenue.



Global IPTV subscribers and net adds – Q4 2007 to Q4 2011

Source: Point Topic.

ADVERTISERS' INDEX

The Satellite Markets 25 Index™

Company Name	Symbol	Price (Apr. 30)	% Change from Last Month	52-wk Range			% change from 52-wk High
Satellite Operators							
ASIA SATELLITE	1135.HK	22.10	16.32%	14.00	22.25	↓	0.67%
EUTELSAT COMM.	ETL.PA	26.89	-3.0%	26.01	31.63	↓	14.99%
APT SATELLITE	1045.HK	2.27	2.25%	0.95	3.02	↓	24.83%
INMARSAT	ISAT.L	439.80	-4.45%	287.50	630.00	↓	30.19%
SES GLOBAL FDR	SES.F	18.09	-2.16%	15.70	19.46	↓	7.01%
Satellite and Component Manufacturers							
Boeing Company (The) Common Stock	BA	76.29	2.58%	56.01	80.65	↓	5.40%
COM DEV INTL	CDV.TO	2.50	21.95%	1.55	2.88	↓	13.19%
Lockheed Martin Corporation Com	LMT	90.52	0.73%	66.36	92.24	↓	1.82%
Loral Space and Communications,	LORL	62.07	-22.02%	45.65	82.48	↓	24.75%
Orbital Sciences Corporation Co	ORB	12.52	-4.79%	11.80	19.23	↓	34.89%
Ground Equipment Manufacturers							
C-Com Satellite Systems Inc.	CMI.V	0.75	0.00%	0.39	0.90	↓	16.67%
Comtech Telecommunications Corp	CMTL	31.17	-4.33%	23.51	35.65	↓	12.57%
Harris Corporation Common Stock	HRS	45.40	0.71%	32.68	53.39	↓	14.98%
Honeywell International Inc. Co	HON	60.43	-1.02%	41.22	62.28	↓	2.97%
ViaSat, Inc.	VSAT	48.10	-0.23%	31.18	49.80	↓	3.41%
Satellite Service Providers							
Gilat Satellite Networks Ltd.	GILT	4.11	1.73%	3.04	5.25	↓	21.71%
Globecomm Systems Inc.	GCOM	14.30	-1.24%	10.63	16.43	↓	12.96%
INTL DATACASTING J	IDC.TO	0.2650	15.22%	0.21	0.45	↓	41.11%
ORBCOMM Inc.	ORBC	3.28	-14.81%	1.98	3.95	↓	16.96%
RRSat Global Communications Net	RRST	5.66	34.76%	3.50	7.75	↓	26.97%
Consumer Satellite Services							
BRITISH SKY ADS	BSYBY.PK	44.24	2.22%	-	-		N/A%
DIRECTV	DTV	49.16	-0.36%	39.82	53.40	↓	7.96%
DISH Network Corporation	DISH	32.08	-2.58%	20.89	35.64	↓	9.98%
Globalstar, Inc.	GSAT	0.5595	-20.07%	0.35	1.30	↓	56.96%
Sirius XM Radio Inc.	SIRI	2.26	-2.16%	1.27	2.44	↓	7.79%

INDEX	Index Value (Apr. 30)	% Change from Last Month	% Change Jan. 03, 2012
Satellite Markets 25 Index™	1,094.81	-3.10%	5.06%
S & P 500	1,395.21	-0.94%	8.93%

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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