

Glass Gains Ground: Fiber in Ground Systems

by Dan Freyer

The demand from satellite service providers for ever more reliable, higher quality RF signals has not diminished. New services, from high bandwidth HD video to wideband signals transmitted using the latest in modulation technologies, can challenge satellite links to their signal threshold limits. In this environment, every opportunity to improve signal quality counts, including the use of RF over fiber within the ground station. Whether a facility is looking to reduce loss in coax runs, make long cable runs possible at a gateway earth station, or to replace obsolete 70 MHz IF links at a teleport, fiber optic inter-facility links (IFLs) can bring important benefits to operators.

Ground System Glassware

Fiber optic link systems are widely employed today within fixed satellite systems (FSS) such as broadcast and cable earth stations, VSATs, teleports, and SNGs, as well as in mobile satellite systems (MSS), for example aboard ships and aircraft.

Fiber optic connections between satellite antenna up-converters and control room modems overcome problems inherent in copper based solutions, including electrical interference, path length and electrical safety isolation.

A typical RF-over-fiber system consists of an optical transmitter and receiver linked by optical fiber.

Fiber IFLs are used for both uplinking and downlinking most common satcom frequency ranges, including transmission of downconverted C, Ku, Ka, or X-band signals, and directly transmitting L-band signals or IF frequency (70/140 MHz) signals. L-band outputs can eliminate the need for extra IF conversion, and also multiple coax cable runs.

Over a dozen industry suppliers play in the RF over fiber, or "RF over glass" (RFOG) field. Among the names in the satellite sector focused on these products are, DEV Systemtechnik, Foxcom, ViaLite, SatService GmbH, and Emcore, Evertz and Finisar, to name a few.



RF over fiber can provide some vital benefits to ground stations. (image courtesy of DEV America)

Initially, fiber optic IFLs were seen mainly as a means to provide acceptable performance over long cable runs, where coaxial cable creates high losses and has unequal attenuation across the band. Today, fiber optic IFLs are seen as a way to provide maximum bandwidth, performance, reliability, monitoring and control, say industry participants.

Performance: Going the Distance

Fiber link technology is improving, and increasing the distances that can be connected between L-band

Continued on page 4

What's Inside

From the Editor.....3

Broadband for the Bush
by E. Tweedie.....8

Competition in Satellite Services
by Robert Bell.....10

Executive Spotlight: Interview with Vince Waterson.....13

Products/Services MarketPlace.....22

Industry Briefs.....28

Market Briefs.....30

Events Calendar ...14



Satcom in Oil and Gas E&P.....16

Update on the Latin American Market
by B.H. Schneiderman32

Vital Statistics.....39

Stock Index.....40

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Industry Consolidation



It's that time of the year again and most of the industry will be heading this month to the annual must-attend industry event, Satellite 2012 in Washington, D.C. Judging from the financial reports of the last quarter and full-year results for 2011 by the major satellite companies, there is much to be optimistic about the prospects of the global satellite industry in the near-term (to read summaries and highlights of various company financial reports go to www.satellitemarkets.com).

Inevitably, when times are relatively good, there will always be moves to consolidate the industry as companies take advantage of opportunities to strengthen their market positions through strategic acquisitions. There are at least two satellite operators that have announced that they are seeking buyers of their assets—Greek operator HellasSat and the Malaysian operator Measat. There are several others who have not formally announced that they are for sale but are “keeping their options open.” Some companies that were reportedly for sale last year have put their plans on hold. That includes Canadian operator Telesat and satellite manufacturer Space Systems/Loral.

There's much to follow in this ever changing industry. We try to keep you abreast of all these developments by providing you with concise, actionable intelligence and analysis through our website, this magazine and our market research reports. We appreciate your continued patronage. And if you have any comments or suggestions, we'd love to hear from you.



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Fiber in Ground Systems... From page 1

and IF/70 MHz RF-over-fiber transmitters and receivers without adding line amplifiers and repeater devices.

For example, “In the past twelve months, Foxcom broke its own record in Asia by transmitting L-band and 70MHz IF signals at a distance of 110km without amplifiers or repeaters along the way,” says Allen Wald, Director of Sales & Marketing for Foxcom, a manufacturer of satellite RF to fiber systems.

In other quarters, a new optical transmitter from DEV Systemtechnik is a significant breakthrough for the industry, according to the Germany-headquartered company, a leading manufacturer of RF over fiber and coax transmission gear in the satellite and cable market.

With a dynamic range of up to 85 dB, and noise figure of less than 10 dB, it can deliver a link gain of up to 40 dB. “The optical transmitter card from DEV with a noise figure of less than 10 dB, is the first of its kind to that specification on the market today,” says Jörg Schmidt, DEV’s Managing Director & CEO. “DEV’s performance cut the noise figure in half, in other words, performing twice as well as the noise figure specification typically found elsewhere. So you do not have to attenuate or amplify the signal — for fiber runs as long as 170 km. In addition, you save on equipment. Your signals arrive safely and reliably using fewer devices, and easier-to-use devices with optimized functionality,” he adds.

Technical and Cost Advantages of RF over Fiber

Players in this space point to a number of advantages in using fiber optic links in satellite ground stations. Low transmission losses over long distances is one. Unlike coax, which exhibits significant losses for runs exceeding 300 feet, fiber runs can safely deliver quality signals for tens of kilometers, and increasingly distances beyond that, with additional amplification. Fiber dis-

**From Dish to Rack and Back**

DEV America (www.dev-america.com) is the U.S. arm of Germany-based DEV Systemtechnik GmbH & Co. KG, (www.dev-systemtechnik.com) which develops and produces a complete range of leading-edge, high-performance products and systems for the optical and electrical transmission of Radio Frequency (RF) signals via coaxial cable or fiber for satellite, cable, and broadcast television headends.

DEV products include distribution amplifiers, splitters and combiners, switching systems, distributing matrices, routing products, multiplexers, and fiber-optic RF signal transmission systems.

DEV Systemtechnik has made big inroads at some of the world’s largest satellite broadcast facilities.

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Solutions range from very high capacity rack-mounted systems such as the DEV 7113 Intelligent Optribution® Chassis with its extensive optical and RF transmission features, to the rugged Outdoor DEV 7152 Intelligent Optribution® Outdoor Chassis, with its sophisticated redundancy options and signal conversion directly at the antenna.



plays no frequency dependent losses in the L-band as with coax. Further, “For a run length of more than 80 meters, the cost of fiber cable is comparable to that of very low loss premium coax cable,” says DEV Systemtechnik’s Jörg Schmidt.

“For typical coax runs, you are talking a lot of dBs of loss before you get to your modem or your downconverter, whereas with using fiber, there is virtually no loss, be it a 300 foot run or half mile run,” explains Don Lehrmann, President of Melbourne, FL-based Digi-sat International, an equipment distributor and integrator that has successfully engineered and integrated dozens of Fiber IFL systems throughout the world using equipment from a variety of manufacturers. “The improvement is spectacular.”

No Cable Leakage and Interference Immunity

Fiber is neither influenced by interference nor a source of it. This translates to “no hum” or noise in the communications band. A huge amount of noise can be generated in an earth station. “Coax is a radiator. It picks up noise,” explains Digi-sat International’s Lehrmann. “Most people don’t realize that most earth stations generate a lot of noise, from local oscillators, and AC power, etc. We have seen an increase of Eb/No of 3-4 dB at earth stations where we employ fiber typically,” he says, explaining how customers experience a huge improvement in signal quality by replacing coax with RF signal transmission over fiber.

Huge Operating Expense Savings

The cost-savings that can come with replacing a coaxial cable inter-facility link with a fiber optic link can be dramatic. Lehrmann, gives the example of one large antenna uplink facility, which has been able to significantly reduce its uplink HPAs (high power amplifiers) and therefore cut its utility bill by US\$ 50,000 per month. “Often what happens is this: if you can remove 3 to 6 dB of line losses by replacing coax with loss-

less fiber, you can downsize your HPA transmitters and save a tremendous amount of electric power in the long term,” he explains. “By going to our fiber IFL system, our customer saved almost 9 dB of power on an uplink, allowing them to go from 3 kW klystrons amplifiers to 1 kW SSPAs running at only 15 to 20 watts. They reduced their utility bill from US\$64,000 a month to US\$ 14,000 a month.”

Security: fiber also offers significantly higher security against illegal interception. When compared to copper cables, this can be an advantage for military and governmental applications.

Electrical Isolation: There are many circumstances where electrical isolation from a high voltage area is essential in protecting valuable electronic equipment. A fiber optic IFL link provides a simple and effective isolation solution. A fiber cable better isolates indoor equipment from satellite antennas feeds during a lightning storm than coaxial cable, with its copper core.

Space savings: The pitch for fiber goes beyond signal capacity and quality. Optical waveguides require significantly less installation space in cable ducts than coax, and can be installed without the cable trays found in coax-wired facilities.

This can be a major benefit in installations. It has been estimated that the space, air conditioning and cabling costs to have one rack of equipment is approximately US \$25,000 in a typical cable headend – excluding the equipment to be racked. The cost can run even higher in a broadcast satellite center. So any savings in rack space and power is valuable.

In addition, the huge bandwidth capac-



The sat-nms LFRX Optical Receiver and sat-nms LFTX Optical Transmitter together form a high performance optical link for analog multi-carrier RF transportation on fibre optical media. They are available as stand alone modules, integrated in 2RU 19" drawers, but are also designed to allow N:1 redundant L-band optical links.

(image courtesy of SatService)

ity of fiber provides room to grow traffic in the future.

An Evolving Market, Improvements and Innovations

“RF over fiber technology is widely embraced by satellite and broadcast operators, so it is less a case of convincing serious operators about the benefits of deploying fiber IFLs,” says Foxcom’s Wald. “We are seeing more and more cases of new uplink facilities deploying fiber links from day one, regardless of the distance between their antennas and control room.”

Copper and Glass – The Migration Path

Despite all of fiber’s advantages over coax, one manufacturer of fiber optic ground segment gear estimates that fiber links are implemented in only about twenty-five percent (25%) of installations, even in new installations. Many operators understand the advantages of fiber for new installations, but need to maintain existing on air systems using coax, and have an existing infrastructure that must be supported over coax.

“Now or in the near future, 80 to 90 percent of all satellite communications and CATV operators will have to deal with signal distribution systems using copper lines as well as glass fiber cables as transmission media in parallel” says Joerg Schmidt of DEV Systemtechnik. To offer a seamless migration and expansion path for the infrastructure be-



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tween antenna and racks via fiber or coax, DEV developed its OPTRIBUTION® approach to integrated RF-over-fiber and coax, based on the company's RF expertise.

Packing More in Less Rack Space

Satellite installations are also looking for solutions that require less equipment, use less rack space and power, have simple operation, and offer full web and SNMP control and monitoring. As a result, leading manufacturers are delivering more integration, allowing for smaller set-ups of higher functionality and less rack space at the user's premises. A case in point is DEV's Optical Signal Transmission System, the DEV 7113, which now accommodates up to 20 twin modules in a 3 RU chassis to receive the signals of ten instead of four satellite antennas in one single unit. New L-Band transmitter and receiver modules are now available in 4 instead of 5 width units, so the Optical Signal and Distribution System DEV 7114 now can hold up to 16 receiver modules, in a 4 RU enclosure.

Bigger Systems

Another trend is that large-scale multi-site equipment installs have now reached widespread adoption in many leading satellite operators ground stations. "We are seeing movement to bigger systems with many optical links for individual antennas at the same location," says Michael Ulbricht, SatService GmbH, in Germany, which offers its *sat-nms* LFRXTX line L-Band and 50 to 2200 MHz optical fiber link product.

For its part, DEV Systemtechnik has been successful delivering large-scale fiber systems to major satellite headends, such as those of SES Astra and others. With the introduction of its Optribution® line, DEV added RF distribution and switching capability to the optical transmission in one compact chassis. With Optribution®, the function density and signal performance is stepped up to a new higher level. Systems like this can easily handle the entire transponder frequency plans of multiple satellites in a single box.

"...Satellite installations are also looking for solutions that require less equipment, use less rack space and power, have simple operation..."

Taking it Outside – More Weatherproof Outdoor Units (ODU)

Manufacturers also report healthy demand from customers for outdoor IFL units that integrate with the antenna mount. This includes systems for VSAT installations as well as large earth stations. Weatherproof outdoor enclosures for these Outdoor Units (ODU) allow the RF to fiber conversion equipment to be mounted close to, antennas, and even inside protective radomes for shipboard applications, so losses to the satellite signal are minimized. In the past two years DEV, Foxcom, and SatService GmbH have introduced new Outdoor Unit fiber link products, for example. "The number of outdoor units is growing, but indoor solutions still comprise the majority of the requirements," says SatService's Ulbricht.

Built-in Flavors of Redundancy

Another market trend, says Ulbricht, is more N:1 and 1:1 redundancy switching directly integrated in the fiber links chassis so that the customers no longer need external switches and controllers.

Fiber to the Antenna Control Unit (ACU)

In addition to transmitting signals between the antenna and baseband equipment, fiber links are being used increasingly for "out-of-band" control networking such as connecting Antenna Control Units (ACUs) with indoor control systems. The fiber optic link connects a steerable or motorized antenna system with its control system

computer.

"We have been doing a lot of antenna upgrades where we are using fiber IFLs for the antenna control units (ACUs)," says Digisat International's Don Lehrmann. "Fiber is easy install. This is not the case anymore using coax. Many new ACUs are USB-based and use Internet connectivity and Internet monitoring and control. By going to fiber, you have that ability with a single link for Monitor and Control. To perform these monitoring and control functions before fiber, you had 50-pin connectors, requiring additional cables, conversions, and computer gear."

Looking Ahead

With all the benefits that fiber connections can bring to satellite earth stations, it is not surprising that manufacturers report continued healthy demand for new products in this area.

Leading RF-over-fiber manufacturers are delivering more powerful, compact, and affordable solutions for technology migrations and upgrades. The resulting improvements in signal quality can unleash new options for improving other sub-systems in the earth station chain – including power downsizing and streamlining – which can deliver big financial savings.

In an environment where many teleports, satellite and headend facilities face challenging operating expenses, service providers may find it very rewarding to look again at how scenarios for upgrading coax plant to fiber can improve their businesses.



Dan Freyer is the Founder of **AdWavez Marketing**, a marketing firm serving the satellite industry. He is the author of *Liftoff: Careers in Satellite, the World's First and Most Successful Space Industry* (SSPI 2010), among numerous other publications and articles, and has helped top satellite manufacturers, operators, service providers, and equipment suppliers develop their businesses for over 20 years. He can be reached at dan@adwavez.com



Broadband for the Bush

by Elisabeth Tweedie



After more than four years of discussion, debate and deliberation in February of this year the Australian government's NBN Co. Ltd. signed a contract for two Ka-Band satellites to deliver broadband to the three percent of Australian households and enterprises that are located out of the reach of fiber and terrestrial wireless. This was a landmark decision both for Australia and for the satellite industry as a whole as it marks the first time that a government has so wholeheartedly endorsed satellite as a means of providing broadband connectivity; something that last year

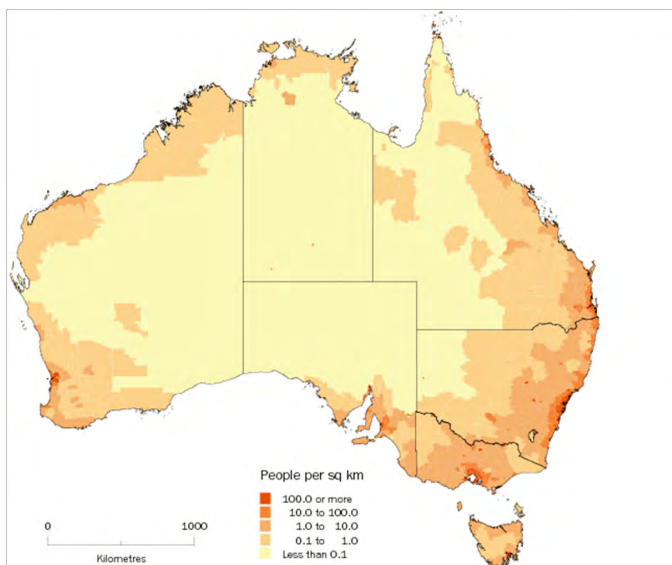
the UN in its Broadband Challenge declared to be a "human right".

Australia occupies a landmass roughly 82% of the size of the United States, but has less than nine million households, most of which are grouped together in small clusters on tiny parts of the coastal area, an ideal scenario for satellite.

NBN Co Ltd. is wholly owned by the Australian government and was established in 2009 with a charter to build and operate a national broadband network. In its corporate plan it has stated that 13 million premises will be served by 2021. It will operate the network on a wholesale basis selling capacity to retail service providers on a non-discriminatory basis. 93% of homes and premises are to be connected by fiber which will provide speeds of up to 1Gbps down and 400Mbps up. 4% will be connected via terrestrial wireless and the remaining three percent by satellite. Wireless and satellite will deliver 12Mbps down and 1Mbps up. The total cost for the network is expected to be in the region of A\$ 36 Billion. Last year Ericsson was awarded a contract worth around A\$ 1.1 Billion to design, build and operate a LTE network.

The satellite contract went to Space Systems/Loral (SS/L) and is reported to be worth over US\$ 600 million. This is for two 70Gbps Ka-band satellites to be launched within six months of each other in 2015. Loral will also provide TT&C for the first five years and in-orbit support for the life of the satellites.

As would be expected with a government project of this magnitude the satellite contract has attracted a lot of criticism with much of it coming from the opposition party. The main criticism has been that this capacity is in excess of what



Australia occupies a landmass roughly 82% of the size of the United States, but has less than nine million households, most of which are grouped together in small clusters on tiny parts of the coastal area, an ideal scenario for satellite.

Source : Australian Bureau of Statistics.

is required “the Rolls Royce solution” and the needs of rural Australians could be best served by leasing capacity on existing satellites. An interesting argument given that NBN has stated that it is already leasing as much capacity as it can get (from Optus and iPSat) but can only provide a 6Mbps service to 50,000 end users. It would seem to me that a more relevant question would be why would rural users be content with 12Mbps when their urban cousins will have the option for a much faster service?

The answer of course being that they may well not be! This however bodes well for satellites. The two satellites are required to deliver “initial peak speeds” of 12/1Mbps. The Eutelsat satellite, KA-SAT, also a 70Gbps satellite, was reputedly designed to deliver 10Mbps down and this is the standard speed offered, however official presentations from Eutelsat have talked about delivering 50Mbps down and 20Mbps up. There is no reason to assume that the satellites from SS/L will be any less capable. It just means that as demand for higher bandwidth materializes, the number of users that can be served decreases, if the demand for bandwidth gets so high that the satellites are maxed out then the obvious solution would be another satellite. However given the relatively small number of potential users this isn’t likely to happen in the near future.

Unfortunately no discussion of High Throughput Satellites (HTS) and SS/L can fail to omit a mention the lawsuit filed by ViaSat against the company. SS/L and ViaSat are two highly reputable and well-regarded companies in the satellite industry. It is hard to imagine that SS/L, a company that employs some of the finest engineers in the business, would have knowingly infringed ViaSat’s intellectual property or violated WildBlue’s patents. It’s equally hard to imagine that ViaSat would have filed a frivolous lawsuit.

If this goes to court (at the time of writing the companies were in discussions) and ViaSat does succeed in proving that its technology was used by Loral on other High Throughput Satellites, then SS/L could, as ViaSat has requested, be unable to use that technology in the future. Unless of course ViaSat decides to license it, which – if this technology is as fundamental to HTS as ViaSat claim – would effectively put ViaSat in control of the broadband world for satellites. Now that could be a very interesting outcome.

Michael Targoff, CEO of SS/L’s parent company Loral Space and Communications, has been quoted in an interview with Space News that “They (ViaSat) appear to believe that they have invented the wheel with respect to high-throughput broadband satellites. We think the wheel has been around for some time”.

Indeed it wouldn’t be the first time in history that great minds have thought alike. Geoffrey Whittle and Hans von Ohain are both credited with inventing the jet engine; Richard Trevithick and Oliver Evans are independently recog-



Artist rendition of the two high throughput satellites to be built by Space Systems Loral (SS/L) for the Australian National Broadband Network. (image courtesy of SS/L).

nized for inventing the high-pressure steam engine. So it is perfectly feasible that both ViaSat and Loral engineers came

up with technology that would significantly improve the throughput of Ka-Band satellites. For the sake of those 500,000 or so Australians outside of the reach of wireless or fiber and for the industry as a whole it is to be hoped that this dispute is settled quickly.



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The Right Kind of Competition in Satellite Services

by Robert Bell

There are those still working today who can remember where there was no competition in the satellite business, when it was completely dominated by treaty organizations or state-owned companies beholden to national governments and bound by monopoly regulations. There are still wide swathes of the planet where monopoly conditions rule but the international market now contains a multitude of companies large and small, operating in space and on the ground, who compete fiercely for government, media, telecommunications, maritime and other business.

Competition is not a simple thing. In most markets, the lines separating customer, vendor and competitor are less clear than one might expect. Satellite communications are no exception. Teleport operators and satellite operators are natural partners, both in the business of opening new markets and taking risks on new capacity. They offer the customer complementary strengths on the ground and in the sky.

Most important, they need each other. No satellite operator can afford to have ground segment in all the places it needs,

equipped with state-of-the-art equipment and interconnected with the globe's major fiber routes. No satellite operator can specialize in all the complex value-added services and systems integration required by the different customer groups that satellite serves. And no satellite operator can deploy skilled sales, technical and operations professionals to sell and service business around the world.

For teleport operators, satellite capacity is the essential service. While they all interconnect terrestrially via fiber, microwave and even broadband wireless, 100% of teleport operators are customers for satellite capacity. It is also their biggest single expense. In a research for the World Teleport Association's (WTA) [2011 Top Operator Rankings](#), we asked respondents to share in confidence information on gross revenues and annual spending on satellite capacity. Respondents spent an average of 47% of revenue on satellite capacity, from a low of 14% of revenues to a high of 79%.

For all of the ties binding them together, however, satellite and teleport operators often have competing interests and engage in direct competition for value-added services. The long-term health of the relationship depends on being flexi-

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ble and staying mindful of the need for cooperation as well as competition.

That is why, in March, WTA will publish its second annual [Satellite Operator Benchmarks report](#). In January and February, we conducted interviews with over 80 teleport executives around the world and received 170 ratings of the commercial and operational practices of the major satellite operators who serve them. We are doing this to inform teleport operators about how their peers view the major satellite operators and to provide objective feedback to those operators from an important customer group. By objectively tracking, rating and comparing performance, as experienced by a major buyer segment, we are trying to keep this vital relationship healthy and strong, and drive self-improvement across the industry.

Benchmarks looks at everything from the quality of sales staff to customer communications, pricing consistency and the degree and fairness of competition with teleport operators for value-added business. We look at operational availability, the handling of interference and of outages, both planned and unplanned. If it affects the business success of a teleport operator, we ask about it and share the results with our readers.

When the first edition of *Benchmarks* was published last year, we were pleased and grateful to have the satellite operators take the results seriously and spending time with us to dig deeper and understand the implications. This year's

research shows some of the result: measurable improvement in commercial practices that received criticism twelve months ago. That is precisely the kind of outcome we are seeking.

Competition between teleport operators and satellite operators for the same business remains an issue. Satellite operators are vendors to teleports. But when they choose to compete directly for the same business, their control of the orbital asset gives them the power to offer prices no teleport operator can match. Whether that closes the deal is a different matter, but it is a powerful advantage.

There is no single right answer to competitive policy. Competition is far too complex a thing for that. But if *Satellite Operator Benchmarks* contributes to better understanding of the issues across the industry, we will have done the job we set out to do.

Satellite Operator Benchmarks 2011 and 2012 are available free to members of the World Teleport Association and for sale to non-members at www.worldteleport.org.



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Interview with Vince Waterson

Vince Waterson, President of **Asia Pacific Teleport** has worked for over 30 years telecommunications industry in Asia, Europe and North America. Vince founded VideoKall Inc while maintaining his role as VP of Business Development at Hawaii Pacific Teleport (HPT) a provider of satellite Internet services to the Asia Pacific region. Prior to joining HPT, Vince was VP of Business Development at Subic Bay Satellite Systems Inc, (SBSSI) satellite teleport in the Subic Bay Freeport Zone, Philippines. There he initiated the first large scale satellite internet service in the Asia-Pacific region in 1997 launched on Asiasat2 satellite. While at SBSSI he designed and operated a satellite delivered Electronic Program Guide (EPG) system for cable TV head-ends in the Asia-Pacific region operating on Thaicom3 satellite.



Vince Waterson

In 1988 he designed FAXCAST the world's first commercial group3 facsimile broadcast system delivered over satellite, terrestrial television and cable television networks. We caught with Vince recently on his newest venture Polverter which is planning to launch a new product at Satellite 2012. The following are excerpts of the interview:

Tell us about your new venture?

Polverter Inc. is a startup company that will launch at the Satellite 2012 show a new product called "Polverter" that will enable circular polarized VSAT antennas to operate efficiently with linear polarized satellite transponders. This product was developed by Dr Donald Chang who earned his Ph.D. at Stanford University and later became a chief technologist in the satellite engineering serving a major aerospace company for more than 20 years. He is the CEO of Spatial Digital Systems (SDS).

Other members of the Polverter team include Dave Sturgess who started his career with IBM in Europe and is now Chief Design Engineer at a UK R&D company C21 Systems. The company has recently completed a contract to design a high speed signal processing system which is now installed on British submarines.

How are you able to make circular polarized VSAT antennas to communicate with linear polarized satellite transponders?

We are able to do it from just one location at a linear polarized VSAT hub or teleport with no adjustments required at the circular polarity remote VSAT terminals in the network. Traditionally a teleport which needed to work with a legacy network of circular feed VSAT antennas moving from a circular polarized satellite to a linear satellite would need to have all the end users change their feeds from circular to linear. The cost of purchasing replacement feeds, shipping them to the end users and hiring competent satellite equipment installers to change the feeds is not only a very costly operation but it is also very time consuming.

Polverter changes all that. In a matter of minutes a Polverter transceiver can be installed in the transmit and receive RF chains at L-band of 70Mhz/140Mhz IF and immediately the remote sites are able to transmit circular polarized signals to a linear polarized satellite without any loss of performance. The remote VSAT terminals will amazingly be able to receive the linear polarized signals and decide them without any signal loss.

So how can this be possible? Surely the signal transmitted from a circular polarized VSAT terminal will illuminate both the vertical and horizontal transponders on the linear polarity satellite?

Yes it does. We are not defying the laws of physics. But that means that one carrier is now occupying double the bandwidth needed if it is working with a circular polarized satellite. Well one carrier would but the Polverter system has an interesting trick up its sleeve. The system requires two carriers to be uplinked from each VSAT terminal. Both carriers from the circular VSAT terminal appear in the vertical transponder and the horizontal transponder of the satellite. When those two signals reach the Polverter at the teleport the two signals on each polarity transponder can be reconstituted back with one signal on each polarity by the time signal reaches the modems at the teleport.

On the reverse path the teleport uplinks two signals on each of the horizontal and linear polarities however at the receiving VSAT terminal each signal will appear on a different circular polarity (ie RHCP and LHCP).

At the teleport there is also installed a receive only circular polarity antenna which receives the same signal as is received at the remote VSAT terminals. This signal is also fed

to the Polverter. The Polverter samples the signals from both the local feedback circular antenna and the signals received from the VSAT terminals on the linear transmit/receive antenna at the teleport. It does this sampling 50,000 times per second using custom high speed analysis circuitry programmed with WaveFront Multiplexing technology. (US patent pending and U.S. patented by SDS^{1,2}) Wavefront Multiplexing is one of those technologies which after it's been explained to the average satellite engineer he will probably need to sit down in a dark room for a couple of hours to let his brain cool down.

What about the cost, something that does all that might be very expensive?

You'll be surprised how cost-effective this product is, check us out at the Satellite 2012 show in Washington D.C. to get more details.

NOTES

¹U.S. Pub. App. No. 2012026937; "Accessing LP Transponders with CP Terminals via Wavefront Multiplexing Techniques," filed 06/29/2011 by Spatial Digital Systems.

²U S Patent No.: 8,111,646; "Communication System for Dynamically Combining Power from a plurality of Propagation channels in order to Improve Power Levels of Transmitted Signals without Affecting Receiver and Propagation Segments," issued on 02/07/2012 to Spatial Digital Systems.

Events Calendar

March 12-15, **SATELLITE 2012**, Walter E. Washington Convention Center, Washington, D.C.
Contact: phone +1-301-354-2100
e-mail: register@SATELLITE2012.com
web: www.satellite2012.com

2012 NAB Show® Conferences: April 14 – 19, 2012, Exhibits: April 16 – 19, 2012, Las Vegas Convention Center, Las Vegas, Nevada, USA
e-mail: info@nab.org, web: www.nabshow.com

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@spacetecheexpo.com
web: www.spacetecheexpo.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/

AMOS-5 WAS SUCCESSFULLY LAUNCHED



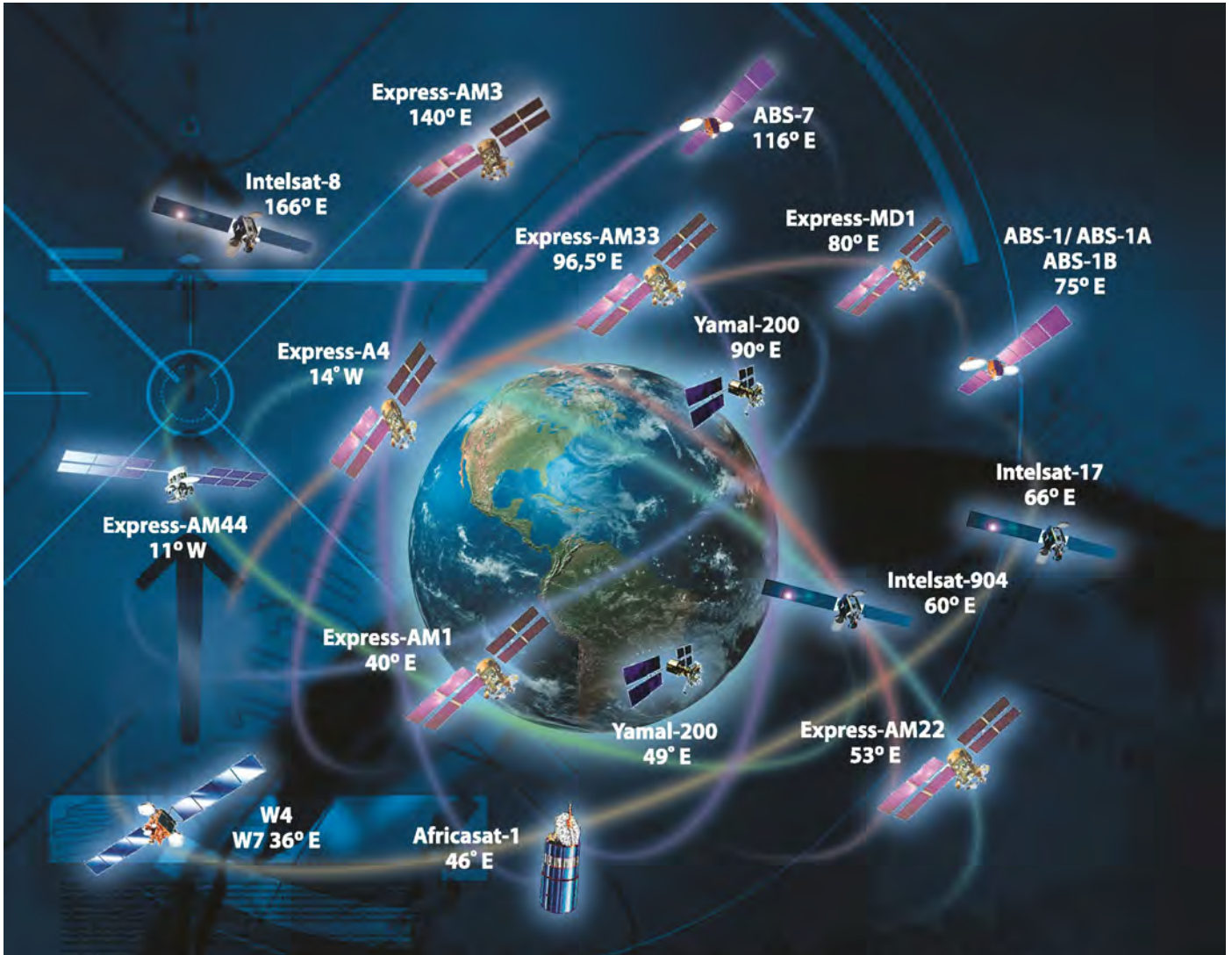
The AMOS-5 satellite, successfully launched to the 17°E orbital location, provides a full range of satcom services with high-power Pan-African C-band and Ku-band beams.

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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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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www.intersputnik.com

SatComs in Oil & Gas E&P: The Broadband Connection in Emergent Exploration and Mature Production

by Martin Jarrold

Oil & Gas Communications Brazil 2012: '21st Century Digital Oilfield & Gasfield Imperatives Onshore, Offshore, and in Deepwater' (O&GC Brazil 2012) brings the GVF & EMP Oil & Gas Communications Series to its 14th international event on 25th & 26th April in Rio de Janeiro. Just three weeks later the 15th conference in the Series, **Oil & Gas Communications Europe 2012: 'Digital Applications & Communications Dynamics in the Mature & Emergent Northern Fields'** (O&GCE5), takes place in Aberdeen, over 16th & 17th May.

Series conference # 15 will certainly be a major milestone in the development of the GVF conference-related focus on this key end-user vertical market, and the Series continues to go from strength-to-strength, not only through the continuing support from both the communications solution provider community and the end-user sector, but also through its expansion into new geographies in the global oil and gas patch.

The 2012 Rio de Janeiro event will only be the second dedicated to satellite communications in Brazil's exploration and production (E&P) environment, whereas the Aberdeen conference will be the fifth to focus on Europe's oil and gas fields. But, even within this longer-standing European focus the geographical emphasis has shifted from the North Sea only to incorporate the hydrocarbon potential of the Arctic latitudes.

Why Rio?

The largest oil-production region in Brazil is, in fact, within the boundaries of Rio de Janeiro state. It contains about 80 percent of the country's total production, with most crude production being

offshore in very deep water and consisting of mostly heavier grades of crude. Additionally a large proportion of Brazil's natural gas production occurs from offshore fields in the Campos Basin in Rio de Janeiro state, with a significant volume of onshore production occurs in Amazonas and Bahia states.

Discoveries in Brazil's offshore subsalt have the potential to significantly increase oil production in the country, as well as to boost Brazil's total natural gas reserves by 50 percent, and it has been estimated that spending on investments in further oil and natural gas exploration and production in Brazil could exceed



US\$75 billion by the end of this year. Exploration and production (E&P) projects in the Tupi Field in Santos Basin are forecast to yield up to 8 billion barrels of recoverable reserves (oil and natural gas volumes combined), but are located in a subsalt zone that is an average of 5.5km below the surface of the ocean. Numerous other subsalt discoveries have resulted in analyst estimates of some 56 billion barrels of oil equivalent.

The difficulty of access to these reserves, resulting from both the large depths and the pressures involved with subsalt oil production, mean that there are many technical hurdles that must be overcome, requiring major new infra-

structure and associated communications networking capabilities.

Such key current – and other – emerging issues on the regional E&P communications and applications networking agenda will be prioritized at **O&GC Brazil 2012** together with other topic areas arising from the international energy environment and the wider global economy which, respectively feature a high oil price and persistent stagnation. Following this continuing rationale for a Brazil-oriented oil & gas communications event – which will build on the successes of the first Rio de Janeiro conference in 2011 – **O&GC Brazil 2012** will deliver an information and communications technology (ICT) oriented dialogue at the crucial interface of an elevated demand for solutions by the energy vertical and the supply of those solutions from the communications industry.

The Rio de Janeiro list of applications and connectivity imperatives to be discussed will include ICT aspects of: safety systems provision on oil & gas installations at sea; and, the implications for E&P ICT in the Brazilian region of the oil & gas patch arising from deep-water drilling moratoria in other hydrocarbon extraction ocean regions. Other key theme additions will include the enhanced application of satellite-based security provisions related to the use of "Cloud"-based data traffic networking.

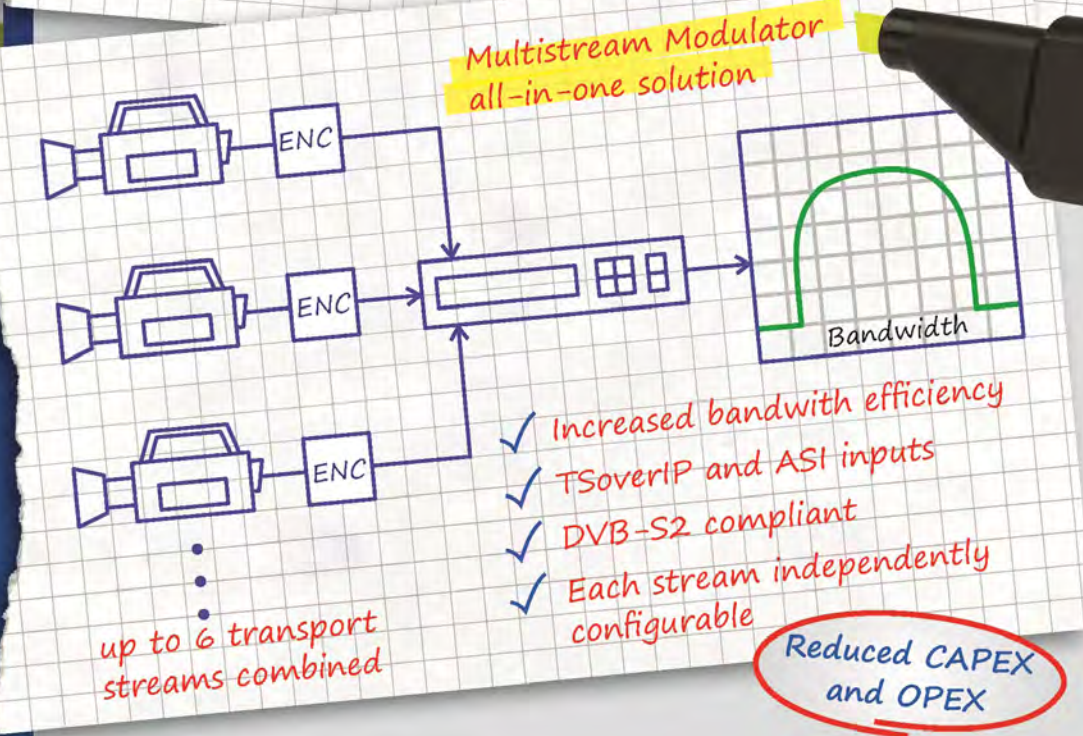
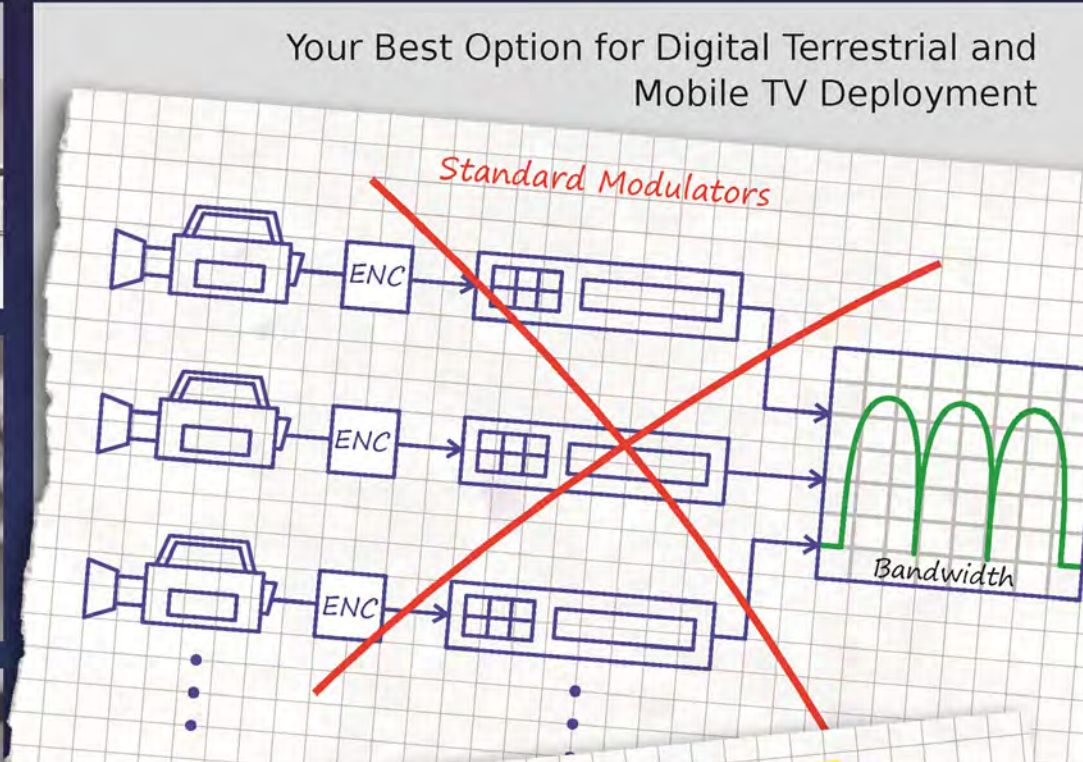
Over two days of discussion, and in addition to the above themes, **O&GC Brazil 2012** will examine the full range of satellite-based communications, and integrated satellite-terrestrial hybrid communications solutions, to which the oil & gas industry turns to play a vital role in providing the essential connectivity and access to vital applications.

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Mission critical operational success in the upstream E&P environment is dependent on access to the most efficient ICTs, and to the wealth of sophisticated applications these technologies bring to the disposal of the teams of geologists, geophysicists, drilling engineers, seismic data analysts, etc., etc., who locate new oil & gas reserves and get them out of the ground and from beneath the ocean floor through the collection of massive amounts of disparate data in multiple formats (including GPS, acoustic, compass and other sensor data) and using the information for predictive analysis. Widely spread and remotely located experts can see data as it is collected in real time and can determine the size and potential value of a payload before any actual drilling begins, a capability that can significantly reduce the amount of time and other resources wasted on drilling sites that don't have a strong yield potential. In Brazil exploration for new hydrocarbon reserves has moved increasingly to dangerous, difficult (and otherwise very expensive) environments, where the extreme physical conditions of a hostile climate and multiple geographic/topographic obstacles are as equally challenging as the investment imperatives that must be faced in the remote deployment of drilling equipment. The 2012 Aberdeen conference again takes a leap into new hydrocarbon geographies and the latest communications

technologies.

The program for this latest event dedicated to the European "oil & gas patch" – which will examine the role of satellite, and satellite-wireless, technologies and services in continuing to bring mission critical operational success to the maturing oil & gas fields of the North Sea – will push into a deeper exploration of the communications imperatives and the delivery of networking solutions for the extreme northerly boundary of Europe's new hydrocarbon exploration & production (E&P) opportunity.

To these ends, the conference will bring together key leaders and experts from

the oil & gas sector as well as the communications *and* commercial applications sectors, creating a high-level discussion forum, and providing extended networking opportunities for demand (end-user) and supply (vendor) expert practitioners.

Further program information for both events can be located at www.uk-emp.co.uk and from links on the GVF website at www.gvf.org.



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

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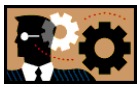
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■ A guide to key products and services showcased at SATELLITE 2012 exhibition in Washington, D.C. from March 12-14, 2012.

Advantech Wireless

Booth no. 1231

www.advantechwireless.com

Advantech Wireless, a Canada-based manufacturer of satellite, RF and microwave equipment is showcasing the newest generation, lowest cost, most fully functional and software upgradeable VSAT solution in the market, the Discovery Hub. Guests can learn, see and touch the new Hub at the Satellite 2012 show at Booth # 1231. The Discovery Hub which has received substantial market response includes powerful standard features and easy software selectable upgrades to enable customers to increase capacity with their demand thereby minimizing CAPEX and OPEX with the ability to upgrade in an instant. Advantech Wireless will also present details of its world leading, state-of-the-art Solid State Power Amplifiers featuring GaN technology – the smallest, lightest, highest power amplifiers available today, at the best price.



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ATCi enhances its customers' opportunity for profit by providing custom global satellite communications systems and services. The company is committed to delivering innovative technologies to meet the emerging needs of cable television, corporations, government, educational institutions and small- and medium-sized enterprises. ATCi is headquartered in Chandler, Arizona with operating sales offices in North America and China.

For over 20 years, ATCi has been the world leader in multi-beam technology and the ATCi proprietary Simulsat multi-beam has been providing programming to over 30 million cable subscribers in the U.S. market and abroad.

For further information on ATCi products and services, please call +1-480-844-8501.

Amos - Spacecom

Booth no. 667

www.amos-spacecom.com



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.

AVCOM of Virginia

Booth no. 354

www.avcomofva.com



AVCOM is an industry leader of affordable test equipment within the satellite communications industry. For over 25 years we have produced rugged, easy to use products that have become the standard for companies small and large.

At the Satellite show, AVCOM of Virginia will be highlighting its new SBS-2 Single Board, an upgrade of its very successful AVCOM SBS Single Board Spectrum Analyzer. The SBS-2 comes with more features in an even smaller, more compact form factor than it's predecessor.

AvL Technologies

Booth no. 445

www.avltech.com



AvL Technologies designs and manufactures mobile, motorized antenna systems and positioners featuring high performance carbon fibre reflectors, auto-acquisition controllers, and the unique AvL cable drive system. Ideal for small aperture antennae, it boasts zero backlash, high stiffness, light weight ruggedness, reliability, and cost effectiveness. AvL has designed and developed SNG antennae for

1.0M,1.2M, 1.4M,1.6M, 2.0M and 2.4M apertures and a diverse product line of rugged motorized FlyAway packages, many available in back-pack configurations, some as small as to meet airline requirements for cabin baggage. AvL, now recognized as the leading producer of SNG antenna systems in the USA and fast becoming known worldwide, developed the first motorized, auto-acquisition Mobile VSAT antenna system designed specifically for IP broadcast. AvL has over fifteen thousand high-quality antennae for C-band, X,-band, Ku-band, DBS-band, and Ka-band in service throughout the world for SNG, military, emergency communications, disaster management, mobile medicine, and other speciality applications.

AvL is now offering three-year warranties on its 2012 mobile VSAT antennas.

Cobham Tracstar
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Cobham TracStar Land Systems is an international provider of mobile satellite communications technology to Government (military and civil), Commercial Media, Energy and Mining, and Enterprise markets. We have a comprehensive offering of products and services including Comm-on-the-Move, Comm-on-the-Pause, and Man-Packable antenna systems delivering video, data and voice connectivity worldwide.



Tracstar LVT 750P8 Terminal

The TracStar LVT Series of Manual Backpack Terminals provides a heavy duty, ruggedized, self-contained mobile system designed for easy portability and field-swappable Ku-, Ka- and X-band operations. Pictured here is the LVT 750P8, with an 8-segment carbon fiber reflector and tripod. BUCs, LNBs, and manual pointing tools for smartphones are also available.

For more information, contact Cobham at +1 (407) 650-9054 or sales@tracstar.net.

Comtech Xicom Technology
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Comtech Xicom Technology, Inc. continues to be the world's leading SATCOM power amplifier supplier, offering the broadest product line in the industry. For more than 20 years, our focus on customers, innovation and quality has created a tremendous breadth of products and established a company with a reputation for excellence.

Comtech Xicom is introducing a new line of compact, high efficiency, TWTAs that yield 400W performance in a 200W package and 750W performance in a 400W package. The XTD-400KHE high power amplifier is in a compact, rugged package weighing only 32 pounds. Drawing only 860W at 185W of linear RF output power, the amplifier is ideal for transportable applications where high efficiency, light weight, and high ambient temperature operation are required. The XTD-750HE consumes only 1450 Watts at 400W of linear output power and is an ideal upgrade for existing 400W systems.



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DEV America offers a complete range of leading-edge, high-performance products and systems for the optical and electrical transmission of RF signals via coaxial cable or fiber for satellite, cable, and broadcast television head ends.

From Dish to Rack and Back, DEV products include: distribution amplifiers; splitters and combiners; switching systems; distributing matrices; routing products; multiplexers and fiber-optic RF signal transmission systems

All products are built to meet the highest standards of system availability, reliability and controllability.

Benefits from integrated RF and fiber optic transport through DEV's OPTRIBUTION® approach to signal distribution infrastructure in satellite facilities and CATV head-ends include improved signal quality and reliability, reduced rack space, power, and heat consumption. Easier and simpler M&C requirements help satellite headends, teleports, and uplink facilities save on costs and overhead.

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Among the features and options available with the DEV

L-Band Distribution Systems that make them a favorite choice for satellite ground stations are: easy control and adjustment of variable gain, RF thresholds as well as LNB-bias current via SNMP or Web browser interface, hot-pluggable and upgradeable amplifiers, and multiple independent power supplies.

DEV's new CFP (Core Function Products) series of RF Switches, Combiners and Splitters, signal routing and distribute RF signals in earth stations and head ends offer up to **70% cost savings** by streamlining devices down to core features.

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Booth no. 567

www.globecommsystems.com

Globecom's 1m/1.2m LT (Lightweight) Auto-Explorer Multimedia Transportable Satellite Communications Terminals provide high-bandwidth, cost-effective two-way communications designed to meet the demands of military units, governmental agencies, corporations, and other organizations to extend the reach of their networks to remote locations where traditional telecommunications infrastructure is either inadequate or non-existent. Applications include voice, fax, data, video, Internet and LAN-to-LAN connections.

Options include:

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- Outdoor Modem Configuration
- Eliminate L-Band Cabling
- Supports Select iDirect, HNS
- Indoor Rack Mount Configuration
- Supports any L-band Modem
- Baseband Enclaves (SIPR, NIPR)



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Whether the need is remote communications, live videoconferencing, surveillance or reconnaissance, this lightweight solution can be deployed in a matter of minutes.

GE Satellite

Booth no. 775

www.gesatellite.com



GE Satellite is the only US based operator to provide international fixed satellite services. Leveraging the GE-23 satellite, we deliver superior service, exceptional media and data capacity, and flexible coverage for our clients in a wide variety of sectors across the entire Pacific region.

O3B Networks

Booth no. 300

www.o3bnetworks.com



O3b Networks Ltd is building a next generation network that combines the reach of satellite with the speed of fiber. O3b's groundbreaking services will enable emerging market telcos and ISPs to make the internet a truly global and universal experience.

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.

Walton De-Ice

Booth no. 745

www.de-ice.com



Walton De-Ice designs and manufactures the broadest line of equipment available for preventing the accumulation of snow and/or ice on satellite earth station antennas.

Walton De-ice offers several options for heating including, gas heaters with their economical operation advantages or the low maintenance Stainless Steel Electric Heaters.

At Satellite 2012, Walton De-ice will be providing demos of its Ice Quake System configured to conform to military requirements.

The Ice Quake system (U.S. patent pending) enhances the reliability of de-ice and snowshield systems by a factor of 100 percent.



See us at Satellite 2012
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for a Demo

Never let sun, rain, ice or snow disrupt your vital communications



De-Ice System

The original de-icing system includes a behind the antenna plenum (enclosure) which is heated with hot air from either liquid propane, natural gas or electric heating units. These systems are for antennas ranging in size from 5.0-meter to 32-meters in diameter. This is the original de-icing system originated over 30 years ago.



Ice Quake System

The Ice Quake system (U.S. patent pending) enhances the reliability of the Snow Shield systems by a factor of 100 percent. The Ice Quake System also acts as a Rain Shield to prevent water from sheeting on the antenna reflective surface causing rain fade on a Ku or Ka band antenna.



Snow Shield Cover

The Snow Shield Cover is designed for antennas in size from 0.6 meters to 6.3-meters in diameter. The Snow Shield consists of PTFE coated GORTEX® material, which is virtually invisible to RF, stretched over the satellite antenna. The Snow Shield can be used as a passive, Ice Quake, or heat system that can be added for a higher level of protection.

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Wavestream
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Wavestream sets the standard in the design and manufacture of next generation high power solid state amplifiers. Wavestream's family of C-, Ku-, Ka- and X-band Solid State Power Amplifiers (SSPA) and Block Upconverters (BUC) provide systems integrators with field-proven, high performance, high reliability solutions designed for mission-critical satellite communications systems worldwide.

By leveraging Wavestream's Spatial advantEdge™ technology across all our product platforms, we are able to consistently deliver indoor and outdoor amplifiers with greater reliability and efficiency, in smaller, lighter product packages. For integrators and operators, this translates into reduced energy and maintenance costs over the lifecycle of the system.

Wavestream has shipped thousands of our Ka- and Ku-band products to support military ISR, first responders, Comms-on-the-Move, Comms-on-the-Halt, fly-away, and fixed satellite communication systems. Our product line has expanded to support X-band SATCOM requirements. We also offer a growing line of PowerStream® C- and Ku-band amplifiers for broadcast SATCOM systems, including VSAT, Satellite News Gathering (SNG), and teleport applications.



80W X-Band Amplifier

When compact size and lighter weight is critical, when energy efficiency is paramount, and when reliability is essential, Wavestream is the choice to get the job done. Call us at +1 877 214-6294 or visit our website: www.wavestream.com

WORK Microwave
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www.work-microwave.de

At Satellite 2012, **WORK Microwave** will introduce the company's latest, new-generation DVB-S/S2 modulator featuring multistream technology. The high-speed modulator with up to six multistream inputs and 50-180MHz and/or 950-2150MHz L-Band output is ideal for fixed satellite ground stations as well as for SNG vehicles, fly-aways, or any other mobile or portable applications. The product supports DVB-S2 transmissions in variable coding and modulation (VCM) mode to ensure the highest transmission throughput at all times.

The new improved design of the modulator includes features

such as:

Multistream Technology — Users can now aggregate up to six independent transport streams into one satellite carrier in a fully transparent manner. Multistream technology does not modify the original data streams, maintaining the integrity of the original content. Also, fewer modulation devices are required, reducing both operational expenses and capital investments for users.



New Generation DVB-S/S2 Modulator

Transport Stream over IP (TSoverIP) — In addition to the known ASI interface, the updated modulator now also offers transport over IP. Users can use existing network infrastructure to transport video data.

Enhanced User Interface — The powerful, easy-to-use, and intuitive user interface now supports easier access to all the new features introduced with this product update.

Xiplink, Inc.
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At Satellite 2012, **Xiplink** will be showcasing its XipLink Real Time ("XRT") capabilities. XRT is a new optimization capability that compresses, coalesces and prioritizes VOIP, Skype or other small packet UDP traffic types for significantly more bandwidth and packet efficiency without compromising quality. XRT can provide bandwidth savings up to 50% and dramatically improve the packet/second performance of most modems by 2 to 10 times the current packet rate. XRT optimizations are now included with all XipOS 3.2 and higher releases.



XipLink is also demonstrating the award-winning XHO hub optimization technology, allowing Network Operators to immediately improve outbound web performance or reduce bandwidth costs by deploying a single device at the Teleport or Data Center without remote equipment or software. This hub side investment can then be leveraged into selected "bracketed" applications to take advantage of XRT, SCPS-standard TCP acceleration, Link Bonding and other optimizations available with XipLink's appliances or embedded systems.

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Major industry news and developments

MERGERS & ACQUISITIONS

GE Satcom Acquired by Trustcomm International

GE-Satcom, also known as Satlynx, has been acquired by Trustcomm International, Inc. in a transaction that saw Trustcomm International assuming ownership for the entire Satlynx group of companies which include teleport facilities located in Luxembourg, Germany and Switzerland. The new owners subsequently announced that the company has formally changed its name to **Signalhorn**.

Disney Acquires UTV

Disney has completed its acquisition of **UTV**, paying US\$ 454 million for the shares in the Indian media group that it did not already own. Disney plans to delist UTV from the Indian stock exchange and is creating Walt Disney Company India, a new holding company that will manage UTV alongside its other assets in the country.

The deal was completed after a public tender offer for the 20 per cent of UTV shares owned by individual investors. Disney plans to produce Disney and UTV-branded films in India.

“With the middle class in India expected to grow from 50 million to more than 500 million people by 2025, this market offers huge potential for us to deliver quality branded entertainment to consumers,” said Ronnie Screwvala, the former chief executive of UTV – and now the managing director of Walt Disney Company India.

EXECUTIVE MOVES

WTA Names Bill Tillson Teleport Executive of the Year

The **World Teleport Association** (WTA) announced that **Bill Tillson**, President and COO of Encompass Digital Media, has been named as its 2012 Teleport Executive of the Year. Mr. Tillson will be honored during WTA’s Teleport Awards for Excellence luncheon on March 13 during SATELLITE 2012. The Teleport Executive of the Year award is presented to an individual for demonstrated entrepreneurship, leadership and innovation in the development or operation of a teleport-based business.

Encompass Digital Media is the product of a series of acquisitions and strategic alignments by Mr. Tillson and Encompass CEO Simon Bax, beginning with the purchase of Andrita Studios in Los Angeles. Moving rapidly, the venture-funded team acquired Crawford Communications near Atlanta from its legendary owner, Jesse Crawford and the content distribution assets and business of Ascent Media to create a teleport operator and digital media services company with a global footprint. The company has also expanded its horizons beyond sports, media and entertainment by launching a government solutions unit that provides commercial satellite communications services for civilian government and military sectors including federal, state and local agencies.

Medved Appointed Area Sales Manager for DEV America

DEV America, announced the appointment of **Timothy Medved** as Area Sales Manager for North America. Medved, an industry veteran, will be responsible for helping customers in North America take advantage of DEV’s expanding product line of RF and fiber transmission equipment.



Timothy Medved

Medved brings over 20 years of technical, marketing, product management and sales experience in the satellite,

cable, electronics, and optical communications arena, with leading companies in their respective markets, including Siemens, Fujitsu, and General Instrument. His experience as an applications and sales engineer, includes sales of fiber-optic communications systems, a market segment in which DEV’s RF-over-fiber products are experiencing increased demand from North American customers. Medved holds a B.S. in Industrial Technology from San Diego State University, and an MBA in Management and Marketing from the University of San Diego.

Orbital Names David Broome Vice President for Defense and Intelligence Programs

Orbital Sciences Corporation announced that **David V. Broome** has joined the company’s Government Relations Department as Vice President of Defense and Intelligence Programs with responsibility for organizations within the federal government involved in national security space programs. Broome comes to Orbital with a diverse background, having served in senior roles in industry and government, as well as his military service to the country. Broome will report to Kate Kronmiller, Orbital’s Senior Vice President of Government Relations. Broome currently serves in the United States Marine Corps Reserve (USMCR) assigned to Marine Forces Pacific. He is a veteran of Operation Iraqi Freedom having served forward in 2004 in Al Anbar Province.

Sencore Names Stingley as President; Suranyi to Become Strategic Advisor

Sencore, announced that its current president and CEO **John Suranyi** has been named a strategic advisor to the company. In his new role, Suranyi will transfer his day-to-day responsibilities, but will remain active on the Sencore board of directors. **Thomas Stingley** will be promoted from executive vice president to president and will be responsible for the day-to-day operations at Sencore.





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■ Key industry trends and opportunities.

IPTV Growth Outpacing Cable and Satellite

New IPTV forecast from MRG, Inc. indicates that the number of global IPTV subscribers will grow from 53 million in 2011 to 105.1 million in 2015, a CAGR of 18.7%. The service revenue for the global IPTV market was US\$21.8 billion in 2011 and is projected to grow to US\$45.3 billion in 2015, a CAGR of 20%. By 2015, Europe and North America will continue to generate a larger share of the global revenue.

New and innovative services of key Operators described in the report reveal that IPTV Operators are aggressively developing these new services to compete with other local Pay-TV Operators.

"In recent quarters, IPTV Operators have seen their subscriber growth outpace that of their Cable and Satellite TV rivals," says Jose Alvear, IPTV Analyst for MRG, Inc. "IPTV Operators are expanding their TV offerings by aggressively adding HD, multiscreen and multiview services, and hybrid services like OTT video linked with Digital Terrestrial or Satellite video services." Increasingly, IPTV Providers are moving away from pure-play IPTV services and are adding new ways to deliver content to their customers.

"Although certain regions and countries have seen very good

IPTV subscriber growth, areas like Latin America, and Southeast Asia still have not gotten off the ground with IPTV," says Alvear. "As such, IPTV growth will likely be quick once government and regulatory issues have been dealt with."

The IPTV ecosystem breaks into nine industry segments: DSL Subscribers, IPTV Subscribers, Access Systems, Video Headend Encoder Systems, Video-on-Demand Server Software Licenses, Set-top Boxes, Middleware Licenses, Content Protection/Digital Rights Management (CP/DRM) Licenses and System Integration and Professional Services.

Each market segment is split into four regions around the world: Europe, Asia, North America and Rest of World, based on over 930 Service Providers (Operators) worldwide offering IPTV services. The number of Operators has increased since the last report, since more of them have launched services in the last 12 months or announced new trials. This data is refreshed continuously to ensure maximum currency.

More details about this 129-page report **IPTV Global Forecast: 2011 to 2015** are available at <http://www.mrgco.com/iptv/gf0212.html>

Global Market for Satellite Products and Services to Reach US\$ 219.6 Billion by 2015

Growth in the global satellite market is expected to be driven by opportunities in the satellite services market, particularly satellite television and satellite broadband services. Continued demand from government and other mission critical application sectors such as communications, broadcasting, air traffic management, and security, also augurs well for the future of this market, according to a new report from Global Industry Analysts. Technology developments have transformed the global satellite industry over the years from what was earlier confined to serve just the defense and communication applications, to now being capable of even taking entertainment direct to home in the form of digital broadcasting. Satellite technology has become a critical part of our everyday life, enabling communications, entertainment, navigation, and weather forecasting,

among others. Having braved several challenges over the years, including the dotcom bust early this millennium, the general trend towards fiber connectivity, the impact of 2007-2009 economic recession, the industry now stands poised to register growth, primarily riding on the ever changing needs in telecommunications, one of its primarily end-use sector and growing consumer demand for satellite-based broadcasting and entertainment services. The industry will be bolstered by growing demand for satellite services against the backdrop of growing need for longer satellite life, increasing number of transponders per satellite, and data compression.

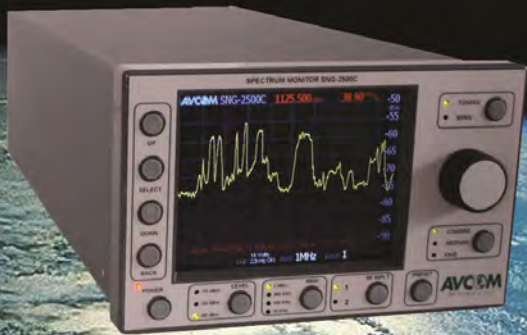
Accounting for a majority share in total revenue, satellite services market is the primary growth driver in the global

satellite industry. Strong growth in the number of subscribers to Direct-To-Home/Direct Broadcast Satellite (DTH/DBS) services, as a result of tremendous increase in television viewership in developing markets such as India and China and introduction of advanced services such as HDTV and 3D-TV are fuelling demand for satellite TV services.

For more details about this comprehensive industry report, go to: www.strategyr.com/

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Update on the Latin American Satellite Market

by B.H. Schneiderman

The Latin American satellite market continues to grow in terms of applications such as Direct-to-Home (DTH), HDTV, Cellular Backhaul & Trunking, and government programs aimed at bridging the Digital Divide. International satellite operators such as SES and Intelsat are forced to review their strategy and are bringing more capacity to serve the region in the next 5 years to be better positioned for relevant growth in transponder capacity and to be able to meet the growing demands of the market.

As example of growth in the market, DirecTV Group reported during the month of February 2012 a 16% jump in fourth-quarter profit as the satellite television company added nearly four times as many Latin American subscribers than in the U.S. In the fourth quarter of 2011, DirecTV said it added a net 590,000 subscribers in Latin America, up from 378,000 subscribers tacked on a year earlier. "Latin America is now the core business," writes Bernstein Research analyst Craig Moffett. Bernstein expects DirecTV's Latin American operations to account for around 40% of revenue by the end of 2015, from around 18.5% at the end of the fourth quarter.

In our October 2011 issue, we featured the Brazilian market which comprises about half of the Latin America market for satellite products and services and transponder capacity. In this article we will focus on the other countries in Latin America specifically countries that are implementing domestic satellite programs in order to get a bigger picture of the major trends in the Latin American market.

MEXICO

The Mexico Government announced last December 2010 a contract with Boeing to design and build the Mexsat communications satellite system to provide mobile L-Band for government and civilian broadband communications, while supporting humanitarian needs and enhanced coverage for domestic communications in Mexico. The system will consist of two Boeing 702 HP Geostationary satellites, Mexsat-1 and Mexsat-2, and one FSS satellite, Mexsat-3, which was subcontracted out to Orbital Sciences Corp.

The contract with the Mexican government is valued at approximately US\$1 billion contract to build a three-satellite system and two ground sites for use in civil communications and national security. Each Boeing satellite will supply 14 kilowatts of power through five-panel solar array wings that use high-efficiency, ultra triple-junction gallium arsenide solar cells.



The satellite to be built by Orbital Sciences, Mexsat-3 will provide full coverage of Mexico and its territorial waters and relay civil communications for socioeconomic development, the company said in a statement. The first is slated for launch by the end of 2012 by Arianespace. The Mexican Communications and Transport Ministry has contracted with Europe's Arianespace consortium to launch the Mexsat 3 satellite in late 2012 as a co-payload aboard a heavy-lift Ariane 5 rocket or as the sole payload on a Europeanized version of Russia's Soyuz vehicle. The contract was signed in June 2011.

Mexsat-3 will be based on Orbital's STAR-2 platform, will generate approximately 3.5 kilowatts of payload power and carry 12 active extended Ku-band and 12 active extended C-band transponders. The spacecraft will provide communications services to Mexico and its surrounding waters from the 114.9 degree West Longitude orbital slot. In addition to the MEXSAT-3 spacecraft, Orbital will also provide the FSS ground segment, including the satellite command and control ground equipment and software as well as training and operational documentation.

The two ground sites in Mexico will be created with advanced beam-forming flexibility to direct mobile user spot beams to government agencies operating in Mexico and its nearby seas, including the Pacific Ocean and Gulf of Mex-

ico. Craig Cooning, chief executive of Boeing Satellite Systems International, said the system marks the fourth-generation of satellites provided to Mexico by Boeing for security and communications needs.

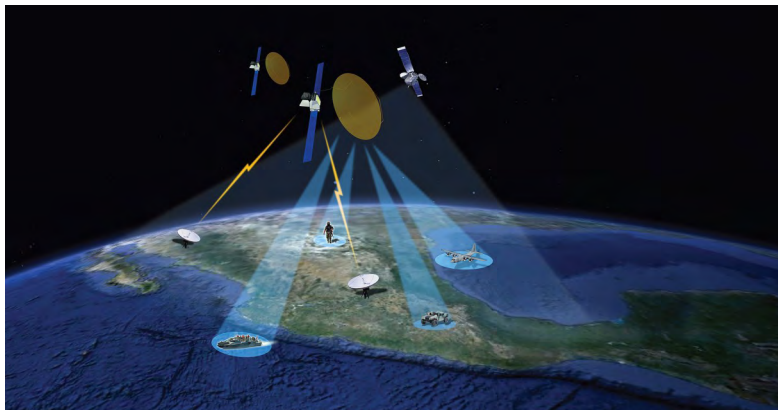
The Boeing Company has awarded a contract in September 2011 valued at approximately US \$40 million to ViaSat to develop a ground-based beam forming (GBBF) system for the Mexican Satellite System. The beam forming system is designed to operate with the Boeing L-band geomobile satellite system being provided for Secretaria de Comunicaciones y Transportes (“SCT”) of Mexico.

ViaSat was contracted to supply Boeing with GBBF processors, the control and management system, and the uplink beacon stations to be deployed in two ground stations in Mexico City and Hermosillo, Mexico. The system creates hundreds of small, flexible, adaptive “spot” beams on the earth that link small, handheld satellite devices. While the beams are projected down on the earth by the satellite, the GBBF system performs the actual beam-shaping signal processing.

Another subcontractor to Boeing, Hughes will provide the ground communications network for MEXSAT, which will be installed at two gateway sites, consisting of satellite base stations, core cellular network switching and related equipment, and customer care and billing systems.

“Mobile satellite broadband technology is ideal for government, military, and emergency communications, particularly in countries with limited terrestrial infrastructure,” said Matthew Mohebbi, vice president and general manager of Mobile Satellite Systems at Hughes. “That’s why today more and more governments are showing considerable interest in owning their own satellites for use by their defense, government, and public safety agencies. Mexico is one of the first to deploy its own mobile satellite system and this may become a trend as nations such as Korea, India, and Australia consider following suit.” Besides the ground network, Hughes is also building a range of reference user terminals for maritime, aeronautical, and high-speed vehicular applications. These new voice and data terminals will leverage a common, flexible architecture so that different antennas and amplifiers can be employed to build various types, such as handheld portables, on-the-pause units, and terminals with rooftop antennas for different uses.

One recent development in Mexico is the sale of the national satellite operator Satelites Mexicanos (Satmex) to a holding company in January 2011. Nacional Financiera (Nafin), as trustee, executed the sale of 100% stake of Satelites de Mexico (Satmex) to Holdsat, a group comprised by creditors and investors, for US \$6.25 million dollars. The federal government will no longer be a shareholder and will receive \$1.25 million for 20% of its shares, and will reserve its satellite



Artist's rendition of the MEXSAT Satellite System.
(image courtesy of Boeing)

capacity from 7% in this system, explained, Gerardo Sanchez Henkel, legal director of the Secretariat of Communications and Transport (SCT).

The new owners of the Mexican satellite system will assume debt of \$198 million dollars and will make a fresh capital injection of \$90 million dollars, through which the company can get funding to put into orbit the Satmex 8 that will replace the Satmex 5, according to media reports.

Space Systems/Loral (SS/L) announced in May 2010 that it has been selected by Satmex to build Satmex 8, a high-power C- and Ku-band satellite that is intended to replace Satmex 5 and will provide Fixed Satellite Services (FSS) in both North and South America. The new satellite will augment the current Satmex fleet in providing services such as broadband, voice and data transmission, and video broadcasting. Satmex 8 is a 24 C and 40 Ku-band transponders satellite and it is being designed to be located at 114.9 degrees West. Satmex 8 is based on SS/L's high power LS-1300 spacecraft bus which provides the flexibility for a broad range of applications. It has a planned mission life of 15 years.

Satmex has selected International Launch Services (ILS) to launch the Satmex 8 satellite into geostationary transfer orbit on an ILS Proton from the Baikonur Cosmodrome in the third quarter of 2012.

Meanwhile, in September 2011 International Launch Services (ILS) launched operator SES' QuetzSat-1 satellite into orbit last month on board a Proton Breeze M rocket. The Ku-band QuetzSat-1 was designed as a 20-kilowatt broadcasting satellite to provide advanced DTH television coverage over Mexico, the United States and Central America. The spacecraft is based on SS/L's 1300 satellite platform and carries 32 Ku-band transponders.. The QuetzSat-1 satellite positioned at the 77 degrees West orbital slot is to be used in part by Dish Mexico, an EchoStar joint venture, for Direct-To-Home (DTH) services in Mexico and for Dish

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Network in the United States.

EchoStar has leased the entire capacity of QuetzSat-1 for 10 years. SES said the satellite is an important part of the company's current satellite expansion program.

ARGENTINA

An Argentinian company, Empresa Argentina de Soluciones Satelitales S.A. (AR-SAT) is planning to launch three domestic communications satellites, with the first one to be launched in 2013. AR-SAT is a government-owned corporation which started operating in July 2006. AR-SAT has exclusive rights to operate and commercialize geostationary orbital position 81 degree West in Ku-Band (North & South America) and C-Band (Hemispheric coverage). AR-SAT holds rights over the engineering and development of national satellites to be manufactured within the scope of the Argentine Geostationary Satellite Project, as started back in December 2007 upon the signing of a contract with an Argentine corporation named INVAP. The Argentine government transferred NAHUEL-SAT's operational assets to AR-SAT. AR-SAT 1 satellite development, production and integration will be done in Argentina. AR-SAT has scheduled the launching of at least three geostationary satellites in geostationary positions 81 and 72 West starting in 2013. AR-SAT will also upgrade and expand the Benavidez Satellite Control Station.

Astrium and Thales Alenia Space were awarded contracts by AR-SAT to provide components for ARSAT-1 satellite. Thales Alenia Space will provide payload components for the first Argentine satellite and Astrium the hardware of the unit processor that hosts the software designed by Arsat and Invap engineering team, in Argentina. Astrium was also awarded with the central cylinder of the satellite and other components for ARSAT-1 thrust subsystem. ARSAT-1 is the first of the Argentine geostationary satellite fleet under the SSGAT Program (Argentine Telecommunications Geostationary Satellite System), and Invap, the regional observation satellite manufacturer, was selected by Arsat as prime contractor of ARSAT-1, integrating all these components. ARSAT-1 is designed with 24 Ku-band transponders and positioned at the 71.8° West orbital slot. The spacecraft aims to provide data, telephone and television transmission services for Argentina, Chile, Uruguay, and Paraguay.



The Venezuelan government is sponsoring a program to develop locally made satellite antennas to receive signals from the Simon Bolivar satellite.

AR-SAT and Arianespace has signed the launch Service & Solutions to orbit the Arsat-1 satellite by mid-2013. Weighing about 2,900 kg at launch, Arsat-1 will be placed into geostationary transfer orbit by an Ariane 5 or Soyuz launcher from the Guiana Space Center, Europe's Spaceport in French Guiana.

VENEZUELA

Venezuela launched in 2008 a domestic satellite called Venesat-1, also known as Simón Bolívar satellite, the first Venezuelan satellite. It was designed, built, launched, controlled and monitored by the CGWIC subsidiary of the China Aerospace Science and Technology Corporation. It was launched on a Chinese Long March 3B carrier rocket at the Xichang Satellite Launch Center in October 2008. Venesat-1 is operated by Venezuela's Ministry of Science and Technology and has 12 C-Band Transponder and 14 Ku-Band Transponders and has expected service life of 15 years. It is based on the DFH-4 satellite bus. The satellite occupies an orbital slot, 78-West, designated for Uruguay and ceded to Venezuela by mutual accord.

The Simón Bolívar satellite will provide services for the following segment in Venezuela:

- 10,200 schools will receive tele-education and internet services, benefiting an estimated educational population of 2 million students.
- 7,700 clinics to receive telemedicine services, remote diagnostics and medical consultations, benefiting more than 1 million patients.
- 340 small business in small towns will facilitate inventory control, purchase products and other network processes, which will benefit 70 000 users.
- 108 village of 500 inhabitants benefit through the phone service during the first quarter of 2009, benefiting over 1 million inhabitants.
- 300 sites of border protection, defense and protection of terrestrial, aquatic and Venezuelan airspace, allowing among other things, the fight against drugs.
- 1,000 sites to address oil wells, barges, ships, pumps, among others.

To lessen dependence on foreign antenna manufacturers, the Venezuelan government through its National Center for Telecommunications Research and Development (CENDIT) is developing locally-made antennas to receive signals from the Simon Bolivar satellite.

BOLIVIA

China will launch Bolivia's first telecommunications satellite, Tupac Katari, into orbit in December 2013. The satellite is being built in China under an agreement signed in December 2010 between the Bolivian Space Agency and China Aerospace Science and Technology subsidiary China Great Wall Industry Corp.. Bolivian and Chinese engineers will be working together on the final design of the satellite, which is scheduled for completion in March 2013. Bolivia is paying approximately US\$ 300 million for the Tupac Katari project. The General Treasury of Bolivia is contributing US\$ 45 million to pay the bill. The remaining US\$ 250 million is being paid through a loan issued from the Development Bank of China.

Ma Xingrui, president of the China Aerospace Science and Technology Corp., said the satellite will promote the Bolivian government's ability to communicate during emergencies and for defense purposes. The company also built Venezuela's Venesat-1 spacecraft. Zhao Xiaojin, head of the aerospace department at the China Aerospace Science and Tech-

nology Corp, said China will help developing countries build up their aerospace industries. "We encourage and help the countries to start their satellite industries from small-scale satellites," Zhao said. "We will provide not only service related to satellite manufacturing and launching, but also personnel training and transfers of technology, which will help the countries build up their own satellite industries." Ivan Zambrana, Executive Director of the Bolivian Space Agency also announced that China will be helping Bolivia launch a second satellite in the next three years. "It will be a remote-sensing satellite that runs in a low orbit, which could be used for civilian services such as detecting minerals and oil, forecasting natural disasters, and so on," Zambrana said.

Conclusion

As we have seen, there is a lot of activity in the Latin American satellite market. The staging of important global sporting event in Latin America such as the FIFA World Cup and the Olympics in the coming years will only sharpen the focus on this growing market.

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

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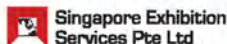
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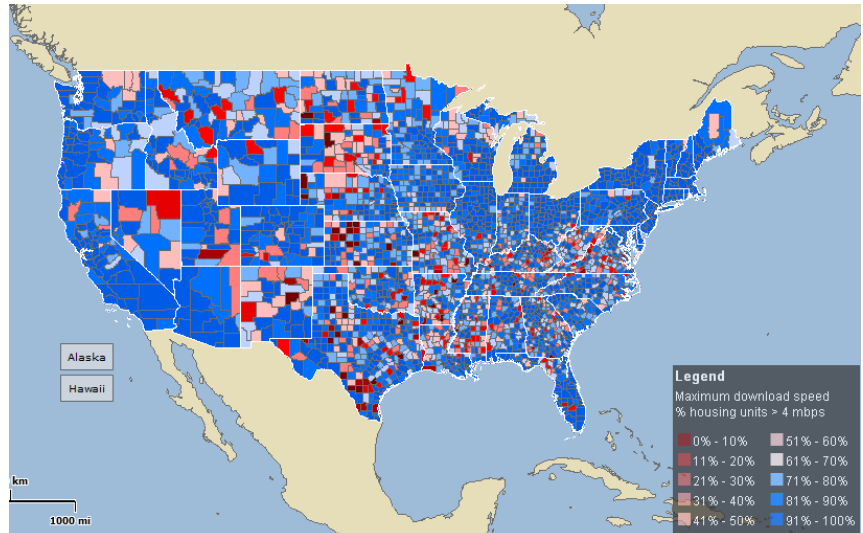


Vital Statistics

The latest broadband map created by the FCC shows large portions of the United States without access to high-speed internet service. Revealed to the public in February 2012, the newest version of the nation's broadband map shows broad areas of Alaska, Arizona, Idaho, Nevada, Montana and Texas without access to 3G or faster mobile broadband coverage.

While nearly every state in the union has sections of land without 3G service, rural western regions are clearly some of the areas least served.

US Broadband Map



To view the interactive broadband map go to <http://broadbandmap.gov>

ADVERTISERS' INDEX

AAE Systems.....	11
www.aaesys.com	
Agile Communication Systems.....	19
www.agilecoms.com	
Amos Spacecom.....	14
www.amos-spacecom.com	
AVL Technologies.....	34
www.avltech.com	
ATCi.....	19
www.atci.com	
AVCOM of Virginia.....	31
www.avcomofva.com	
Broadcast Asia 2012.....	38
www.broadcast-asia.com	
Cobham Tracstar.....	12
www.cobham.com/tracstar	
Comtech Xicom.....	10
www.xicomtech.com	
DEV America.....	<i>cover and 2</i>
www.dev-america.com	
Globecom.....	42
www.globecommsystems.com	

GE Satellite.....	18
www.gesatellite.com	
Intersputnik.....	15
www.intersputnik.com	
NAB 2012.....	36
www.nabshow.com	
O3b Networks.....	37
www.o3bnetworks.com	
Satcom Africa 2012.....	18
www.satservicegmbh.de	
SatService GmbH.....	6
www.satservicegmbh.de	
Spacecraft Tech Expo 2012.....	29
www.spacetecheexpo.com	
The SpaceConnection.....	27
www.thespaceconnection.com	
Walton Enterprises.....	25
www.de-ice.com	
Wavestream.....	41
www.wavestream.com	
Work Microwave.....	17
www.work-microwave.de	

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EUTELSAT COMM	ETL.PA	28.29	-0.32%	26.01 – 31.63	↓ 10.56%
APT SATELLITE	1045.HK	2.15	70.63%	0.95 – 3.19	↓ 32.60%
INMARSAT	ISAT.L	480.90	20.10%	287.50 – 635.50	↓ 24.33%
SES GLOBAL FDR	SES.F	18.24	0.88%	15.70 – 19.46	↓ 6.27%
Satellite and Component Manufacturers					
Boeing Company (The) Common Stock	BA	74.90	0.97%	56.01 – 80.65	↓ 7.13%
COM DEV INTL	CDV.TO	2.12	7.07%	1.55 – 2.88	↓ 26.39%
Lockheed Martin Corporation Com	LMT	88.50	7.51%	66.36 – 90.15	↓ 1.83%
Loral Space and Communications,	LORL	74.00	7.31%	45.65 – 80.56	↓ 8.14%
Orbital Sciences Corporation Co	ORB	14.03	-3.17%	11.80 – 19.38	↓ 27.61%
Ground Equipment Manufacturers					
C-Com Satellite Systems Inc.	CML.V	0.72	33.33%	0.34 – 0.75	↓ 4.00%
Comtech Telecommunications Corp	CMTL	31.76	2.92%	23.51 – 35.65	↓ 10.91%
Harris Corporation Common Stock	HRS	43.79	6.80%	32.68 – 53.39	↓ 17.98%
Honeywell International Inc. Co	HON	59.75	2.95%	41.22 – 62.28	↓ 4.06%
ViaSat, Inc.	VSAT	45.63	-4.00%	31.18 – 49.80	↓ 8.37%
Satellite Service Providers					
Gilat Satellite Networks Ltd.	GILT	3.93	-2.97%	3.04 – 5.87	↓ 33.05%
Globecom Systems Inc.	GCOM	14.15	-0.84%	9.68 – 16.43	↓ 13.88%
INTL DATACASTING J	IDC.TO	0.2450	0.00%	0.25 – 0.47	↓ 47.87%
ORBCOMM Inc.	ORBC	3.24	-6.09%	1.98 – 3.70	↓ 12.43%
RRSat Global Communications Net	RRST	4.1999	-3.45%	3.50 – 7.75	↓ 45.81%
Consumer Satellite Services					
BRITISH SKY ADS	BSYBY.PK	43.35	-1.37%	–	N/A%
DIRECTV	DTV	46.55	3.42%	39.82 – 53.40	↓ 12.83%
DISH Network Corporation	DISH	29.27	4.84%	20.89 – 32.56	↓ 10.10%
Globalstar, Inc.	GSAT	0.7587	16.19%	0.35 – 1.46	↓ 48.03%
Sirius XM Radio Inc.	SIRI	2.31	11.06%	1.27 – 2.44	↓ 5.33%

INDEX	Index Value (Mar. 02)	% Change from Last Month	% Change Jan. 03, 2012
Satellite Markets 25 Index™	1,131.76	9.82%	8.61%
S & P 500	1,369.63	4.36%	6.93%

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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